Declaration of Conformity

According to the following Directives

• Machinery Directive: 2006/42/EC

•Electromagnetic Compatibility Directive : 2004/108/EC

We Wuxi Hong' an Precision Machinery Co.; Ltd.
No.15, Gaokai Road, Binhu District， Wuxi City, Jiangsu Province, China.

Declare that the machines mentioned hereafter:

Product: Roaster

Model/type: HA-BW70 HA-EW70、HA-BW80、HA-EW80、HA-BW90、HA-BW100 HA-EW100、HA-BW100A 、HA-EW100A、HA-BW100B 、HA-EW100B、HA-BW100C HA-EW100C、HA-BW200、HA-EW200、HA-BW300、HA-EW300、HA-BW350 HA-EW350、HA-BW400、HA-EW400、HA-BW400A、HA-EW400A、HA-BW500 HA-EW500、HA-BW550、HA-BW550A、HA-BW600、HA-EW600、HA-BW800 HA-EW800.

This machine is in compliance with the essential safety and health requirements of the Machinery Directive, Low Voltage Directive and Electromagnetic Compatibility Directive

They are based on the following standards:

If users make modification and supplement to the machine, or operate without according to the manual, we will not be responsible for the consequence.

We keep the following document in the files to check: Instruction manual, Technical drawings, Test records

- EN ISO 12100:2010: Safety of machinery — General principles for design
  -Risk assessment and risk reduction
-
- EN 60204-1: 2006+A1:2009 Safety of machinery - Electrical equipment of machines –
  Part 1: General requirements.
- EN 294: 1992, Safety of machinery-Safety distances to prevent danger zones being reached by the upper limbs.
- EN 294:1992/AC: 1993. CEN. EN 349:1993. Safety of machinery-Minimum gaps to avoid crushing of parts of the. Human body. 25.8.1993. -CEN. EN 415-1:2000. Packaging machines safety-Part 1: Terminology and classification
- EN 61000-6-2: 2001 / Electromagnetic compatibility (EMC)
  Part 6-2: Generic standards – Immunity for industrial environments
- EN 61000-6-4: 2001 / Electromagnetic compatibility (EMC)
  Part 6-4: Generic standards – Emission standard for industrial environment

Signature
Name:
Qualification: General Manager
Date of issue: 1, 6, 2014

Verification of Conformity

With European Directives

Name: Wuxi Hong' an Precision Machinery Co.; Ltd.

Add.: No.15, Gaokai Road, Binhu District, Wuxi City, Jiangsu Province, China.

Product Name: Roaster

Model/type: HA-BW70 HA-EW70、HA-BW80、HA-EW80、HA-BW90、HA-BW100 HA-EW100、HA-BW100A 、HA-EW100A、HA-BW100B 、HA-EW100B、HA-BW100C HA-EW100C 、 HA-BW200 、 HA-EW200 、 HA-BW300 、 HA-EW300 、 HA-BW350 HA-EW350 、 HA-BW400 、 HA-EW400 、 HA-BW400A 、 HA-EW400A 、 HA-BW500 HA-EW500 、 HA-BW550 、 HA-BW550A 、 HA-BW600 、 HA-EW600 、 HA-BW800 HA-EW800.

The submitted sample of the above product has been tested for CE marking according to the following European Directives:

Machinery Directive: **2006/42/EC**

Electromagnetic Compatibility Directive: 2004/108/EC

Standard(s) used for showing compliance with the essential requirements in the specified directive(s):

EN ISO12100:2010;
EN 60204-1:2006/AC: 2010
EN61000-6-2:2005
EN 61000-6-4:2007+A1:2011

The referred report(s) show that the product complies with standard(s) recognized as giving presumption of compliance with the essential requirements in the specified EU Directive(s).
The CE marking as shown below can be affixed on the product.

Certificate No.:

Date: 2014-05-29

AMTRE VERITAS STANDARD TECHNICAL TESTING LTD.

Application No:

Questionnaire of Product Certification
(产品认证调查表)

Applicant (申请公司)			
Company name: (公司名称):	(中):无锡弘安精密机械制造有限公司		
	(英):		
Address: (地址):	(中):江苏省无锡市滨湖区高凯路15号		
	(英):		
Telephone (电话):	0510-85627878	Fax: (传真):	051085615840
Name of contact (s)		e-mail or website: (邮件或网站):	www.wxhongan.cn

Manufacturer(生产工厂)			
Name: (名称):	(中):无锡弘安精密机械制造有限公司		
	(英):		
Address: (地址):	(中):江苏省无锡市滨湖区高凯路15号		
	(英):		
Telephone (电话):	051085627878	Fax: (传真):	0510-85615840
Name of contact (s)		e-mail or website: (邮件或网站):	www.wxhongan.cn
Does the company have a certified Quality System? (公司是否已有质量体系认证？)		Yes ( ) No (√)	
European Authorised Representative 欧盟授权代表			

* In case the applicant is different from the manufacturer, please indicate the applicant information above. (如果申请人与生产工厂不同，请填写以上表格。)

PRODUCT DESCRIPTION（产品描述）
Product name (产品名称): 烘烤机
Purpose of the products (产品用途): 食品甜点制作 华夫饼 脆皮蛋筒 蛋糕食品的制作

Certified models (产品型号):
HA-BW70 HA-EW70
HA-BW80 HA-EW80
HA-BW90
HA-BW100 HA-EW100
HA-BW100A HA-EW100A
HA-BW100B HA-EW100B
HA-BW100C HA-EW100C
HA-BW200 HA-EW200
HA-BW300 HA-EW300
HA-BW350 HA-EW350
HA-BW400 HA-EW400
HA-BW400A HA-EW400A
HA-BW500 HA-EW500
HA-BW550
HA-BW550A
HA-BW600 HA-EW600
HA-BW800 HA-EW800
注意：型号请务必据酌好，建议是铭牌、与客户合同上约定的型号以及CE证书三者一致

Description of technical data (产品技术参数):

（例如：每个型号的：电压: 220 V 电流:50/60_Hz 总功率: 1190 w）

The difference in case the client apply a series of models:
(如果客户申请多个型号，请说明各型号之间的差异): 各机器内部结构相同，各机器只有模具形状不同

The standards required by clients (客户希望申请的标准):

European Authorised Representative欧盟授权代表(或其它说明):

备注：以上信息对于贵公司和我们都非常重要，请认真填写。

Clause	Requirement – test	Result	Verdict
1	Essential health and safety requirements	-	-
1.1	General remarks	-	-
1.1.1	Definitions	-	-
1.1.2	Principles of safety integration	-	-
a)	Machinery must be so constructed that it is fitted for its function, and can be adjusted and maintained without putting persons at risk when these operations are carried out under the conditions foreseen by the manufacturer but also in foreseeable abnormal situations.	These specified requirements are satisfied completely.	Pass
	The aim of measures taken must be to eliminate any risk of accident throughout the foreseeable lifetime of the machinery, including the phases of assembly, dismantling, disabling and scrapping.	Appropriate measures have been taken to eliminate or reduce those existed risks.	Pass
b)	In selecting the most appropriate methods, the manufacturer must apply the following principles, in the order given;	-	-
	-Eliminate or reduce risks as far as possible;	The measures have been taken to eliminate or reduce risks as far as possible.	Pass
	-Take the necessary protection measure in relation to risks that can't be eliminated;	Appropriate guards and warning signs are used.	Pass
	-Inform users of the residual risks due to any shortcomings of the protection measures adopted, indicate whether any particular training is required and specify any need to provide personal protection equipment.	The related safety information for the users to operate the machine has been included in the instruction manual.	Pass
c)	When designing and constructing machinery, and when drafting the instructions, the manufacturer must envisage not only the normal use of the machinery but also uses which could reasonably be expected.	All safety principles have been taken into account as far as possible during the design of these machines.	Pass
	The machinery must be designed to prevent abnormal use if such use would engender a risk. In other cases the instructions must draw the user's attention to ways which experience has shown might occur -in which the machinery should not be used.	These requirements have been complied with, and the related information also has been provided within the instruction manual.	Pass
d)	Machinery must be so designed and constructed as to take account of the constraints to which the operator is subject as a result of the necessary or foreseeable use of personal protective equipment.	These requirements have been taken into account during the design of this machine.	Pass
e)	Machinery must be supplied with all the essential special equipment and accessories to enable it to be adjusted, maintained and	These related accessories have been supplied.	Pass

Clause	Content	Mark Y/N	Standards	Other Measures
1	General conditions			
a）	The essential characteristics, the recognition and observance of which will ensure that electrical equipment will be used safely and in applications for which it was made, shall be marked on the equipment, or, if this is not possible, on an accompanying notice.	Y	EN60204-1;	Instruction
b）	The manufacturers or brand name or trade mark should be clearly printed on the electrical equipment or, where that is not possible, on the packaging.	Y	EN60204-1,	Instruction
c）	The electrical equipment, together with its component parts should be made in such a way as to ensure that it can be safely and properly assembled and connected.	Y	EN60204-1,	Instruction
d）	The electrical equipment should be so designed and manufactured as to ensure that protection against the hazards set out in points 2 and 3 of this Annex is assured providing that the equipment is used in applications for which it was made and is adequately maintained.	Y	EN60204-1,	Instruction
2	Protection against hazards arising from the electrical equipment			
a）	that persons and domestic animals are adequately protected against danger of physical injury or other harm which might be caused by electrical contact direct or indirect;	Y	EN60204-1,	Instruction
b）	that temperatures, arcs or radiation which would cause a danger, are not produced;	Y	EN60204-1,	Instruction
c）	that persons, domestic animals and property are adequately protected against non-electrical dangers caused by the electrical equipment which are revealed by experience;	N		
d）	that the insulation must be suitable for foreseeable conditions.	Y	EN60204-1,	Instruction
3	Protection against hazards which may be caused by external influences on the electrical equipment			
a）	that the electrical equipment meets the expected mechanical requirements in such a way that persons, domestic animals and property are not endangered;	Y	EN60204-1,	Instruction
b）	that the electrical equipment shall be resistant to non-mechanical influences in expected environmental conditions, in such a way that persons, domestic animals and property are not endangered;	Y	EN60204-1,	Instruction
c）	that the electrical equipment shall not endanger persons, domestic animals and property in foreseeable conditions of overload.	Y	EN60204-1,	Instruction

2.3. Essential health and safety requirements (EMC)

Clause	Requirement – test	Result	Verdict
	used without risk.		-
1.1.3.	Ergonomics		
	Under the intended conditions of use, the discomfort, fatigue and psychological stress faced by the operator must be reduced to the minimum possible taking ergonomic principles into account.	Taking ergonomic principles into account reduce the fatigue and psychological stress.	Pass
1.1.4	Materials and products	-	-
	The materials used to construct machinery or products used and created during its use must not endanger exposed persons 'safety or health	Materials and products cannot endanger exposed person's safety or Health in operation.	Pass
	In particular, where fluids are used, machinery must be designed and constructed for use without risks due to filling, use, recovery or draining.	It has been complied with.	Pass
1.1.5	Lighting	-	-
	Machinery must be supplied with integral lighting suitable for the operations concerned where its lack is likely to cause a hazard despite ambient lighting of normal intensity.	No integral lighting has been used.	N/A
	Machinery must be so designed and constructed that there is no area of shadow likely to cause nuisance, that there is no irritating dazzle and that there are no dangerous stroboscopic effects due to the lighting provided by the manufacturer.	No integral lighting has been used.	N/A
	The essential requirement described in section 3.1.2 also applies to fixed machinery intended for use outside and for which night work is foreseen.	Appropriate measures have been taken for affixed machines.	Pass
	Internal parts requiring frequent inspection, and adjustment and maintenance areas, must be provided with appropriate lighting.	Internal parts doesn't need frequent inspection.	N/A
1.1.6	Design of machinery to facilitate its handling	-	-
	Machinery or each component part thereof must:	-	-
	Be capable of being handle safely	All of them are capable of being handled safely.	Pass
	-be packaged or designed so that it can be stored safely and without damage	They can be stored safely.	Pass
	During the transportation of the machine and/or its parts, there must be no possibility of sudden movements or of hazards due to instability as long as the machine and/or its parts are handled in accordance with the instructions of the manufacturer or of his authorized representative.	Already take available measurements to guarantee its safety transportation.	Pass
	Where the weight, size or shape of	-	-

Clause	Requirement – test	Result	Verdict
	machinery or its various component parts prevents them from being moved by hand, the machinery or each components part must		
	-Either be fitted with attachments for lifting gear, or	They are fitted with such attachments.	Pass
	-Be designed so that it can be fitted with such attachments, or	Not applicable.	N/A
	-Be shaped in such a way that standard lifting gear can easily be attached	Not applicable.	N/A
	Where machinery or one of its component parts is to be moved by hand, it must:	-	-
	-Either be easily movable, or	Not applicable.	N/A
	-Be equipped for picking up and moving in complete safety	They can be equipped safely.	Pass
	Special arrangement must be made for the handling of tools and/or machinery parts, even if lightweight, which could be dangerous.	Not applicable.	N/A
1.2	Controls	-	-
1.2.1	Safety and reliability of control systems	-	-
	Control systems must be designed and constructed so that they are safe and reliable, in a way that will prevent a dangerous situation arising.	All related safe and reliable technologies have been used adequately for these machines.	Pass
	Above all they must be designed and constructed in such a way that:	-	-
	-They can withstand the rigors of normal use and external factors	The whole control system can withstand the rigors of normal use and external factors.	Pass
	-human errors during operation don't lead to dangerous situations	Human errors don't lead to dangerous situations.	Pass
1.2.2	Manual controls	-	-
	Manual controls must be:	-	-
	-clearly visible and identifiable; the use of pictograms is recommended,	It has been complied with.	Pass
	-Positioned for safe operation without hesitation or loss of time, and without ambiguity	Suitable position for each control device has been taken.	Pass
	-Designed so that the movement of the control is consistent with its effect	The movement of the control is consistent with its effect.	Pass
	-Located outside the danger zones, except for certain controls where necessary, such as emergency stop, console for training of robots	They are located outside the danger zones.	Pass
	-Positioned so that their operation can't cause additional risk	Suitable position for each control device has been taken.	Pass
	-Designed or protected so that the desired effect, where a risk is involved, can't occur without an intentional operation.	This requirement has been complied with.	Pass

Clause	Requirement – test	Result	Verdict
	-Made so as to withstand foreseeable strain, particular attention must be paid to emergency stop devices liable to be subjected to considerable strain	All of them can withstand foreseeable strain.	Pass
	Where a control is designed and constructed to perform several different actions, namely where there is no one-to-one correspondence, the action to be performed must be clearly displayed and subject to confirmation where necessary.	No This Situation.	N/A
	Manual controls must be so arranged that their layout, travel and resistance to operation are compatible with the action to be performed, taking account of ergonomic principles	All control devices have been arranged adequately and taking account of ergonomic principles.	Pass
	Machinery must be fitted with indicators as required for safe operation	These machines are fitted with indicators for safe operation.	Pass
	The operator must be able to read them from the control position -	They can be read from the control position.	Pass
	From each position the operator must be able to ensure that there are no exposed persons in the danger zones	It's complied with the requirements.	Pass
	If this is impossible, the control system must be designed and constructed so that an acoustic and/or visual warning signal is given whenever the Machinery is about to Start and/or visual warning signal is given which leaves enough time for the exposed person to leave the danger zone or prevent the machinery starting up.	An acoustic and visual warning signal device has been used.	Pass
	If necessary, means must be provided to ensure that the machinery can be controlled only from control positions located in one or more predetermined zones or locations.	Functional test: from one position.	Pass
1.2.3	Starting	-	-
	It must be possible to start machinery only by voluntary actuation of a control provided for the purpose	These machines shall be started only by voluntary actuation of a control.	Pass
	The same requirement applies:	-	-
	-When restarting the machinery after stoppage, whatever the cause	The same requirement is applied.	Pass
	-When effecting a significant change in the operating conditions	The same requirement is applied.	Pass
	However, the restarting of the machinery or a change in operating conditions may be effected by voluntary actuation of a device other than the manual control provided for the purpose, unless this would lead to a hazardous situation.	This would not lead to a hazardous situation.	Pass
	As an exception to the above requirements, for automated plant functioning in		

Clause	Requirement – test	Result	Verdict
	automatic mode, the starting of the machinery, or restarting after a stoppage, or a change in operating conditions must be possible without intervention, provided this does not lead to a hazardous situation for the operator and/or exposed persons.	Not applicable.	N/A
1.2.4	Stopping device	-	-
1.2.4.1	Normal stopping	-	-
	Each machine must be fitted with a control Whereby the machine can be brought safely to a complete stop	The normal stopping devices have been used for machines.	Pass
	Each workstation must be fitted with a control to stop some or all of the moving parts of the machinery, depending on the type of hazard, so that the machinery is rendered safe	Workstations have fitted with a normal stopping device.	Pass
	The machinery's stop control must have priority over the start controls	They have priority over the start controls.	Pass
	Once the machinery or its dangerous parts have stopped, the energy supply to the actuators concerned must be cut off	The energy supply has been cut off once they are stopped.	Pass
1.2.4.2.	Emergency stop	-	-
	Each machinery must be fitted with one or more emergency stop devices to enable actual or impending danger to be averted	Having one emergency stops	Pass
	The following exceptions apply:	-	-
	-Machines in which an emergency stop device would not lessen the risk, either because it would not reduce the stopping time or because it would not enable the special measures required to deal with the risk to be taken	Not applicable	N/A
	-Hand-held portable machines and hand-guided machines	Not applicable.	N/A
	The emergency stop device must:	-	-
	-Have clearly identifiable, clearly visible and quickly accessible manual controls	Be complied with	Pass
	-Stop the hazardous process as quickly as possible, without creating additional risks,	Satisfied with the requirement.	Pass
	-Where necessary, trigger or permit the triggering of certain safeguard movements	Not applicable	N/A
	Once active operation of the emergency stop control has ceased following a stop command, that command must be sustained by engagement of the emergency stop device until that engagement is specifically overridden	Command can be sustained by engagement of the emergency stop device.	Pass
	It must not be possible to engage the device only by an appropriate operation, and disengaging the device must not restart the machinery but only permit restarting	Not applicable	N/A

Clause	Requirement – test	Result	Verdict
1.2.4.3.	Complex installations	-	-
	In the case of machinery or parts of machinery designed to work together, must so design and construct the machinery that the stop controls, including the emergency stop, can stop not only the machinery itself but also all equipment upstream and/or downstream if its continued operation can be dangerous	Not applicable	N/A
1.2.5	Control or operating mode selector	-	-
	The control mode selected must override all other control systems with the exception of the emergency stop	It is complied with the requirement.	Pass
	If machinery has been designed and built to allow its use in several control or operating modes presenting different safety levels, it must be fitted with a mode selector which can be locked in each position	Not applicable.	N/A
	Each position of the selector must correspond to a single operating or control mode	Each of them is corresponding to a single operating or control mode.	Pass
	The selector may be replaced by another selection method which restricts the use of certain functions of the machinery to certain categories of operator	Not applicable.	N/A
	If, for certain operations, the machinery must be able to operate with its protection devices neutralized, the mode selector must simultaneously:	-	-
	-Disable the automatic control mode	Not applicable.	N/A
	-Permit movements only by controls requiring sustained action	Not applicable.	N/A
	-Permit the operation of dangerous moving parts only in enhanced safety conditions while preventing hazards from linked sequences	Not applicable.	N/A
	-Prevent any movement liable to pose a danger by acting voluntarily or involuntarily on the machine's internal sensors and any uncontrolled movement.	Not applicable.	N/A
	In addition, the operator must be able to control operation of the parts he is working on at the adjustment point.	Not applicable.	N/A
1.2.6	Failure of the power supply	-	-
	The interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply to the machinery must not lead to a dangerous situation	No risk is generated from these accidental situations.	Pass
1.2.7	control circuit Failure	-	-
	A fault in the control circuit, or failure of or		

Clause	Requirement – test	Result	Verdict
	damage to the control circuit must not lead to dangerous situations	The failure of the control circuit can not lead to dangerous situations.	Pass
1.2.8	Software	-	-
	Interactive software between the operator and the command or control system of a machine must be user-friendly	The control system is user-friendly.	Pass
1.3	Protection against mechanical hazards	-	-
1.3.1	Stability	-	-
	Machinery, components and fittings thereof must be so designed and constructed that they are stable enough, under the foreseen operating conditions for use without risk of overturning, falling or unexpected movement	The stability of machines, components and fittings has been taken into consideration.	Pass
	This requirement also applies during transportation, assembly, dismantling, scrapping and any other action involving the machinery.	The stability of machines, during transportation has been taken into consideration.	Pass
	If the shape of the machinery itself or its intended installation doesn't offer sufficient stability, appropriate means of anchorage must be incorporated and indicated in the instructions	The machine is installed by bolt at the ground.	Pass
1.3.2	Risk of break-up during operation	-	-
	The various parts of machinery and their linkages must be able to withstand the stress to which they are subject when used	All parts used can withstand sufficient stress for working.	Pass
	The durability of the materials used must be adequate for the nature of the workplace	All materials used have adequate durability.	Pass
	The manufacturer or his authorized representative must indicate in the instructions the type and frequency of inspection and maintenance required for safety reasons, where appropriate, indicate the parts subject to wear and the criteria for replacement	This information in relation to inspection and maintenance etc. are indicated in the instruction manual.	Pass
	Where a risk of rupture or disintegration remains despite the measures taken the moving parts must be mounted and positioned in such a way that in case of rupture their fragments will be contained and prevented from reaching workstations.,	No this kind of situation.	N/A
	Both rigid and flexible pipes carrying fluids, particularly those under high pressure, must be able to withstand the foreseen internal and external stresses and must be firmly attached and/or protected against all manner of external stresses and strains; precaution must be taken to ensure that no risk is posed by a rupture	No this kind of situation.	N/A
	Where the material to be processed is fed to	-	-

Clause	Requirement – test	Result	Verdict
	the tool automatically, the following conditions must be fulfilled to avoid risks to the persons exposed:		
	-When the work piece comes into contact with the tool the later must have attained its normal working conditions	This requirement has been complied with.	Pass
	-When the tool starts and/or stops the feed movement and the tool movement must be coordinated	This requirement has been complied with.	Pass
1.3.3	Risks due to falling or ejected objects	-	-
	Precautions must be taken to prevent risks from falling or ejected objects	Precautions already are given.	Pass
1.3.4	Risks due to surfaces, edges or angles	-	-
	In so far as their purpose allows, accessible parts of the machinery must have no sharp edges, no sharp angles, and no rough surfaces likely to cause injury	All parts have been processed carefully so that they have no sharp edges, no sharp angles, and no rough surfaces likely to cause injury.	Pass
1.3.5	Risks related to combined machinery	-	-
	Where the machinery is intended to carry out several different operations with the manual removal of the piece between each operation, it must be designed and constructed in such a way as to enable each element to be used separately without the other elements constituting a danger or risk for the exposed person	No risk is generated from that situation for the exposed person.	Pass
	For this purpose, it must be possible to start and stop separately and elements that are not protected	No this situation.	N/A
1.3.6	Risks relating to variations in the rotational speed of tools	-	-
	When the machine is designed to perform operations under different conditions of use, it must be designed and constructed in such a way that selection and adjustment of these conditions can be carried out safely and reliably	No this situation.	N/A
1.3.7	Prevention of risks related to moving parts	-	-
	The moving parts of machinery must be designed, built and laid out in such a way as to prevent risk of contact which could lead to accidents or, where risks persist, fitted with guards or protective devices.	Appropriate protective guards have been fitted to avoid hazards.	Pass
	All necessary steps must be taken to prevent accidental blockage of moving parts involved in the work	Appropriate protective guards have been taken to avoid hazards.	Pass
	In cases where, despite the precautions taken, a blockage is likely to occur, specific protection devices or tools, the instruction handbook and possibly a sign on the machinery should be provided by the	No this kind of risk situation.	N/A

Clause	Requirement – test	Result	Verdict
	manufacturer to enable the equipment to be safely unblocked -		
	The instructions and possibly a sign on the machinery should indicate these specific protection devices.	These specific protection devices are indicated.	Pass
1.3.8	Choice of protection against risks related to moving parts	-	-
	Guards or protection devices used to protect against the risks caused by moving parts must be selected on the basis of the type of risk. The following guidelines must be used to help make the choice.	Guards or protection devices have been used appropriately.	Pass
	. either fixed guards as referred to in section 1.4.2.1,	Fixed guards are used.	Pass
	. or movable guards of type A as referred to in section 1.4.2.2,	No this kind of situation.	N/A
	Movable guards should be used where frequent access is foreseen.	No frequent access.	N/A
1.3.8.2.	Moving parts directly involved in the work process	-	-
	Guards or protection devices designed to protect exposed persons against the risks associated with moving parts directly involved in the process must be:	-	-
	-either fixed guards as referred to in section 1.4.2.1,	Not applicable	N/A
	-or movable guards of type B as referred to in section 1.4.2.2,	Not applicable	N/A
	-or protection devices as referred to in section 1.4.3.	Not applicable	N/A
	However, when certain moving parts directly involved in the process can't be made completely or partially inaccessible during operation owing to operations requiring near-by operator intervention, where technically possible such parts must be fitted with:	Not applicable	N/A
	-Fixed guards, complying with requirements 1.4.1 and 1.4.2.1 preventing access to those sections of the parts that are not used in the work	Not applicable.	N/A
	-adjustable guards as referred to in section 1.4.2.3.	Not applicable.	N/A
1.3.9.	Uncontrolled movements		
	When a part of a machine has been stopped, any drift away from the stopping position, for whatever reason other than action at the controls, must be such that it is not a hazard to exposed persons.	Not applicable	N/A
1.4	Required characteristics of guards and	-	-

Clause	Requirement – test	Result	Verdict
	protection devices		
1.4.1	General requirement	-	-
	Guards and protection devices must:	-	-
	-Be of robust construction	They are of robust construction.	Pass
	-Not give rise to any additional risk	No additional risk is generated.	Pass
	-Not be easy to bypass or render non-operational	They cannot be easy to bypass or render non-operational.	Pass
	-be unable to remain in place without their fixings,	unable to remain in place without their fixings	Pass
	-Be located at an adequate distance from the danger zone	An appropriate safety distance according to EN 294 has been complied with.	Pass
	-Cause minimum obstruction to the view of the production process	This requirement has been complied with.	Pass
	-Enable essential work to be carried out on installation and/or replacement of tools and also for maintenance by restricting access only to the area where the work has to be done, if possible without the guard or protection device having to be dismantled	These requirements have been taken into account during the design of the protection devices.	Pass
1.4.2	Special requirements for guards	-	-
1.4.2.1	Fixed guards	-	-
	They must be fixed by systems that can be opened only with tools. Their fixing systems must remain attached to the guards when removed.	Their fixing systems can remain attached to the guards when removed.	Pass
1.4.2.2	Movable guards	-	-
	A. Type A movable guards must: A	-	-
	-As far as possible remain fixed to the machinery when open	Not applicable.	N/A
	-Be associated with a locking device to prevent moving parts starting up as long as these parts can be accessed and to give a stop command whenever they are no longer closed	Not applicable.	N/A
	B. Type B movable guards must:	-	-
	-as far as possible remain fixed to the machinery when open	It met the requirement, see the picture in part4	Pass
	-be so designed and constructed that:		
	-they can be adjusted only by means of an intentional action,	No this situation.	N/A
	-the absence or failure of one of their components prevents starting or stops the moving parts,	No this situation.	N/A
	-protection against any risk of ejection is provided by means of an appropriate barrier,	No this situation.	N/A
	-be associated with an interlocking device preventing:	Associated with an limit switch	Pass
	-moving parts from starting up while they		

Clause	Requirement – test	Result	Verdict
	are within the operator's reach,	No this situation	N/A
	-the exposed person from reaching moving parts once they have started up.	Not applicable.	N/A
1.4.2.3	Adjustable guards restricting access	-	-
	Adjustable guards restricting access to those areas of the moving parts strictly necessary for the work must:		
	-Be adjustable manually or automatically according to the type of work involved	Not applicable.	N/A
	-Be readily adjustable without the use of tools	Not applicable.	N/A
	-Reduce as far as possible the risk of ejection	Not applicable.	N/A
1.4.3	Special requirements for protection devices	-	-
	Protection devices must be designed and constructed so that they can be associated with an interlocking device preventing:	The protection devices satisfy the requirements.	Pass
	-Moving parts can't startup while they are within the operator's reach	This requirement has been complied.	Pass
	-The exposed person can't reach moving parts once they have started up	This requirement has been complied.	Pass
	They can be adjusted only by means of an intentional action	This requirement has been complied.	Pass
	The absence or failure of one of their components prevents starting or stops the moving parts	This requirement has been complied.	Pass
1.5	Required characteristics of operating and/or driving positions	-	-
1.5.1.	Operating and/or driving positions	-	-
	There may be two or more operating and/or driving positions and, in such cases, each position must be provided with all the requisite manual controls without the operators hindering or endangering each other.	Only one control position.	N/A
	Where there is more than one control position, the machinery must be designed so that the use of one of them precludes the use of the others, except for stop controls and emergency stops.	Only one control position.	N/A
	The operating and/or driving position must be designed and constructed so as to avoid any health risk due to exhaust gases and/or lack of oxygen.	Only one control position.	Pass
	The operating and/or driving position must be fitted with an adequate cab if the machine gives rise to a dangerous environment presenting risks to the health and safety of the operator. The cab must be designed,		

Clause	Requirement – test	Result	Verdict
	constructed and/or equipped to ensure that the driver has good operating conditions and is protected against any foreseeable hazards. The exit must allow rapid evacuation. Moreover, an emergency exit must be provided in a direction which is different from the usual exit.	Not applicable.	N/A
	The materials used for the cab and its fittings must be fire-resistant.	Not applicable.	N/A
1.5.2.	Seating	-	-
	Where the working conditions so permit, work places constituting an integral part of the machinery must be equipped with seats.	Not applicable	N/A
	Where one exists, the driving seat of the operator or driver must enable the driver or operator to maintain a stable position.	Not applicable	N/A
	Where the seat is an integral part of the machinery, it must be supplied with it.	Not applicable	N/A
	If the machinery is subject to vibrations, the seat must be designed in such as way as to reduce the vibrations transmitted to the operator or driver to the lowest level that is reasonably possible. The seat mountings must withstand all stresses to which they can be subjected. Where there is no floor beneath the feet of the driver or operator, footrests covered with a slip-resistant material must be provided.	Not applicable	N/A
1.6	Protection against other hazards	-	-
1.6.1	Electricity supply	-	-
	Where machinery has an electricity supply it must be designed, constructed and equipped so that all hazards of an electrical nature are or can be prevented	The machinery is designed complied with the requirements.	Pass
1.6.2	Static electricity	-	
	Machinery must be so designed and constructed as to prevent or limit the build-up of potentially dangerous electrostatic charges and/or be fitted with a discharging system	Adequate safety design for this requirement has been taken.	Pass
1.6.3.	Lightning	-	-
	Machinery which is designed for outdoor use and which may be subject to the direct effects of lightning while being used must be fitted with a system for conducting the resultant electrical charges to earth.	Indoor use.	N/A
1.6.4.	Energy supply other than electricity	-	-
	Where machinery is powered by an energy other than electricity, it must be so designed, constructed and equipped as to avoid all potential hazards associated with	Not applicable.	N/A

Clause	Requirement – test	Result	Verdict
	these types of energy.		
1.6.5	Errors of fitting	-	-
	Errors likely to be made when fitting or refitting certain parts which could be a source of risk must be made impossible by the design of such parts or, failing this, by information given on the parts themselves and/or the housings	Appropriate design has been taken during design and attention has been paid during fitting.	Pass
	The same information must be given on moving parts and/or their housings where the direction of movement must be known to avoid a risk.	The direction of movement is indicated.	Pass
	Where necessary, the instructions must give further information on these risks.	Not applicable	Pass
	Where a faulty connection can be the source of risk, incorrect fluid connections, including electrical conductors, must be made impossible by the design or, failing this, by information given on the pipes, cables, etc. and/or connectors blocks	The relative safety technologies have been taken and sufficient information has been given.	Pass
1.6.6	Extreme temperatures	-	-
	Step must be taken to eliminate any risk of injury caused by contact with or proximity to machinery parts or materials at high or very low temperatures	Appropriate measure has been taken.	Pass
	The risk of hot or very cold materials being ejected should be assessed. Where this risk exists, the necessary steps must be taken to prevent it or, if this is not technically possible, to render it non-dangerous	Appropriate measure has been taken.	Pass
1.6.7	Fire	-	-
	Machinery must be designed and constructed to avoid all risk of fire or overheating posed by the machinery itself or by gases, liquids, dusts, vapors or the other substances produced or used by the machinery	Appropriate measure has been taken.	Pass
1.6.8	Explosion	-	-
	Machinery must be designed and constructed to avoid any risk of explosion posed by the machinery itself or by gases, liquids, dusts, vapors or other substances produced or used by the machinery	No explosion risk is generated.	N/A
	Machinery must comply, as far as the risk from explosion due to its use in a potentially explosive atmosphere is concerned, with the provisions of the specific directives in force. -	No explosion risk is generated.	N/A
1.6.9	Noise	-	-
	Machinery must be so designed and constructed that risks resulting from the		

Clause	Requirement – test	Result	Verdict
	emission of airborne noise are reduced to the lowest level taking accounting of technical progress and the availability of means of reducing noise, in particular at source	Appropriate measure has been taken.	Pass
1.6.10	Vibrations	-	-
	Machinery must be so designed and constructed that risks resulting from vibrations produced by the machinery are reduced to the lowest level, taking account of technical progress and the availability of means of reducing vibration, in particular at source	Appropriate design and construction have been taken.	Pass
1.6.11	Radiation	-	-
1.6.11.1.	General	-	-
	Machinery must be so designed and constructed that any emission of ionising or non-ionising radiation is limited to the extent necessary for its operation and that the effects on exposed persons are non-existent or reduced to non-dangerous proportions	No harmful emission of radiation has been found.	N/A
1.6.11.2	Instructions	-	-
	Where machinery is likely to emit non-ionising radiation which may endanger exposed persons, in particular persons with active or non-active implantable medical devices, the instructions must give quantitative information concerning the radiation emitted for the operator and exposed persons.	No harmful emission of radiation has been found.	N/A
	Furthermore, this information is mandatory for the following machinery:	-	-
	-welding machines,	Not applicable	N/A
	-induction heaters,	Not applicable	N/A
	-electro-magnets.	Not applicable	N/A
1.6.12	External radiation	-	-
	Machinery must be so designed and constructed that external radiation doesn't interfere with its operation	Appropriate EMC protection measure has been taken.	Pass
1.6.13	Laser equipment	-	-
	Where laser equipment is used, the following provisions should be taken into account;	No laser equipment is used.	N/A
	-Laser equipment on machinery must be designed and constructed so as to prevent any accidental radiation	No laser equipment is used.	N/A
	-Laser equipment on machinery must be protected so that effective radiation, radiation produced by reflection or diffusion and secondary radiation don't damage	No laser equipment is used.	N/A

Clause	Requirement – test	Result	Verdict
	health		
	-Optical equipment for the observation or adjustment of laser equipment on machinery must be such that no health risk is created by the laser rays	No laser equipment is used.	N/A
1.6.14	Emissions of dangerous substances	-	-
	Machinery must be so designed, constructed and/or equipped that risks due to gases, liquids, dust, vapors and other waste materials which it produces can be avoided	No this kind of hazard exists.	N/A
	Where a risk exists, the machinery must be so equipped that the said substances can be contained and/or evacuated in order to prevent the risks related to inhalation or the ingestion of dangerous substances.	No this kind of hazard exists.	N/A
	During normal operation of the machinery, the devices for containment and/or evacuation referred to in the previous paragraph must be situated as close as possible to the source of emission if the emission is not produced in an enclosed space which is part of the machinery.	Not applicable.	N/A
1.6.15	Risk of being trapped in a machine	-	-
	Machinery must be so designed, constructed or fitted with a means of preventing a exposed person from being enclosed within it or, if that is impossible, with a means of summoning help	This kind of situation doesn't exist.	N/A
1.5.15	Risk of slipping, tripping or falling	-	-
	Parts of the machinery where persons are liable to move about or stand must be designed and constructed to prevent persons slipping, tripping or falling on or off these parts	Appropriate methods were taken to avoid these risks.	Pass
1.7	Maintenance	-	-
1.7.1	Machinery maintenance	-	-
	Adjustment, lubrication and maintenance points must be located outside danger zones	They are located outside danger zones.	Pass
	It must be possible to carry out adjustment, maintenance, repair, cleaning and servicing operations while machinery is at a standstill	These jobs can be carried out while the machine is at a standstill.	Pass
	If one or more of the above conditions can't be satisfied for technical reasons, these operations must be possible without risk	No these technical reasons.	N/A
	In the case of automated machinery and, where necessary, other machinery, a connecting device for mounting diagnostic fault-finding equipment must be provided.	This kind of situation doesn't exist.	N/A

Clause	Requirement – test	Result	Verdict
	Automated machine components which have to be changed frequently must be capable of being removed and replaced easily and in safety. Access to the components must enable these tasks to be carried out with the necessary technical means in accordance with a specified operating method.	The relative components can be removed and replaced easily and in safety.	Pass
1.7.2	Access to operating position and servicing points	-	-
	Machinery must be designed and constructed in such a way as to allow access in safety to all areas used for production, adjustment and maintenance operations.	Appropriate protection measures have been taken so that all areas can be accessed safely.	Pass
	The movement of exposed persons must be unhindered.	Not unhindered.	Pass
1.7.3	Isolation of energy sources	-	-
	Machinery must be fitted with means to isolate it from all energy sources. Such isolators must be clearly identified.	Suitable insulating devices are used.	Pass
	They must be capable of being locked if reconnection could endanger exposed persons	Not applicable.	N/A
	In the case of machinery supplied with electricity through a plug capable of being plugged into a circuit, separation of the plug is sufficient provided that the requirement of the following paragraph is met. -		
	The isolator must be capable of being locked also where an operator is unable, from any of the points to which he has access, to check that the energy is still cut off	This requirement has been complied	Pass
	After the energy is cut off, it must be possible to dissipate normally any energy remaining or stored in the circuits of the machinery without risk to exposed persons	This requirement has been complied with.	Pass
	As an exception to the above requirements, certain circuits may remain connected to their energy source in order, for example, to hold parts, protect information, light interiors, etc. In this case, special steps must be taken to ensure operator safety	This kind of situation doesn't exist.	N/A
1.7.4	Operator intervention	-	-
	Machinery must be so designed, constructed and equipped that the need for operator intervention is limited	The operator intervention has been limited.	Pass
	If operator intervention can't be avoided, it must be possible to carry it out easily and in safety	No this kind of situation.	N/A
1.7.5	Cleaning of internal parts	-	-
	The machinery must be designed and	The clause has been met.	Pass

Clause	Requirement – test	Result	Verdict
	constructed in such a way that it is possible to clean internal parts which have contained dangerous substances or preparations without entering them; any necessary unblocking must also be possible from the outside	It is satisfied with.	Pass
	If it is absolutely impossible to avoid entering the machinery, the manufacturer must take steps during its construction to allow cleaning to take place with the minimum of danger-	The clause has been met.	Pass
1.8	Indicators, warnings and warning systems	-	-
1.8.1	Information devices	-	-
	The information needed to control machinery must be unambiguous and easily understood	The information is easy to recognize and understand.	Pass
	It must not be excessive to the extent of overloading the operator	Not applicable.	Pass
	Where the health and safety of exposed persons may be endangered by a fault in the operation of unsupervised machinery, the machinery must be equipped to give an appropriate acoustic or light signal as a warning	It has been equipped with an appropriate acoustic and light signal device.	Pass
1.8.2	Warning devices	-	-
	Where machinery is equipped with warning devices, these must be unambiguous and easily perceived	It has been complied with.	Pass
	The operator must have facilities to check the operation of such warning devices at all times	It has been complied with.	Pass
	The requirements of the specific directives concerning colors and safety signals must be complied with	It has been complied with.	Pass
1.8.3	Warning of residual risks	-	-
	Where risks remain despite all the measures adopted or in the case of potential risks which are not evident, the manufacturer must provide warnings	Appropriate warning has been taken.	Pass
	Such warnings should preferably use readily understandable pictograms and/or be drawn up in one of the languages of the country in which the machinery is to be used, accompanied, on request, by the languages understood by the operators	They can be understood easily.	Pass
1.9	Marking of machinery	-	-
	All machinery must be marked legibly and indelibly with the following minimum particular:	-	-
	-Name and address of the manufacturer		

Clause	Requirement – test	Result	Verdict
	and, where applicable, his authorized representative	It has been marked.	Pass
	-. where applicable, the name and address of the natural or legal person who assumes responsibility for its conformity to this Directive,	Not applicable	N/A
	-. designation of the machinery,	It has been marked.	Pass
	-CE mark	It has been marked.	Pass
	-Designation of series or type	It has been marked.	Pass
	-Serial number, if any	It has been marked.	Pass
	-the year of construction	It has been marked.	Pass
	Furthermore, machinery designed and constructed for use in a potentially explosive atmosphere must be marked accordingly.	Not applicable.	N/A
	Machinery must also bear full information relevant to its type and essential to its safe use	This information has been provided.	Pass
	Where a machine part must be handled during use with lifting equipment, its mass must be indicated legibly, indelibly and unambiguously	This information has been provided.	Pass
	All the information must be clearly identifiable by the final user.	No this situation.	N/A
1.10	Instructions	-	-
	Every machine must be accompanied by instructions in the official Community language(s) which may be determined in accordance with the Treaty by the Member State in which it is placed on the market and/or put into service.	Every machine can be accompanied by instructions	Pass
	The instructions accompanying the machine must be either. Original instructions. or a Translation of the original instructions., in which case the translation must be accompanied by the original instructions.	Translation of the original instructions	Pass
	The instructions must be drafted in accordance with the principles set out below.		
1.10.1.	General principles on the drafting of instructions	-	-
(a)	The contents of the instructions must be limited to the machine in question and cover not only the normal use of the machinery but also uses which may reasonably be expected of it.	The instruction consider all cases fully.	Pass
(b)	The manufacturer or his authorized representative must draft the instructions in an official Community language. The words ‘Original instructions should appear on the language version(s) verified by the		

Clause	Requirement – test	Result	Verdict
	manufacturer. If the manufacturer or his authorized representative verify versions of the instructions in other official Community languages, these versions should also bear the words 'Original instructions'..	English	Pass
(c)	Where no 'Original instructions exist in the official language(s) of the country where the machinery is to be used, a translation into that/those language(s) must be made by the person introducing the machinery into the language area in question. The translations must bear the words .'Translation of the original..'	It met the requirement.	Pass
(d)	In the case of machinery which may be intended for use by non-professional operators, the wording and layout of the instructions for use must take into account the level of general education and acumen that can reasonably be expected from such operators.	It met the requirement.	Pass
(e)	By way of exception, the maintenance instructions intended for use by specialist operators employed by the manufacturer or his authorized representative may be drafted in only one Community language which the operators understand.	It has been included in the instructions.	Pass
1.10.2.	Contents of the instructions	-	-
	Each instruction manual must contain the following information:	-	-
(a)	the name and address of the manufacturer and, where applicable, his authorized representative,	It contains in the instruction.	Pass
(b)	the designation of the machinery as marked on the machinery itself, except for the serial number (see section 1.9),	It contains in the instruction.	Pass
(c)	the installation and assembly instructions, including the means of attachment,	It contains in the instruction.	Pass
(d)	the instructions for putting the machinery into service and, if necessary, training instructions,	It contains in the instruction.	Pass
(e)	where appropriate, the essential characteristics of tools which may be fitted to the machinery,	It contains in the instruction.	Pass
(f)	instructions on the safety of handling operations, giving the mass of the machinery and its various parts where they are regularly to be transported separately,	It contains in the instruction.	Pass
(g)	intended conditions of use of the machinery within the meaning of 1.1.2(c),	It has been included in the instructions.	Pass
(h)	where applicable, a statement that the	Not applicable	N/A

Clause	Requirement – test	Result	Verdict
	machinery is intended for use in a potentially explosive atmosphere,		
(i)	-Workstation(s) likely to be occupied by operators	It has been included in the instructions.	Pass
	the operating method to be followed in case of accident or breakdown. If a blockage is likely to occur, the instructions are to specify the operating method to be followed to enable the equipment to be safely deblocked,	It contains in the instruction.	Pass
	the definition of the adjustment and maintenance operations that should be carried out by the user and the preventive measures that should be observed,	It contains in the instruction.	Pass
	information to facilitate maintenance,	It contains in the instruction.	Pass
	instructions on the connecting of fluids, including electrical connections, which may be the source of risk,	It contains in the instruction.	Pass
	ways in which the machinery should not be used,	It contains in the instruction.	Pass
	conditions in which the machinery meets the requirement of stability during use, transportation, assembly, dismantling, when out of service, during testing or during foreseeable breakdowns,	It contains in the instruction.	Pass
	the requirements relating to installation and assembly for reducing noise or vibration,	Not applicable	N/A
	the following information on airborne noise emissions:	-	-
	-equivalent continuous A-weighted sound pressure level at workstations, where this exceeds 70 dB(A); where this level does not exceed 70 dB(A), this fact must be indicated,	Does not exceed 70 dB, the fact indicated.	Pass
	-peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 μPa),	Not applicable	N/A
	-sound power level emitted by the machinery where the equivalent continuous A-weighted sound pressure level at workstations exceeds 85 dB(A).	Not applicable	N/A
	These values must be either those actually measured for the machinery in question, or those established on the basis of measurements taken for technically comparable machinery which is representative of the machinery to be produced.	The valve established on the basis of the measurement taken for technically comparable machinery.	Pass
	In the case of very large machinery, instead of the sound power level the equivalent	Not applicable	N/A

Clause	Requirement – test	Result	Verdict
	continuous sound pressure levels at specified positions around the machinery may be indicated		
	Where the harmonised standards are not applied, sound levels must be measured using the most appropriate method for the	Use the most appropriate method	Pass
	The operating conditions of the machinery during measurement and the measuring methods used must be described	Not applicable	N/A
	Where the workstation(s) are undefined or cannot be defined, sound pressure levels must be measured at a distance of 1 metro from the surface of the machinery and at a height of 1.6 metres from the floor or access platform. The position and value of the maximum sound pressure must be	Not applicable	N/A
	c) The instructions must contain the drawing and diagrams necessary for putting into service, maintenance, inspection, checking of correct operation and, where appropriate, repair of the machinery and all useful instructions in particular with regard	It has been complied with.	Pass
	Where specific directives lay down other requirements for the measurement of sound pressure levels or sound power levels, those directives must be applied and the corresponding provisions of this section	Not applicable	N/A

2.2. Essential health and safety requirements (LVD)

Clause	Content	Mark Y/N	Standards	Other Measures
1	Protection requirements			
	Equipment shall be so designed and manufactured, having regard to the state of the art, as to ensure that:			
a）	The electromagnetic disturbance generated does not exceed the level above which radio and telecommunications equipment or other equipment cannot operate as intended;	Y	EN 61000-6-2: 2005 EN 61000-6-4: 2007	Instruction
b）	it has a level of immunity to the electromagnetic disturbance to be expected in its intended use which allows it to operate without unacceptable degradation of its intended use.	Y	EN 61000-6-2: 2005 EN 61000-6-4: 2007	Instruction, Technique Documents
2	Specific requirements for fixed installations			
	A fixed installation shall be installed applying good engineering practices and respecting the information on the intended use of its components, with a view to meeting the protection requirements set out in Point 1.	Y	EN 61000-6-2: 2005 EN 61000-6-4: 2007	Instruction, Technique Documents
	Those good engineering practices shall be documented and the documentation shall be held by the person(s) responsible at the disposal of the relevant national authorities for inspection purposes for as long as the fixed installation is in operation.	Y	EN 61000-6-2: 2005 EN 61000-6-4: 2007	Instruction, Technique Documents

Chapter III

Test report

3.1. EN ISO 12100:2010 test report

The tested models represent all the models of this machinery including HA-BW70、HA-EW70、HA-BW80、HA-EW80、HA-BW90、HA-BW100、HA-EW100、HA-BW100A 、HA-EW100A、HA-BW100B 、HA-EW100B、HA-BW100C、HA-EW100C、HA-BW200、HA-EW200、HA-BW300、HA-EW300、HA-BW350、HA-EW350、HA-BW400、HA-EW400、HA-BW400A、HA-EW400A、HA-BW500、HA-EW500、HA-BW550、HA-BW550A、HA-BW600、HA-EW600、HA-BW800、HA-EW800..

These models' discrepancy can't make another risk to the machine. As for their discrepancy, please check the Chapter V.

Clause	Requirement - test	Result	Verdict
0	Introduction	-	-
1	Scope	-	-
2	Normative references	-	-
3	Risk reduction by design	-	-
4	Inherently safe design measures	-	-
4.1	General	-	-
	Inherently safe design measures are the first and most important step in the risk reduction process because protective measures inherent to the characteristics of the machine are likely to remain effective, whereas experience has shown that even well-designed safeguarding may fail or violated and information for use may not be followed	A risk assessment report has been carried out for these machines in order to choose those appropriate safety measures.	Pass
	Inherently safe design measures are achieved by avoiding hazards or reducing risks by a suitable choice of design features of the machine itself and/or interaction between the exposed persons and the machine.	The design features and interaction between the exposed persons and the machine does not expose the hazards.	Pass
4.2	Consideration of geometrical factors and physical aspects	-	-
4.2.1	Geometrical factors	-	-
	Such factors can be, e.g.:	-	-
	- designing the shape of machinery to maximize direct visibility of the working areas and hazard zones from the control position, e.g. reducing blind spots, and choosing and locating means of indirect vision where necessary (e.g. mirrors) so as to take account the characteristics of human vision, particularly when safe operation requires permanent direct control by the operator, e.g.:	It is in compliance with requirement. The operator works are in safe condition.	Pass.
	- the travelling and working area of mobile machines;	Not applicable	N/A
	- the zone of movement of lifted loads or of the carrier of machinery for lifting persons;	Not applicable	N/A
	- the area of contact of the tool of a hand-held or hand-guided machine with the material being worked;	Not applicable	N/A
	The design of the machine shall be such that, from the main control position, the operator is able to ensure that there are no exposed persons in the danger zones.	The design is satisfied with the requirement.	Pass.
	- the shape and the relative location of the mechanical component parts; for instance, crushing and shearing hazards are avoided by increasing the minimum gap between the moving parts, such that the part of the body under consideration can enter the gap safely, or by reducing the gap so that no part of the body can enter it (see ISO 13852, ISO 13854);	The machine is designed to reduce the gap and fixed safety device.	Pass.

Clause	Requirement - test	Result	Verdict
	- avoiding sharp edges and corners, protruding parts. In so far as their purpose allows, accessible parts of the machinery shall have no sharp edges, no sharp angles, no rough surfaces, no protruding parts likely to cause injury, and no openings which may "trap" parts of the body or clothing. In particular, sheet metal edges shall be deburred, flanged or trimmed, open ends of tubes which may cause a "trap" shall be capped;	The machine does not have the sharp edges and sharp angles, rough surfaces and sheet metal edges.	Pass.
	-designing the shape of the machine to achieve a proper working position and accessibility of manual controls (actuators).	It is in compliance with requirement.	Pass.
4.2.2	Physical aspects	-	
	Such aspects can be, e.g.:	-	
	- limited the actuating force to a sufficiently low value so that the actuated part does not generate a mechanical hazard;	No this situation.	N/A
	- limiting the emissions by acting on the characteristics of the source;	No this situation.	N/A
	- measures for reducing noise emission at source (see ISO/TR 11688-1);	No this situation.	N/A
	- measures for reducing the emission of vibration at source include e.g. redistribution or addition of mass and change of process parameters, e.g. frequency and/or amplitude of movements (for hand-held and hand-guided machinery, see CR 1030-1);	No emission of vibration at source in the machine.	N/A
	- measures for reducing the emission of hazardous substances include e.g. use of less hazardous substances or use of dust reducing processes;	No this situation.	N/A
	- measures for reducing radiation emissions include e.g. avoiding the use of hazardous radiation sources, limiting the power of radiation to the lowest level sufficient for the proper functioning of the machine, designing the source so that the beam is concentrated on the target, increasing the distance between the source and the operator or providing for remote operation of the machinery	No this situation.	N/A
	- measures for the reduction of emission of non-ionizing radiation are given in 5.4.5 (see also EN 12198-1 and -3).	No this situation.	N/A
4.3	Taking into account the general technical knowledge regarding machine design	It is in compliance with requirement.	Pass
	This general technical knowledge can be derived from technical specifications for design (e.g. standards, design codes, calculation rules). These should be used to cover:	-	-
a)	Mechanical stresses, e.g.:	-	-
	- stress limitation by implementation of correct calculation, construction and	It has been considered during design.	Pass

Clause	Requirement - test	Result	Verdict
	fastening methods as regards, e.g. bolted assemblies, welded assemblies;		
	- stress limitation by overload prevention, (e.g. “fusible” pressure-limiting valves, breakage points, torque-limiting devices);	It has been considered during design.	Pass
	- avoiding fatigue in elements under variable stresses (notably cyclic stresses);	It has been considered during design.	Pass
	- static and dynamic balancing of rotating elements;	It has been considered during design.	Pass
b)	Materials and their properties, e.g.:	-	-
	- resistance to corrosion, ageing, abrasion and wear;	It is met for the requirement.	Pass
	- hardness, ductility, brittleness;	It is met for the requirement.	Pass
	- homogeneity;	It is satisfied.	Pass
	- toxicity;	Not applicable.	N/A
	- flammability.	Not applicable.	N/A
c)	Emission values for:	-	-
	- noise;	Take enough measure to avoid the damage caused by noise.	Pass
	- vibration;	Just little vibration.	Pass
	- hazardous substances;	Not applicable.	N/A
	-radiation.	Not applicable.	N/A
	When the reliability of particular components or assemblies is critical for safety (e.g. ropes, chains, lifting accessories for lifting loads or persons), stress values shall be multiplied by appropriate working coefficients.	No this situation.	N/A
4.4	Choice of an appropriate technology	-	-
	One or more hazards can be eliminated or risks reduced by choice of the technology to be used in certain applications, e.g.:	No this situation.	N/A
a)	On machines intended for use in explosive atmospheres:	It does not have the explosive atmospheres in the machine.	N/A
	- fully pneumatic or hydraulic control system and machine actuators;	No this situation.	N/A
	- “intrinsically safe” electrical equipment (see EN 50020);	No this situation.	N/A
b)	For particular products to be processed such as a solvent: equipment assuring that the temperature will remain far below the flash point.	No this situation.	N/A
c)	Alternative equipment to avoid high noise level, e.g.:	-	-
	- electrical instead of pneumatic equipment;	No this situation.	N/A
	- in certain conditions, water cutting instead of mechanical equipment.	No this situation.	N/A
4.5	Applying the principle of the positive mechanical action of a component on another component	-	-
	If a moving mechanical component inevitably moves another component along with it, either by direct contact or via rigid elements, these components are connected in the positive mode. An example of this is		

Clause	Requirement - test	Result	Verdict
	positive opening operation of switching devices in an electrical circuit (see IEC 60947-5-1 and ISO 14119:1998, 5.7).	No this situation.	N/A
4.6	Provisions for stability	-	-
	Machines shall be designed to have sufficient stability to allow to be used safely in their specified conditions of use.	The machine has enough stability.	Pass
	Factors to be taken into account include:	-	-
	- geometry of the base;	The base of the machine is cuboids.	Pass
	- weight distribution, including loading;	It is well-distribution.	Pass
	- dynamic forces due to movements of parts of the machine, of the machine itself, or of elements held by the machine which may result in an overturning moment;	The machine withstands the dynamic forces of itself well.	Pass
	- vibration;	It has little vibration.	Pass
	- oscillations of the supporting surface in case of travelling or installation on different sits (e.g. ground conditions, slope);	No this situation.	N/A
	- characteristics of the supporting surface in case of travelling or installation on different sites (e.g. ground conditions, slope);	No this situation.	N/A
	- external forces (e.g. wind pressure, manual forces).	No this situation.	N/A
	Stability shall be considered in all phases of the life of the machine, including handling, travelling, installation, use, de-commissioning and dismantling.	The stability has been considered in the initial stage design.	Pass
	Other protective measures for stability relevant to safeguarding are given in 5.2.6.	Check the operation manual.	Pass
4.7	Provisions for maintainability	-	-
	When designing a machine, the following maintainability factors shall be into account:	It is in compliance with requirement.	Pass
	- accessibility, taking into account the environment and the human body measurements, including the dimensions of the working clothes and tools used;	It is described in the operation manual.	Pass
	- ease of handling, taking into account human capabilities;	It is described in the operation manual.	Pass
	- limitation of the number of special tools and equipment.	It is described in the operation manual.	Pass
4.8	Observing ergonomic principles	-	-
4.8.1	Ergonomic principles shall be taken into account in designing machinery to reduce mental or physical stress and strain of the operator. These principles shall be considered when allocating functions of operator and machine (degree of automation) in the basic design.	The ergonomic principles have been taken into account.	Pass
	Account shall be taken of body sizes likely to found in the intended user population, strengths and postures, movement amplitudes, frequency of cyclic actions (see ISO 10075 and ISO 10075-2).	It is in compliance with requirement.	Pass
	All elements of the “operator-machine” interface such as controls, signalling or data		

Clause	Requirement - test	Result	Verdict
	display elements, shall be designed to be easily understood so that clear and unambiguous interaction between the operator and the machine is possible.	It is in compliance with requirement.	Pass
	(see EN 614-1, ISO 6385, EN 13861 and IEC 61320-1).	-	-
	Designers' attention is especially drawn to following ergonomic aspects of machine design:	It is in compliance with requirement.	Pass
4.8.2	Avoiding stressful postures and movements during use of the machine (e.g. by providing facilities to adjust the machine to suit the various operators).	It is in compliance with requirement.	Pass
4.8.3	Designing machines and more especially hand-held and mobile machines to enable them to be operated easily taking into account human effort, actuation of controls and hand, arm and leg anatomy.	It is in compliance with requirement.	Pass
4.8.4	Avoiding as far as possible noise, vibration, thermal effects (e.g. extreme temperatures).	It is in compliance with requirement.	Pass
4.8.5	Avoiding linking the operator's working rhythm to an automatic succession of cycles.	It is in compliance with requirement.	Pass
4.8.6	Providing local lighting on or in the machine for the illumination of the working area and of adjusting, setting-up, and frequent maintenance zones when the design features of the machine and/or its guards render the ambient lighting inadequate. Flicker, dazzling, shadows and stroboscopic effects shall be avoided if they can cause a risk. If the position of the lighting source has to be adjusted, its, location shall be such that it does not cause any risk to persons making the adjustment.	No this situation.	N/A
4.8.7	Selecting, locating and identifiable manual controls (actuators) so that:	-	-
	- they are clearly visible and identifiable and appropriately marked where necessary (see 5.4);	They are very clear there.	Pass
	- they can be safely operated without hesitation or loss of time and without ambiguity (e.g. a standard layout of controls reduces the possibility of error when an operator changes from a machine to another one of similar type having the same pattern of operation);	It is not necessary to hesitate to operate, the machine has standard layout of controls.	Pass
	-their location (for push-buttons) and their movement (for levers and handwheels) are consistent with their effect (see IEC 61320-3);	It is in compliance with the standards.	Pass
	- their operation cannot cause additional risk. See also EN 894-3	No additional risk.	Pass
	Where a control is designed and constructed to perform several different actions, namely where there is no	It is in compliance with the standards.	Pass

Clause	Requirement - test	Result	Verdict
	one-to-one correspondence (e.g. keyboards), the action to be performed shall be clearly displayed and subject to confirmation where necessary.		
	Controls shall be so arranged that their layout, travel and resistance to operation are compatible with the action to be performed, taking account of ergonomic principles. Constrains due to the necessary or foreseeable use of personal protective equipment (such as footwear, gloves) shall be taken into account.	It has been designed in the machine, the basic points in safety precautions are saw in the operation manual.	Pass
4.8.8	Selecting, designing and locating indicators, dials and visual display units so that:	-	-
	- they fit within the parameters and characteristics of human perception;	It is in compliance with requirement.	Pass
	- information displayed can be detected, identified and interpreted conveniently, i.e. long lasting, distinct, unambiguous and understandable with respect to the operator's requirements and the intended use;	It is in compliance with requirement.	Pass
	- the operator is able to perceive them from the control position.	The operator is easy to perceive them from the control position.	Pass
4.9	Preventing electrical hazard	-	-
	For the design of the electrical equipment of machines IEC 60204-1:1997 gives general provisions, especially in clause 6 for protection against electric shock. For requirements related to specific machines, see corresponding IEC standards (e.g. series of IEC 61029, IEC 60745, IEC 60335)	The design of the electrical equipment is in compliance with the corresponding IEC standards	Pass
4.10	Preventing hazards from pneumatic and hydraulic equipment	No this situation.	N/A
	Pneumatic and hydraulic equipment of machinery shall be designed so that:	-	-
	- the maximum rated pressure cannot be exceeded in the circuits (e.g. by means of pressure limiting devices);	No this situation.	N/A
	- no hazard results from pressure surges or rises, pressure losses or losses of vacuum;	No this situation.	N/A
	- no hazardous fluid jet or sudden hazardous movement of the hose (whiplash) result from leakage or component failures;	No this situation.	N/A
	- air receivers, air reservoirs or similar vessels (e.g. in gas loaded accumulators) comply with the design rules for these elements;	No this situation.	N/A
	-all elements of the equipment, and especially pipes and hoses, be protected against harmful external effects;	No this situation.	N/A
	- all far as possible, reservoirs and similar vessels (e.g. in gas loaded accumulators) are automatically depressurized when	No this situation.	N/A

Clause	Requirement - test	Result	Verdict
	isolating the machine from its power supply (see 5.5.4) and, if it is not possible, means are provided for their isolation, local depressurizing and pressure indication (see also ISO 14118:2000, clause 5);		
	- all elements which remain under pressure after isolation of the machine from its power supply be provided with clearly identified exhaust devices, and warning label drawing attention to the necessity of depressurizing those elements before any setting or maintenance activity on the machine. See also ISO 4413 and ISO 4414.	No this situation.	N/A
4.11	Applying inherently safe design measures to control system	-	-
4.11.1	General	-	-
	The design measures of the control system shall be chosen so that their safety-related performance provides a sufficient amount of risk reduction (see ISO 13849-1).	It is in compliance with requirement.	Pass
	The correct design of machine control systems can avoid unforeseen and potentially hazardous machine behaviour.	Appropriate design is taken into account for the machine.	Pass
	Typical causes of hazardous machine behaviour are:	-	-
	- an unsuitable design or modification (accidental or deliberate) of the control system logic;	The machine has suitable design.	Pass
	- a temporary or permanent defect or a failure of one or several components of the control system;	No this situation	N/A
	- a variation or a failure in the power supply of the control system;	It doesn't generate the risk when it is failure in the power supply of the control system.	Pass
	- inappropriate selection, design and location of the control devices;	Appropriate design is taken into the machine.	Pass
	Typical examples of hazardous machine behaviour are:	-	-
	- unintended/unexpected start-up (see ISO 14118);	Interlock by monitor.	Pass
	- uncontrolled speed change;	No this situation	N/A
	- failure to stop moving parts;	It doesn't happen the risk	Pass
	- dropping or ejection of a mobile part of the machine or of a workpiece clamped by the machine;	No this situation	N/A
	- machine action resulting from inhibition (defeating of failure) of protective devices.	No this situation.	N/A

	In order to prevent hazardous machine behaviour and to achieve safety functions, the design of control systems shall comply with the principles and methods presented in this subclause 4.11 and in 4.12. These principles and methods shall be applied	The design of control systems can comply with the principles and combine as appropriate to the circumstances.	Pass

Clause	Requirement - test	Result	Verdict
	singly or in combination as appropriate to the circumstances (see ISO 13849-1 and IEC 60204-1:1997, clauses 9 to 12).		
	Control systems shall be designed to enable the operator to interact with the machine safely and easily; this requires one or several of the following solutions:	-	-
	- systematic analysis of start and stop conditions;	It is in compliance with requirement.	Pass
	- provision for specific operating modes (e.g. start-up after normal stop, restart after cycle interruption or after emergency stop, removal of the workpieces contained in the machine, operation of a part of the machine in case of a failure of a machine element);	It is in compliance with requirement.	Pass
	- clear display of the faults;	It is in compliance with requirement.	Pass
	- measures to prevent accidental generation of unexpected start commands (e.g. shrouded start device) likely to cause dangerous machine behaviour (see ISO 14118:2000, figure 1);	Appropriate design is taken into the machine.	Pass
	- maintained stop commands (e.g. interlock) to prevent restarting that could result in dangerous machine behaviour (see ISO 14118:2000, figure 1).	Appropriate design is considered for the machine.	Pass
	An assembly of machines may be divided into several zones for emergency stopping, for stopping as a result of protective devices and/or for isolation and energy dissipation. The different zones shall be clearly defined and it shall be obvious which parts of the machine belong to which zone. Likewise it shall be obvious which control devices (e.g. emergency stop devices, supply disconnecting devices) and/or protective devices belong to which zone. The interfaces between zones shall be designed such that no function in one zone creates hazards in another zone which has been	The design has taken into the machine, for stopping as a result of protective devices have been found in the machine.	Pass

	Control systems shall be designed to limit the movements of parts of the machinery, the machine itself, or workpieces and/or loads held by the machinery, to the safe design parameters (e.g. range, speed, acceleration, deceleration, load capacity). Allowance shall be made for dynamic effects (e.g. the swinging of loads).	The design has taken into the machine.	Pass
	For example:	-	-
	- the travelling speed of mobile pedestrian controlled machinery other than remote-controlled shall be compatible with walking speed;	The design has taken into the machine	Pass
	- the range, speed, acceleration and deceleration of movements of the person-carrier and carrying vehicle for lifting	No this situation	N/A

Clause	Requirement - test	Result	Verdict
	persons shall be limited to non-hazardous values, taking into account the total reaction time of the operator and the machine;		
	- the range of movements of parts of machinery for lifting loads shall be kept within specified limits.	No this situation	N/A
	When machinery is designed to use synchronously different elements which can also be used independently, the control system shall be designed to prevent risks due to lack of synchronization.	No this situation	N/A
4.11.2	Starting of an internal power source/switching on an external power supply	-	-
	Starting of an internal power source or switching on an external power supply shall not result in starting of working parts (e.g. starting the internal combustion engine shall not lead to movement of a mobile machine, connection to mains electricity supply shall not result in starting of working parts of an electrical machine; see IEC 60204-1:1997,7.5)	It is considered in the design.	Pass
4.11.3	Starting/stopping of a mechanism	-	-
	The primary action for starting or accelerating the movement of a mechanism should be performed by application or increase of voltage or fluid pressure, or, if binary logic elements are considered, by passage from state 0 to state 1 (if state 1 represents the highest energy state).	It is considered in the design.	Pass

	The primary action for stopping or slowing down should be performed by removal or reduction of voltage or fluid pressure, or, if binary logic elements are considered, by passage from state 1 to state 0 (if state 1 represents the highest energy state).	It is in compliance with requirements.	Pass
	When, in order for the operator to maintain permanent control of deceleration, this principle is not observed (e.g. a hydraulic braking devices of a self-propelled mobile machine), the machine shall be equipped with a means of slowing and stopping in case of failure of the main braking system.	No this situation	N/A
4.11.4	Restart after power interruption	-	-
	If it may generate a hazard, the spontaneous restart of a machine when it is re-energized after power interruption shall be prevented (e.g. by use of a self-maintained relay, contactor or valve).	The self-maintained relay and contactor are used in the machine.	Pass
4.11.5	Interruption of power supply	-	-
	Machinery shall be designed to prevent hazardous situations resulting from interruption or excessive fluctuation of the power supply. At least the following requirements shall be met:	It is in compliance with requirement.	Pass

Clause	Requirement - test	Result	Verdict
	- the stopping function of the machinery shall remain;	The stopping function of the machinery can remain;	Pass
	- all devices whose permanent operation is required for safety shall operate in an effective way to maintain safety (e.g. locking, clamping devices, cooling or heating devices, power-assisted steering of self-propelled mobile machinery);	It is in compliance with requirement.	Pass
	- parts of machinery or work pieces and/or loads held by machinery which are liable to move as a result of potential energy shall be retained for the time necessary to allow them to be safely lowered.	No this situation	N/A
4.11.6	Use of automatic monitoring	-	-
	Automatic monitoring is intended to ensure that a safety function(s) implemented by a protective measure do(es) not fail to be performed if the ability of a component or an element to perform its function is diminished, or if the process conditions are changed in such a way that hazards are generated.	Not applicable.	N/A

	Automatic monitoring either detects a fault immediately or carries out periodic checks so that a fault is detected before the next demand upon the safety function. In either case, the protective measure can be initiated immediately or delayed until a specific event occurs (e.g. the beginning of the machine cycle).	Not applicable.	N/A
	The protective measures may be, e.g.:	Not applicable.	N/A
	- the stopping of the hazardous process;	Not applicable.	N/A
	- preventing the re-start of this process after the first stop following the failure;	Not applicable.	N/A
	- the triggering of an alarm.	Not applicable.	N/A
4.11.7	Safety functions implemented by programmable electronic control systems	-	-
4.11.7.1	General	-	-
	A control system including programmable electronic equipment (e.g. programmable controllers) can be used to implement safety functions at machinery. Where a programmable electronic control system is used it is necessary to consider its performance requirements in relation to the requirements for the safety functions	No this situation	N/A
	The design of the programmable electronic control system shall be such that the probability of random hardware failures and the likelihood of systematic failures that can adversely affect the performance of the safety-related control function (s) are sufficiently low. Where a programmable electronic control system performs a monitoring function, the system behaviour	No this situation.	N/A

Clause	Requirement - test	Result	Verdict
	on detection of a fault shall be considered (see also IEC 61508 series for further guidance).		
	The programmable electronic control system should be installed and validated to ensure that the specified performance (e.g. safety integrity level (SIL) in IEC 61508 series) for each safety function has been achieved. Validation comprises testing and analysis (e.g. static, dynamic or failure analysis) to show that all parts interact correctly to perform the safety function and that unintended functions do not occur	No this situation	N/A
4.11.7.2	Hardware aspects	-	-
	The hardware (including e.g. sensors, actuators, logic solvers) shall be selected (and/or designed) and installed to meet both the functional and performance requirements of the safety function(s) to be performed, in particular, by means of:	No this situation	N/A

	- architectural constraints (e.g. the configuration of the system, its ability to tolerate faults, its behaviour on detection of a fault);	No this situation	N/A
	- selecting (and/or designing) equipment and devices with an appropriate probability of dangerous random hardware failure;	No this situation	N/A
	Incorporating measures and techniques within the hardware to avoid systematic failures and control systematic faults.	No this situation	N/A
4.11.7.3	Software aspects	-	-
	The software (including internal operating software (or system software) and application software) shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).	No this situation	N/A
4.11.7.4	Application software	-	-
	Application software should not be re-programmable by the user. This may be achieved by use of embedded software in a non re-programmable memory (e.g. micro-controller, application specific integrated circuit (ASIC)).	No this situation	N/A
	When the application requires reprogramming by the user, the access to the software dealing with safety functions should be restricted e.g. by:	No this situation	N/A
	- locks;	No this situation.	N/A
	- passwords for the authorized persons.	No this situation	N/A
4.11.8	Principles relating to manual control	-	-
a)	Manual control devices shall be designed and located according to the relevant ergonomic principles given in 4.8.7.	It is taken into account when design.	Pass
b)	A stop control device shall be placed near each start control device. Where the	It is taken into account when design.	Pass

Clause	Requirement - test	Result	Verdict
	start/stop function is performed by means of a hold-to-run control, a separate stop control device shall be provided when a risk can result from the hold-to-run control device failing to deliver a stop command when released.		
c)	Manual controls shall be located out of reach of the danger zones (see I EC 61320-3:1999, clause 4), except for certain controls where, of necessity, they are located within a danger zone, such as emergency stop or teach pendant.	The manual controls are located out of reach of the danger zones.	Pass
d)	Whenever possible, control devices and control positions shall be located so that the operator is able to observe the working area or hazard zone.	It is in compliance with requirement.	Pass

	The driver of a ride-on mobile machine shall be able to actuate all control devices required to operate the machine from the driving position, except for functions which can be controlled more safely from other positions.	It is taken into account when design.	Pass
	On machinery intended for lifting persons, controls for lifting and lowering and, if appropriate, for moving the carrier, shall generally be located in the carrier. If safe operation requires controls to be situated outside the carrier, the operator in the carrier shall be provided with the means of preventing hazardous movements.	No this situation.	N/A
e)	If it possible to start the same hazardous element by means of several controls, the control circuit shall be so arranged that only one control is effective at a given time. This applies especially to machines which can be manually controlled by means among others of a portable control unit (teach pendant, for instance), with which the operator may enter danger zones.	No this situation.	N/A
f)	Control actuators shall be designed or guarded so that their effect, where a risk is involved, cannot occur without intentional operation (see ISO 9355-1 and ISO 447).	No this situation.	N/A
g)	For machine functions whose safe operation depends on permanent, direct control by the operator, measures shall be taken to ensure the presence of the operator at the control signals are not received, including loss of communication (see IEC 60204-1:1997, 9.2.7).	No this situation.	N/A
4.11.9	Control mode for setting, teaching, process changeover, fault-finding, cleaning or maintenance	-	-
	Where, for setting, teaching, process changeover, fault-finding, cleaning or maintenance of machinery, a guard has to	It is in compliance with the requirement	Pass

Clause	Requirement - test	Result	Verdict
	be displaced or removed and/or a protective device has to be disabled, and where it is necessary the operator shall be achieved using a specific control mode which simultaneously:		
	- disables all other control modes;	It is in compliance with requirement	Pass
	- permits operation of the hazardous elements only by continuous actuation of an enabling device, a hold-to-run control device or a two-hand control device;	The design has taken into the machine	Pass

	- permits operation of the hazardous elements only in reduced risk conditions (e.g. reduced speed, reduced power/force, step-by-step operation, e.g. with a limited movement control device).	No this situation.	N/A
	This control mode shall be associated with one or more of following measures:	-	-
	- restriction of access to the danger zone as far as possible;	It is in compliance with requirement.	Pass
	- emergency stop control within immediate reach of the operator;	It is in compliance with requirement.	Pass
	- portable control unit (teach pendant) and/or local controls allowing sight of the controlled elements.	No this kind of control unit.	N/A
	(see IEC 60204-1:1997,9.2.4).	-	-
4.11.10	Selection of control and operating modes	-	-
	If machinery has been designed and built to allow for its use in several control or operating modes requiring different protective measures and/or work procedures (e.g. to allow for adjustment, setting, maintenance, inspection), it shall be fitted with a mode selector which can be locked in each position. Each position of the selector shall be clearly identifiable and shall exclusively allow one control or operating mode.	It is fitted with a mode selector which can be locked in each position and every selector is clearly identifiable and shall exclusively allow one control or operating mode.	Pass
	The selector may be replaced by another selection means which restricts the use of certain functions of the machinery to certain categories of operators (e.g. access codes for certain numerically controlled functions).	According to requirements.	Pass
4.11.11	Applying measures to achieve electromagnetic compatibility (EMC)	-	-
	For guidance on electromagnetic compatibility, see IEC 60204-1:1997, 4.4.2 and IEC 61000-6 series.	According to requirements.	Pass
4.11.12	Provision of diagnostic systems to aid fault-finding	-	-
	Diagnostic systems to aid fault finding should be included in the control system so that there is no need to disable any protective measure.	The design has taken into the control system in the machine.	Pass
4.12	Minimizing the probability of failure of safety functions	-	-
	Safety of machinery is not only dependent	It is in compliance with requirement.	Pass

Clause	Requirement - test	Result	Verdict
	on the reliability of the control systems but also on the reliability of all parts of the machine.		
	The continued operation of the safety functions is essential for the safe use of the machine. This can be achieved by:	-	-
4.12.1	Use of reliable components	-	-

	"Reliable components" means components which are capable of withstanding all disturbances and stresses associated with the usage of the equipment in the conditions of intended use (including the environmental conditions), for the period of time or the number of operations fixed for the use, with a low probability of failures generating a hazardous malfunctioning of the machine. Components shall be selected taking into account all factors mentioned above (see also 4.13)	The components of the machine can withstand all disturbances and stresses associated with the usage of the equipment in the conditions of intended use and have low probability of failures generating a hazardous malfunctioning.	Pass
4.12.2	Use of "oriented failure mode" components	-	-
	"Oriented failure mode" components or systems are those in which the predominant failure mode is known in advance and which can be used so that such a failure leads to a non-hazardous alteration of the machine function.	This design has been taken into the machine.	Pass
	The use of such components should always be considered, particularly in case where redundancy is not employed.	It is met for the requirement.	Pass
4.12.3	Duplication (or redundancy) of components or subsystems	-	-
	In the design of safety-related parts of the machine, duplication (or redundancy) of components may be used so that, if one component fails, another component (or other components) continue(s) to perform its (their) function, thereby ensuring that the safety function remains available.	The design of safety-related parts of the machine, duplication (or redundancy) of components has been used in the machine.	Pass
	Diversity of design and/or technology can be used to avoid common cause failures (e.g. from electromagnetic disturbance) or common mode failures.	They can avoid the common cause failures.	Pass
4.13	Limiting exposure to hazards through reliability of equipment	-	-
	Increased reliability of all component parts of machinery reduces the frequency of incidents requiring rectification, thereby reducing exposure to hazards.	It is met for the requirement.	Pass
	This applies to power systems (operative part) as well as to control systems, to safety functions as well as to other functions of machinery.	It is in compliance with the requirement.	Pass
	Safety-critical components (as, e.g. certain sensors) with a known reliability shall be used.	Safety-critical components with a known reliability have been found	Pass
	The elements of guards and of protective	The elements of guards and of	Pass

Clause	Requirement - test	Result	Verdict

	devices shall be particularly reliable, as their failure can expose persons to hazards, and also as poor reliability would encourage attempts to defeat them.	protective devices are particularly reliable	
4.14	Limiting exposure to hazards through mechanization or automation of loading (feeding)	It is in compliance with the requirement.	Pass
	Mechanization and automation of machine loading/unloading operations and more generally of handling operations (of workpieces, materials, substances) limit the risk generated by these operations by reducing the exposure of persons to hazards at the operating points.	This situation has been attention.	Pass
	Automation can be achieved e.g. by robots, handling devices, transfer mechanisms, air blast equipment. Mechanization can be achieved, e.g. by feeding slides, push rods, hand-operated indexing tables.	The design of automatic control has taken into the lmachine.	Pass
	While automatic feeding and removal devices have much to offer in preventing accidents to machine operators, they can create danger when any faults are being rectified. Care shall be taken to ensure that the use of these devices does not introduce further hazards (e.g. trapping, crushing) between the devices and parts of the machine or workpieces/materials being processed. Suitable safeguards (see clause 5) shall be provided if this cannot be ensured.	The automatic safely protection devices and suitable safeguards and appropriate marks have been used in the machine.	Pass
	Automatic feeding and removal devices with their own control systems and the control system of the associated machine shall be interconnected after thoroughly studying how all safety functions are performed in all control and operation modes of the whole equipment.	Automatic feeding and removal devices with their own control systems and the control system of the associated machine are interconnected	Pass
4.15	Limiting exposure to hazards through location of the setting and maintenance points outside of danger zones	-	-
	The need for access to danger zones shall be minimized by locating maintenance, lubrication and setting points outside these zones.	See the safety directions in the operation manual.	Pass
5	Safeguarding and complementary protective measures	-	-
5.1	General	-	-
	Guards and protective devices shall be used to protect persons whenever inherently safe design does not reasonably make it possible either to remove hazards or to sufficiently reduce risks. Complementary protective measures involving additional (e.g. emergency stop equipment) may have to be taken (see ISO	Guards and protective devices have been used to protect persons and they have the interlock protection functions in the all machine.	Pass

Clause	Requirement - test	Result	Verdict
	12100-1:2003,5.4).		
	The different kinds of guards and protective devices are defined in ISO 12100-1:2003,3.25 and 3.26.	It is met for the requirement.	Pass
	Certain safeguards may be used to avoid exposure to more than one hazard (e.g. a fixed guard preventing access to a zone where a mechanical hazard is present being used to reduce noise level and collect toxic emissions).	It is in compliance with the requirement.	Pass
5.2	Selection and implementation of guards and protective devices	-	-
5.2.1	General	-	-
	This subclause give guidelines for the selection and implementation of guards and protective devices the primary purpose of which is to protect persons against hazards generated by moving parts, according to the nature of those parts (see figure 1) and to the need for access to the danger zone(s).	It is in compliance with the requirement.	Pass
	The exact choice of a safeguard for a particular machine shall be made on the basis of the risk assessment for that machine.	The safeguards for the machine have been chosen on the basis of the risk assessment.	Pass
	In selecting an appropriate safeguard for a particular type of machinery or hazard zone, it shall be borne in mind that a fixed guard is simple and shall be used where access of an operator to the danger zone is not required during normal operation (operation without any malfunction) of the machinery.	The safeguards for the machine have been chosen on the basis of the risk assessment.	Pass
	As the need for frequency of access increases this inevitably leads to the fixed guard not being replaced. This requires the use of an alternative measure (movable interlocking guards, sensitive protective equipment).	Suitable measures are adopted.	Pass
	A combination of safeguards may sometimes be required. For example, where, in conjunction with a fixed guard, a mechanical loading (feeding) device is used to feed a work piece into a machine, thereby removing the need for access to the primary hazard zone, a trip device may be required to protect against the secondary drawing-in or shearing hazard between the mechanical loading (feeding) device, when reachable, and the fixed guard.	The combination of safeguards may sometimes are used according to the requirements.	Pass
	Consideration shall be given to the enclosure of control positions or intervention zones to provide combined protection against several hazards which may include:	-	-
	- hazards from falling or ejects (e.g. falling object protection structure);	No this situation.	N/A
	- emission hazards (e.g. protection against noise, vibration, radiation, harmful	No this situation.	N/A

Clause	Requirement - test	Result	Verdict
	substances);		
	- hazards due to the environment (e.g. protection against heat, cold, foul weather);	No this situation.	N/A
	- hazards due to tipping over or rolling over of machinery (e.g. roll-over or tip-over protection structure).	No this situation.	N/A
	The design of such enclosed work stations (e.g. cabs and cabins) shall take into account ergonomic principles concerning visibility, lighting, atmospheric conditions, access, posture.	It has been taken into account during the design.	Pass
5.2.2	Where access to the hazard zone is not required during normal operation	-	-
	Where access to the hazard zone is not required during normal operation of the machinery, safeguards should be selected from the following:	-	-
a)	Fixed guard (see also ISO 14120);	It is in compliance with the requirement.	Pass
b)	Interlocking guard with or without guard locking (see also ISO 14119, ISO 14120 and 5.3.2.3 of this standard);	It is in compliance with the requirement.	Pass
c)	Self-closing guard (see ISO 14120:2002,3.3.2);	It is in compliance with the requirement.	Pass
d)	Sensitive protective equipment, e.g. electro-sensitive protective equipment (see IEC 61496-1, IEC 61496-2) or pressure sensitive mat (see ISO 13856-1).	It is in compliance with the requirement.	Pass
5.2.3	Where access to the hazard zone is required during normal operation	-	-
	Where access to the hazard zone is required during normal operation of the machinery, safeguards should be selected from the following:	-	-
a)	Interlocking guard with or without guard locking (see also ISO 14119, ISO 14120 and 5.3.2.3 of this standard);	It is in compliance with the requirement.	Pass
b)	Sensitive protective equipment, e.g. electro-sensitive equipment (see IEC 61496-1, IEC 61496-2);	It is in compliance with the requirement.	Pass
c)	Adjustable guard;	No this situation.	N/A
d)	Self-closing guard (see ISO 14120:2002,3.3.2);	It is in compliance with the requirement.	Pass
e)	Two-hand control device (see ISO 13851);	No this situation.	N/A
f)	Interlocking guard with a start function (control guard) (see 5.3.2.5 of this standard).	It is in compliance with the requirement.	Pass
5.2.4	Where access to the hazard zone is required for machine setting, teaching, process changeover, fault finding, cleaning or maintenance	-	-
	As far as possible, machines shall be designed so that the safeguards provided for the protection of the production operator may ensure also the protection of personnel	The machine is designed so that the safeguards provided for the protection of the production operator may ensure also the protection of personnel in	Pass

Clause	Requirement - test	Result	Verdict
	in change of setting, teaching, process changeover, fault finding, cleaning or maintenance without hindering them in performing their task. Such tasks shall be identified and considered in the risk assessment as parts of the use of the machine (see ISO 12100-1:2003,5.3).	change of setting, teaching, process changeover, fault finding, cleaning or maintenance without hindering them in performing their task	
5.2.5	Selection and implementation of sensitive protective equipment[1)]	-	-
5.2.5.1	Selection	-	-
	Due to the great diversity of the technologies on which their detection function is based, all types of sensitive protective equipment are far from being equally suitable for safety applications. The following provisions are intended to provide the designer with criteria for selecting, for each application. The following provisions are intended to provide the designer with criteria for selecting, for each application, the most suitable device(s).	-	-
	Types of sensitive protective equipment include, e.g.:	-	-
	- light curtains;	Light curtain has been used.	Pass.
	- scanning devices s , e.g. , laser scanners;	No this situation.	N/A
	- pressure sensitive mats;	No this situation.	N/A
	- trip bars, trip wires.	No this situation.	N/A
	Sensitive protective equipment can be used:	-	-
	- for tripping purposes;	No this situation.	N/A
	- for presence sensing;	No this situation.	N/A
	- for both tripping and presence sensing;	No this situation.	N/A
	- to re-initiate machine operation, a practice which is subject to stringent conditions.	No this situation.	N/A
	The following characteristics of the machinery, among others, can preclude the sole use of sensitive protective equipment:	-	-
	- tendency for the machinery to eject materials or component parts;	No this situation.	N/A
	- necessity to guard against emissions (noise, radiation, dust, etc.);	No this situation.	N/A
	- erratic or excessive machine stopping time ;	No this situation.	N/A
	- inability of a machine to stop part-way through a cycle.	No this situation.	N/A
5.2.5.2	Implementation	-	-
a)	Consideration should be given to:	-	-
	- size, characteristics and positioning of the detection zone (see ISO 13855, which deals with the positioning of some types of sensitive protective equipment);	It is in compliance with the requirement.	Pass
	- reaction of the device to fault conditions (see IEC 61496-1, IEC 61496-2 for electro-sensitive protective equipment);	No this situation.	N/A
	- possibility of circumvention;	It is little possible	Pass

Clause	Requirement - test	Result	Verdict
	- detection capability and its variation over the course of time (e.g. as a result of its susceptibility to different environmental conditions such as the presence of reflecting surfaces, other artificial light sources, sunlight or impurities in the air).	No this situation.	N/A
b)	Sensitive protective equipment shall be integrated in the operative part and associated with the control system of the machine so that:	-	-
	- a command is given as soon as a person or part of a person detected does not, by itself, restart the hazardous machine function(s); therefore, the command given by the sensitive protective equipment shall be maintained by the control system until a new command is given;	It is in compliance with the requirement.	Pass
	- restarting the hazardous machine function(s) results from the voluntary actuation, by the operator, of a control device placed outside the hazard zone, where this zone can be observed by the operator;	Not applicable.	N/A
	- while the detection function of the sensitive protective equipment is interrupted the machine cannot operate, except during muting phases;	Not applicable.	N/A
	- the position and the shape of the detection field prevents, possibly together with fixed guards, a person or part of a person from entering the hazard zone, or being present in it, without being detected.	Not applicable.	N/A
5.2.5.3	Additional requirements for sensitive protective equipment when used for cycle initiation	-	-
	In this exceptional application, starting of the machine cycle is initiated by the withdrawal of a person or of the detected part of a person from the sensing field of the sensitive protective equipment, without any additional start command, hence deviating from the general requirement given in the 2nd dash of 5.2.5.2.b). After switching on the power supply, or when the machine has been stopped by the tripping function of the sensitive protective equipment the machine cycle shall be initiated only by voluntary actuation of a start control. For cycle initiation by a sensitive protective equipment, only active opto-electronic protective devices (AOPDs) complying with IEC 61496 series shall be used, provided	Not applicable.	N/A
	The requirements for an AOPD used as a tripping and presence-sensing device (see IEC 61496-2) are satisfied (in particular:	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
	location, minimum distance (see ISO 13855), detection capability, reliability and monitoring of control and braking systems);		
b)	The cycle time of machine is short and the facility to re-initiate the machine upon clearing of the sensing field is limited to a period commensurate with a single normal cycle;	Not applicable.	N/A
c)	Entering the sensing field of the AOPD(s) or opening interlocking guards is the only to enter the hazard zone;	Not applicable.	N/A
d)	If there are more than one AOPD safeguarding the machine, only one of them is capable of cycle re-initiation;	Not applicable.	N/A
e)	With regard to the higher risk resulting from automatic cycle initiation, the AOPD and the associated part of the control system comply with a higher safety-related performance than under normal conditions.	Not applicable.	N/A
5.2.6	Protective measures for stability	-	-
	If stability cannot be achieved by inherently safe design measures such as weight distribution (see 4.6), it will be necessary to maintain it by protective measures such as the use of:	-	-
	- anchorage bolts;	It is complied with.	Pass
	- locking devices;	Adopted	Pass
	- movement limiters or mechanical stops;	No this situation.	N/A
	- acceleration or deceleration limiters;	No this situation.	N/A
	- load limiters;	No this situation.	N/A
	- alarms warning of the approach to stability or tipping limits.	No this situation.	N/A
5.2.7	Other protective devices	-	-
	When a machine requires continuous control by operator (e.g. mobile machines, cranes, cranes) and an error of the operator can generate a hazardous situation, this machine shall be equipped with the necessary devices to enable the operation to remain within specified limits, in particular:	It isn't necessary to be continuously controlled by operator.	N/A
	- when the operator has insufficient visibility of the hazard zone;	No this situation.	N/A
	- when the operator lacks knowledge of the actual value of a safety-related parameter (e.g. a distance, a speed, the mass of a load, the angle of a slope);	No this situation.	N/A
	- when hazards may result from operations other than those controlled by the operator.	No this situation.	N/A
	The necessary devices include, e.g. :	-	-
	-devices for limiting parameters of movement (distance, angle, velocity, acceleration);	No this situation.	N/A
	-overloading and moment limiting devices;	No this situation.	N/A
	- devices to prevent collisions or	No this situation.	N/A

Clause	Requirement - test	Result	Verdict
	interference with other machines;		
	- devices for preventing hazards to pedestrian operators of mobile machinery or other pedestrians;	These devices are adopted	Pass
	- torque limiting devices, breakage points to prevent excessive stress of components and assemblies;	No this situation.	N/A
	- devices for limiting pressure, temperature;	No this situation.	N/A
	- devices for monitoring emissions;	No this situation.	N/A
	- devices to prevent operation in the absence of the operator at the control position;	No this situation.	N/A
	- devices to prevent lifting operations unless stabilizers are in place;	No this situation.	N/A
	- devices to limit inclination of the machine on a slope;	No this situation.	N/A
	- devices to ensure that components are in a safe position before travelling.	Devices will be used when transporting	Pass
	Automatic protective measures triggered by such devices which take operation of the machinery out of the control of the operator (e.g. automatic stop of hazardous movement) should be preceded or accompanied by a warning signal to enable operator to take appropriate action (see 6.3).	No this situation.	N/A
5.3.2.3	Requirements for movable guards	-	-
a)	Movable guards which provide protection against hazards generated by moving transmission parts shall:	No movable guard has been found in this machine.	N/A
	- as far as possible remain fixed to the machinery or other structure (generally by means of hinges or guides) when open;	No this situation.	N/A
	- be interlocking guards (with guard locking when necessary) (see ISO 14119).	No this situation.	N/A
	See figure 1.	-	-
b)	Movable guards against hazards generated by non-transmission moving parts shall be designed and associated with the machine control system so that:	-	-
	- moving parts cannot start up while they are within the operator's reach and the operator cannot reach moving parts once they have started up; this can be achieved by interlocking guards, with guard locking when necessary;	No this situation.	N/A
	- they can be adjusted only by an intention action, such as the use of a tool or key;	No this situation.	N/A
	- the absence or failure of one of their components prevents starting of the moving parts or stops them; this can be achieved by automatic monitoring (see 4.11.6).	No this situation.	N/A
	See figure 1 and ISO 14119.	-	-
5.3.2.4	Requirements for adjustable guards	-	-
	Adjustable guards may only be used where		

Clause	Requirement - test	Result	Verdict
	the hazard one cannot for operational reasons be completely enclosed.	There is no adjustable guards.	N/A
	They shall:	-	-
	- be designed so that the adjustment remains fixed during a given operation;	No this situation.	N/A
	- be readily adjustable without the use of tools.	No this situation.	N/A
5.3.2.5	Requirements for interlocking guards with a start function (control guards)	-	-
	An interlocking guard with a start function may be used only when all the following requirements are met:	-	-
	- all requirements for interlocking guards are satisfied (see ISO 14119);	All requirements for interlocking guards are satisfied	Pass
	- the cycle time of the machine is short;	It is in compliance with the requirement.	Pass
	- the maximum opening time of the guard is present to low value(e.g. equal to the cycle time). When this time is exceeded, the hazardous function(s) cannot be initiated by the closing of the interlocking guard with a start function and resetting is necessary before restarting the machine;	The design has been taken into the machine.	Pass
	- the dimension or shape of the machine do not allow a person, or part of a person, to stay in the hazard zone or between the hazard zone and the guard while the guard is closed (see ISO 14120);	The person and partof a person can't enter the hazard zones.	Pass
	- all other guards whether fixed (removable type) or movable are interlocking guards;	It is in compliance with the requirement.	Pass
	- the interlocking device associated with the interlocking guard with a start function is designed in such a way-e.g. by duplication of position detectors and use of automatic monitoring (see 4.11.6) – that its failure cannot lead to an unintended/unexpected start-up;	It can't lead to an unintended/unexp-ected start-up;	Pass
	- the guard is securely held open (e.g. by a spring or counterweight) such that it cannot initiate a start while falling by its own weight.	It cannot initiate a startwhile falling by its own weight.	Pass
5.3.2.6	Hazards from guards	-	-
	Care shall be taken to prevent hazards which might be generated by:	-	-
	- the guard construction (e.g. sharp edges or comers, material);	The guards don't have sharp edges or comers.	Pass
	- the movements of the guards (shearing or crushing zones generated by power-operated guards and by heavy guards which are liable to fall).	This danger can't happen in the machine.	Pass
5.3.3	Technical characteristics of protective devices	-	-
	Protective devices shall be selected or designed and connected to the control system so as to ensure correct implementation of their safety function(s).	The design has been taken into the machine.	Pass

Clause	Requirement - test	Result	Verdict
	Protective devices shall be either selected as meeting the appropriate product standard (e.g. for active opto-electronic protective see IEC 61496-2) or designed according to one or several of the principles formulated in ISO 13849-1.	The protective devices are chosen according to the appropriate product standard.	Pass
	Protective devices shall be installed and connected to the control system so that they cannot be easily defeated.	It isn't easy to be defeat.	Pass
5.3.4	Provisions for alternative types of safeguards	-	-
	Provisions should be made to facilitate the fitting of alternative types of safeguards on machinery where it is known that this fitting will be necessary because the work to be done on it will vary.	Provisions for alternative types of safeguards have been fitted.	Pass
5.4	Safeguarding for reducing emissions	-	-
5.4.1	General	-	-
	If the measures for the reduction of emissions at source mentioned in 4.2.2 are not adequate, the machine shall be provided with additional protective measures.	Not applicable.	N/A
5.4.2	Noise	-	-
	Additional protective measures include, for example:	-	-
	- enclosures (see ISO 15667);	Not applicable.	N/A
	- screens fitted to the machine;	Not applicable.	N/A
	- silencers (see ISO 14163).	Not applicable.	N/A
5.4.3	Vibration	-	-
	Additional protective measures include, for example, damping devices for vibration isolation between the source and the exposed person such as resilient mounting or suspended seats.	Not applicable.	N/A
	For measures for vibration isolation of stationary industrial machinery see EN 1299.	Not applicable.	N/A
5.4.4	Hazardous substances	-	-
	Additional protective measures include, for example:	-	-
	- encapsulation of the machine (enclosure with negative pressure);	It is in compliance with the requirement.	Pass
	- local exhaust ventilation with filtration;	It is in compliance with the requirement.	Pass
	- wetting with liquids;	It is in compliance with the requirement.	Pass
	- special ventilation in the area of the machine (air curtains, cabins for operators).	It is in compliance with the requirement.	Pass
	See ISO 14123-1.	-	-
5.4.5	Radiation	-	-
	Additional protective measures include, for example:	Not applicable.	N/A
	- use of filtering and absorption;	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
	- use of attenuating screens or guards.	It isn't necessary for this machine.	N/A
5.5	Complementary protective measures	-	-
5.5.1	General	-	-
	Protective measures which are neither inherently safe design measures, nor safeguarding (implementation of guards and/or protective devices), nor information for use may have to be implemented as required by the intended use and the reasonably foreseeable misuse of the machine. Such measures include, but are not limited to, the ones dealt with in 5.5.2 to 5.5.6	The design has been taken into the machine.	Pass
5.5.2	Components and elements to achieve the emergency stop function	The design has been taken into the machine.	Pass
	If following a risk assessment, a machine needs to be fitted with components and elements to achieve an emergency stop function to enable actual or impending emergency situations to be averted, the following requirements apply:	The design has been taken into the machine.	Pass
	- the actuators shall be clearly identifiable, clearly visible and readily accessible;	It is in compliance with the requirement.	Pass
	- the hazardous process shall be stopped as quickly as possible without creating additional hazards. If this is not possible or the risk cannot be reduced, it should be questioned whether implementation of an emergency stop function is the best solution;	The automatic protection functions have found in the machine.	Pass
	- the emergency stop control shall trigger or permit the triggering of certain safeguard movements where necessary.	It is in compliance with the requirement.	Pass
	Once active operation of the emergency stop device has ceased following an emergency stop command, the effect of this command shall be sustained until it is reset. This reset shall be possible only at that location where the emergency stop command has been initiated. The reset of the device shall not restart the machinery, not but only permit restarting	It is in compliance with the requirement.	Pass
	More details for the design and selection of electrical components and elements to achieve the emergency stop function are provided in IEC 60204 series.	It is in compliance with the requirement.	Pass
5.5.3	Measures for the escape and rescue of trapped persons	No this situation	N/A
	Measures for the escape and rescue of trapped persons may consist, e.g. of:	-	-
	- escape routes and shelters in installations generating operator-trapping hazards;	No this situation	N/A
	- arrangements for moving some elements by hand, after an emergency stop;	No this situation	N/A
	- arrangements for reversing the movement of some elements;	No this situation	N/A

Clause	Requirement - test	Result	Verdict
	- anchorage points for descender devices;	No this situation	N/A
	- means of communication to enable trapped operators to call for help.	No this situation	N/A
5.5.4	Measures for isolation and energy dissipation	-	-
	Especially with regard to their maintenance and repair, machines shall be equipped with the technical means to achieve the isolation from power supply(ies) and dissipation of stored energy as a result of following actions:	It is in compliance with the requirement.	Pass
a)	Isolating (disconnecting, separating) the machine (or defined parts of the machine) from all power supplies;	It is in compliance with the requirement.	Pass
b)	Locking (or otherwise securing) all the isolating position;	It is in compliance with the requirement.	Pass
c)	Dissipating or, if this is not possible or practicable, restraining (containing) any stored energy which may give rise to a hazard;	It is in compliance with the requirement.	Pass
d)	Verifying, by means of a safe working procedure, that the actions taken according to a), b) and c) above have produced the desired effect.	See the operation manual in detail.	Pass
	See ISO 14118:2000, clause 5 and IEC 60204-1:1997, 5.5 and 5.6.	-	-
5.5.5	Provisions for easy and safe handling of machines and their heavy component parts	-	-
	Machines and their component parts which cannot be moved or transported by hand shall be provided or capable of being provided with suitable attachment devices for transport by means of lifting gear.	There are appropriate attachment devices for transport.	Pass
	These attachments may be, e.g.:	-	-
	- standardized lifting appliances with slings, hooks, eyebolts, or tapped holes for appliance fixing;	There are appropriate attachment has been used.	Pass
	- appliances for automatic grabbing with a lifting hook when attachment is not possible from the ground;	No this situation	N/A
	- guiding grooves for machines to be transported by a fork truck;	This machine to be transported by a fork truck.	Pass
	- lifting gear and appliances integrated into the machine.	No this situation	N/A
	Parts of machinery which can be removed manually in operation shall be provided with means for their safe removal and replacement. See also 6.4. c) (3rd dash).	No this situation	N/A
5.5.6	Measures for safe access to machinery	-	-
	Machinery shall be so designed as to enable operation and all routine tasks relating to setting and/or maintenance, to be carried out, as far as possible, by a person remaining at ground level.	The design has been taken into the machine.	Pass
	Where this is not possible, machines shall have built-in platforms, stairs or other	The design has been taken into the	Pass

Clause	Requirement - test	Result	Verdict
	facilities to provide safe access for those tasks, but care should be taken to ensure that such platforms or stairs do not give access to danger zones of machinery.	machine.	
	The walking areas shall be made from materials which remain as lip resistant as practicable under working conditions and, depending on the height from the ground, suitable guard-rails (see ISO 14122-3) shall be provided.	The design has been taken into the machine.	Pass
	In large automated installations, particular attention shall be given to safe means of access such as walkways, conveyor bridges or crossover points.	It isn't necessary for this machine.	N/A
	Means of access to parts of machinery located at a height shall be provided with collective means of protection against falls (e.g. guard-rails for stairways, stepladders and platforms and/or safety cages for ladders). As necessary, anchorage points for personal protective equipment against falls from a height shall also be provided (e.g. in carriers of machinery for lifting persons or with elevating control stations)	The design has been taken into the machine.	Pass
	Openings shall whenever possible open towards a safe position .They shall be designed to prevent hazards due to unintended opening.	The design has been taken into the machine.	Pass
	The necessary aids for access shall be provided (e.g. steps, handholds). Control devices shall be designed and located to prevent their being used as aids for access.	No this situation	N/A
	When machinery for lifting goods and/or persons includes landings at fixed levels, these shall be equipped with interlocking guards preventing falls when the platform is not present at the level. Movement of the lifting platform shall be prevented while the guards are open.	The machine doesn't have the function for lifting goods or persons.	N/A
	For detailed provisions see ISO 14122-1, ISO 14122-2, ISO 14122-3 and ISO 14122-4.	No this situation.	N/A
6	Information for use	-	
6.1	General requirements	-	
	Drafting information for use is an integral part of the design of a machine (see ISO 12100-1:2003, figure 1). Information for use consists of communication links, such as texts, words, directed to professional and/or non-professional users.	The purpose of the machine has been defined in the instruction manual.	Pass.
6.1.1	Information shall be provided to the user about the intended use of the machine, taking into account, notably, all its operating modes.	Some safety precautions and information are included in the instruction manual.	Pass.
	It shall contain all directions required to ensure safe and correct use of the machine.	The applications of the machine have been written down in the instruction	Pass.

Clause	Requirement - test	Result	Verdict
		manual according to its design or designation.	
	With this in view, it shall inform and warn the user about residual risk.	These warnings are included.	Pass.
	The information shall indicate:	-	-
	- if training is needed;	These warnings are included.	Pass.
	- if personal protective equipment is needed;	These warnings are included.	Pass.
	- the possible need for additional guards or protective devices (see ISO 12100-1:2003, figure 1, note 4).	These warnings are included.	Pass.
	It shall not exclude use of the machine that can reasonably be expected from its designation and description and shall warn about the risk which would result from using the machine in other ways than ones described in the information, especially considering its reasonably foreseeable misuse.	These warnings are included.	Pass.
6.1.2	Information for use shall cover, separately or in combination, transport, assembly and installation, commissioning, use (setting, teaching/programming or process changeover, operation, cleaning, fault finding and maintenance) of the machine, and the machine, and, if necessary, de-commissioning, dismantling and disposal.	They cannot compensate for design flaws.	Pass.
6.2	Location and nature of the information for use	-	
	Depending on the risk, the time when the information is needed by the user and the machine design, it shall be decided whether the information-or parts thereof – are to be given:	This information is included.	Pass.
	- in/on the machine itself (see 6.3 and 6.4);	This information is included.	Pass.
	- in accompanying documents (in particular instruction handbook, see 6.5);	This information is included.	Pass.
	- on the packaging;	This information is included.	Pass.
	- by other means such as signals and warning outside the machine.		
	Standardized phrases shall be considered where important messages such as warnings need to be given (see also IEC 62079).	Standardized phrases have been considered.	Pass.
6.3	Signals and warning devices	-	
	Visual signals (e.g. flashing lights) and audible signals (e.g. sirens) may be used to warn of an impending hazardous event such as machine start-up or overspeed.	These requirements have been complied with.	Pass
	Such signals may also be used to warn the operator before the triggering of automatic protective measures (see last paragraph of 5.2.7).	It is met for this requirement.	Pass
	It is essential that these signals:	-	

Clause	Requirement - test	Result	Verdict
	- are emitted before the occurrence of the hazardous event;	It is complied with the requirement.	Pass
	- are unambiguous;	It is complied with the requirement.	Pass
	-can be clearly perceived and differentiated from all other signals used;	It is complied with the requirement.	Pass
	- can be clearly recognized by the operator and other persons.	It is complied with the requirement.	Pass
	The warning devices shall be designed and located such that checking is easy. The information for use shall prescribe regular checking of warning devices.	It is complied with the requirement.	Pass
	The attention of designers is drawn to the risks from "sensorial saturation" which results from too many visual and/or acoustic signals, which may also lead to defeating the warning devices.	Check the safety operation manual.	Pass.
6.4	Markings, signs(pictograms), written warnings	-	-
	Machinery shall bear all markings which are necessary:	-	-
a)	For its unambiguous identification, at least :	-	-
	- name and address of the manufacturer;	This information is included.	Pass.
	- designation of series or type;	This information is included.	Pass.
	- serial number, if any;	This information is included.	Pass.
b)	In order to indicate its compliance with mandatory Requirements:	-	-
	- marking;	This information is included.	Pass.
	- written indications (e.g. for machines intended for use in potentially explosive atmosphere);	This information is included.	Pass.
c)	For it safe use, e.g.:		-
	- maximum speed of rotating parts;	This information is included.	Pass.
	- maximum diameter of tools;	This information is included.	Pass.
	- mass (expressed in kilograms) of the machine itself and/or of removable parts;	This information is included.	Pass.
	- maximum working load;	This information is included.	Pass.
	- necessary of wearing personal protective equipment;	Not applicable.	N/A
	- guard adjustment data;	This information is included.	Pass.
	- frequency of inspection.	This information is included.	Pass.
	Information printed directly on the machine should be permanent and remain legible throughout the expected life of the machine.	It is in compliance with the requirement.	Pass
	Signs or written warnings only saying "danger" shall not be used.	It is in compliance with the requirement.	Pass
	Markings, signs and written warnings shall be readily understandable and unambiguous, especially as regards the part of the function(s) of the machine which they are related to. Readily understandable signs (pictograms) should be used in preference to written warnings.	It is in compliance with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	Signs and pictograms should only be used if they are understood in the culture in which the machinery is to be used.	It is in compliance with the requirement.	Pass
	Written warnings shall be drawn up in the language(s) of the country in which the machine will be used for the first time and, on request, in the language(s) understood by operators.	It is in compliance with the requirement.	Pass
	Markings shall comply with recognized standards (see ISO 2972, ISO 7000, particularly for pictograms, symbols, colours). See IEC 60204 series as regards marking of electrical equipment	They are in conformity with the ISO 7000, EN 60417 etc. relevant standards.	Pass.
6.5	Accompanying documents (in particular, instruction handbook)	-	
6.5.1	Content	-	
	The instruction handbook or other written instructions(e.g. on the packaging) shall contain among others: :	-	
a)	Information relating to transport, handling and storage of the machine, e.g.:	-	
	- storage conditions for the machine;	Check the instruction manual.	Pass.
	- dimensions, mass value(s),position of the centre(s) of gravity;	Check the instruction manual.	Pass.
	- indications for handling(e.g. drawings indicating application points for lifting equipment);	Check the instruction manual.	Pass.
b)	Information relating to installation and commissioning of the machine, e.g.:	-	
	- fixing/anchoring and vibration conditions;	Check the instruction manual.	Pass.
	- assembly and mounting conditions;	Check the instruction manual.	Pass.
	- space need for use and maintenance;	Check the instruction manual.	Pass.
	- permissible environmental conditions (e.g. temperature, moisture, vibration, electromagnetic radiation);	Check the instruction manual.	Pass.
	- instructions for connecting the machine to power supply (particularly about protection against electrical overloading);	Check the instruction manual.	Pass.
	- advice about waste removal/disposal;	Check the instruction manual.	Pass.
	- if necessary, recommendations about protective measures which have to be taken by the user; e.g. additional safeguards (see ISO 12100-1:2003, figure 1, NOTE 4), safety distances, safety signs and signals;	Check the instruction manual.	Pass.
c)	Information relating to the machine itself, e.g.:	-	
	- detailed description of the machine, its guards and/or protective devices;	Check the instruction manual.	Pass.
	- comprehensive range of applications for which the machine is intended, including prohibited usages, if any, taking into account variations of the original machine if appropriate;	Check the instruction manual.	Pass.
	- diagrams (especially schematic representation of safety functions);	Check the instruction manual.	Pass.

Clause	Requirement - test	Result	Verdict
	- data about noise and vibration generated by the machine, about radiation, gases, vapours, dust emitted by it, with reference to the measuring methods used;	Check the instruction manual.	Pass.
	- technical documentation about electrical equipment (see IEC 60204 series);	Check the instruction manual.	Pass.
	- documents attesting that the machine complies with the mandatory regulations;	Not applicable.	N/A
d)	Information relating to the use of the machine, e.g. about:	-	
	- intended use;	Check the instruction manual.	Pass.
	- description of manual controls (actuators);	Check the instruction manual.	Pass.
	- setting and adjustment;	Check the instruction manual.	Pass.
	- modes and means for stopping (especially emergency stop);	Check the instruction manual.	Pass.
	- risks which could not be eliminated by the protective measures taken by the designer;	Check the instruction manual.	Pass.
	- particular risks which may be generated by certain applications, by the use of certain fittings, and about specific safeguards which are necessary for such applications;	Check the instruction manual.	Pass.
	- reasonably foreseeable misuse and prohibited usages;	Check the instruction manual.	Pass.
	- fault identification and location, repair, and re-starting after an intervention;	Check the instruction manual.	Pass.
	-personal protective equipment which need to be used and training required;		
e)	Information for maintenance, e.g.:	-	
	- nature and frequency of inspections for safety functions;	Check the instruction manual.	Pass.
	- instructions relating to maintenance which require a definite technical knowledge or particular skills and hence should be carried out exclusively by skilled persons (e.g. maintenance staff, specialists);	Check the instruction manual.	Pass.
	- instructions relating to maintenance actions (e.g. replacement of parts) which do not require specific skills and hence may be carried out by users(e.g. operators);	Check the instruction manual.	Pass.
	- drawings and diagrams enabling maintenance personal to carry out their task rationally (especially fault-finding tasks);	Check the instruction manual.	Pass.
f)	Information relating to de-commissioning, dismantling and disposal;	Check the instruction manual.	Pass.
g)	Information for emergency situations, e.g.:	-	
	- type of fire-fighting equipment to be used;	Check the instruction manual.	Pass.
	- warning about possible emission or leakage of harmful substance(s), and if possible, indication of means to fight their effects;	Not applicable.	N/A
h)	Maintenance instructions provided for unskilled persons (third dash in e)), that should appear clearly separated from each other.	Check the instruction manual.	Pass
6.5.2	Production of the instruction handbook	-	

Clause	Requirement - test	Result	Verdict
a)	Type and size of print shall ensure the best possible legibility. Safety warnings and/or cautions should be emphasized by the use of colours, symbols and/or large print.	It has been in compliance with clause.	Pass.
b)	Information for use shall be given in the language(s) of the country in which the machine will be used for the first time and in the original version. If more than one language are to be used, each language should be readily distinguished from the other(s), and efforts should be made to keep the translated text and the relevant illustration together.	In English.	Pass.
c)	Whenever helpful to the understanding, test should be supported by illustrations. Illustrations should be supplemented with written details enabling, for instance, manual controls (actuators) to be located and identified; they should not be separated from the accompanying text and should follow sequential operations.	Check the instruction manual.	Pass.
d)	Consideration should be given to presenting information in tabular from where this will aid understanding. Tables should be adjacent to the relevant text.	Check the instruction manual.	Pass.
e)	The use of clours should be considered, particularly in relation to components requiring quick identification.		Pass.
f)	When information for use is lengthy, a table of contents and/or an index should be given.	Check the instruction manual.	Pass.
g)	Safety-relevant instructions which involve immediate action should be provided in a form readily available to the operator.	Safety-relevant instructions which involve immediate action have been provided	Pass
6.5.3	Advice for drafting and editing information for use	-	
a)	Relationship to model: the information shall clearly relate to the specific model of machine.	The information was clearly described.	Pass.
b)	Communication principles: when information for use is being prepared, the communication process “see-think-use” should be followed in order to achieve the maximum effect and should follow sequential operations. The questions “how-” and “why-” should be anticipated and answers provided.	Check the instruction manual.	Pass.
c)	Information for use shall be as simple and as brief as possible, and should be expressed in consistent terms and units with a clear explanation of unusual technical terms.	Check the instruction manual.	Pass.
d)	When it is foreseen that a machine will be put to non-professional use, the instructions should be written in a form that is readily understood by the non-professional users. If	Check the instruction manual.	Pass.

Clause	Requirement - test	Result	Verdict
	personal protective equipment is required for the safe use of the machine, so that this information is prominently displayed at the point of sale.		
e)	Durability and availability of the documents: documents giving instructions for use should be produced in durable form (i.e. they should be able to survive frequent handling by the user). It may be useful to mark them "keep for future reference". Where information for use is kept in electronic form (e.g. CD, DVD, tape) information on safety-related issues that need immediate action shall always be backed up with a hard copy that is readily available.	Durability and availability of the documents have been supplied.	Pass.

Attachment: Risk analysis of the machine

I. Introduction.

In general this risk assessment report for Beverage filling machinery, model XGF and its variants made by Zhangjiagang City Wanjin Machinery Co., Ltd. was carried out in accordance with the requirements of Machinery Directive and the standards of EN ISO 12100:2010 and DINV 19250, in which an explicit risk level is evaluated with 4 factors described in next clause.

After the first assessment, some measures to eliminate the risks are given for the modification of machine or of relative documents with taking into account the explicit C-type EN standard or related B-type standard.

While taking appropriate provisions for the existing risks, the procedures and principles to eliminate the risk according to the most general B-type standard for any kind of machine, EN 292-part, are followed, i.e.:

- First step: consider the possibility of eliminating risk at design stage.
- Second step: if impossible, protect the dangerous zone with appropriate design of safety guard or safety device.
- Third step: If above impossible, give warning signs to draw attention of operators bout the residual risks.

In addition, some check list drawn from the explicit C-type EN standards, which are found suitable for or near the characteristic of this machine, are used to help developing the provisions for the elimination of the risks.

Finally the risk assessment was carried out again to ensure this machine and its relative documents are totally compliance with the Machinery Directive.

II. Risk assessment Methodology

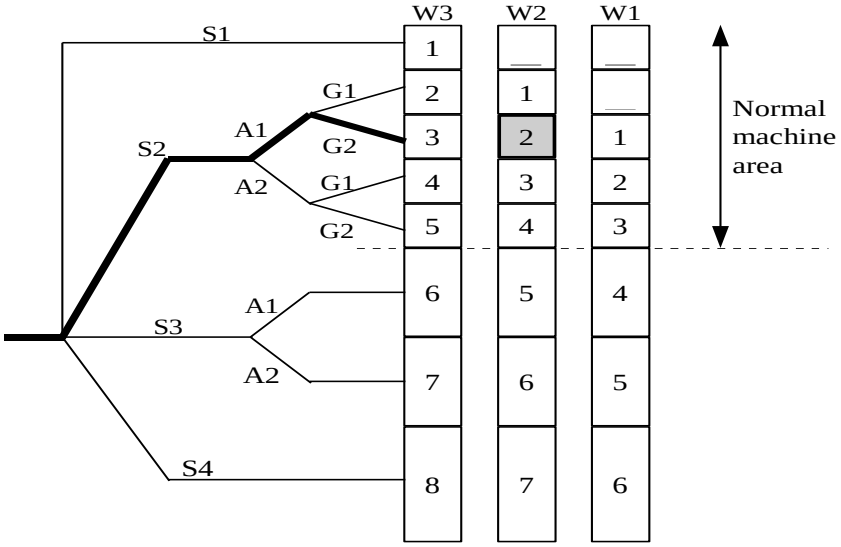
This risk assessment report is based on the methods mentioned in the EN ISO 12100:2010 and DINV 19250 standards, and the 4 factors S-A-G-W have been used for evaluating the level of risks.

(a) S: Severity of possible harm
- S1: Slight (normally reversible)
- S2: Serious (normally irreversible)
- S3: Cause a few men die
- S4: Calamity or cause many men die

(b) A: Frequency and duration of exposure
- A1: Seldom to very often
- A2: Frequent to continuous

(c) G: Possibilities of avoidance
- G1: Possible
- G2: Impossible

(d) W: Probability of occurrence of harm
- W1: Low
- W2: Medium
- W3: High



Solutions for the level of hazards
1: Protected by warning sign
2: Protected by guard and warning sign
3: Consider the other design, choose the best one, add both guard and warning sign
4: Consider another two designs, choose the best one, add both guard and warning sign
5: Consider another three designs, choose the best one, add both guard and warning sign

III. Evaluation of hazards, hazardous situation and hazardous events

3.1 Evaluation of hazards

No.	Type or group	Hazards		S	A	G	W	Level
		Origin	Potential consequences					
1	**Mechanical hazards**	Acceleration, deceleration (kinetic energy)	--Being run over --Being thrown					N/A

		Angular parts	--Crushing	S1			W2	-
		Approach of a moving element to a fixed part	--Cutting or severing --Drawing-in or trapping	S2	A1	G1	W1	-
		Cutting parts	--Entanglement					N/A
		Elastic elements	--Friction or abrasion					N/A
		Falling objects	--Impact	S2	A1	G1	W2	1
		Gravity (stored energy)	--Injection					N/A
		High pressure	--Shearing					N/A
		Machinery mobility	--Slipping, tripping and falling					N/A
		Moving elements						N/A
		Rotating elements	--Stabbing or puncture	S2	A1	G1	W2	1
		Rough, slippery surface	--Suffocation					N/A
		Sharp edges		S1			W3	1
		Stability						N/A
		Vacuum						N/A
2	**Electrical hazards**	Arc	--Burn					N/A
		Electromagnetic phenomena	--Chemical effects					N/A
		Electrostatic phenomena	--Effects on medical implants					N/A
		Live parts		S2	A1	G1	W2	1
		Not enough distance to live parts under high voltage	--Electrocution --Falling, being thrown					N/A
		Overload	--Fire	S2	A1	G1	W1	-
		Parts which have become live under fault conditions	--Projection of molten particles					N/A
		Short circuit	--Shock	S2	A1	G1	W1	-
		Thermal radiation						N/A
3	**Thermal hazards**	Explosion	--Burn					N/A
		Flame	--Dehydration					N/A
		Objects or materials with a high or low temperature	--Discomfort --Frostbite	S2	A1	G1	W1	-
		Radiation from heat sources	--Injuries by the radiation of heat sources --Scald	S2	A1	G1	W1	-
4	**Noise hazards**	Cavitation phenomena	--Discomfort					N/A
		Exhausting system	--Loss of awareness					N/A
		Gas leaking at high speed	--Loss of balance					N/A

No.	**Type or group**	**Hazards**		**S**	**A**	**G**	**W**	**Level**
		Origin	**Potential consequences**					
		Manufacturing process (stamping, cutting, etc.)	--Permanent hearing loss --Stress	S2	A1	G2	W2	2
		Moving parts	--Tinnitus					N/A
		Scraping surfaces	--Tiredness					N/A
		Unbalanced rotating parts	--Any other (e.g. mechanical, electrical) as					N/A
		Whistling pneumatics						N/A

		Worn parts	a consequence of an interference with speech communication of with acoustic signals					N/A
5	**Vibration hazards**	Cavitation phenomena	--Discomfort --Low-back morbidity --Neurological disorder --Osteo-articular disorder --Trauma of the spine --Vascular disorder					N/A
		Misalignment of moving parts						N/A
		Mobile equipment						N/A
		Scraping surfaces						N/A
		Unbalanced rotating parts						N/A
		Vibrating equipment		S1			W2	-
		Worn parts						N/A
6	**Radiation hazards**	Lonising radiation source	--Burn --Damage to eyes and skin --Effects on reproductive capability --Genetic mutation --Headache, insomnia, etc.					N/A
		Low frequency electromagnetic radiation						N/A
		Optical radiation (infrared, visible and ultraviolet), including laser						N/A
		Radio frequency electromagnetic radiation						N/A
7	**Material/ substance hazards**	Aerosol	--Breathing difficulties, suffocation --Cancer --Corrosion --Effects on reproductive capability --Explosion --Fire --Infection --Mutation --Poisoning --Sensitization					N/A
		Biological and microbiological (viral or bacterial) agent						N/A
		Combustible						N/A
		Dust		S2	A1	G2	W1	1
		Explosive						N/A
		Fibre						N/A
		Flammable						N/A
		Fluid						N/A
		Fume						N/A
		Gas						N/A
		Mist						N/A
		Oxidizer						N/A

No.	Type or group	Hazards		S	A	G	W	Level
		Origin	Potential consequences					
8	**Ergonomic hazards**	Access	--Discomfort --Fatigue --Musculoskeletal disorder --Stress --Any other (e.g. mechanical, electrical) as a consequence of human error					N/A
		Design or location of indicators and visual displays units						N/A
		Design, location or identification of control devices						N/A
		Effort						N/A
		Flicker, dazzling, shadow, stroboscopic effect						N/A
		Local lighting						N/A
		Mental overload/ underload						N/A

		Posture						N/A
		Repetitive activity						N/A
		Visibility						N/A
9	**Hazards associated with environment in which the machine is used**	Dust and fog	--Burn --Slight disease --Slipping, falling --Suffocation --Any other as a consequence of the effect caused by the sources of the hazards on the machine of parts of the machine					N/A
		Electromagnetic disturbance						N/A
		Lightning						N/A
		Moisture						N/A
		Pollution						N/A
		Snow						N/A
		Temperature						N/A
		Water		S2	A1	G1	W2	1
		Wind						N/A
		Lack of oxygen						N/A
10	**Combination of hazards**	E.g. repetitive activity + effort + high environmental temperature	--E.g. dehydration, loss of awareness, heat stroke					N/A

3.2 Evaluation of hazardous situations

Phase of machine life cycle	Tasks	S	A	G	W	Level
Transport	Lifting	S2	A1	G1	W2	1
	Loading	S2	A1	G1	W2	1
	Packing					N/A
	Transportation					N/A
	Unloading	S2	A1	G1	W2	1
	Unpacking					N/A
Assembly and installation Commissioning	Adjustments of the machine and its components					N/A
	Assembly of the machine	S2	A1	G1	W1	-
	Connecting to disposal system (e.g. exhaust system, water installation)					N/A
	Connecting to power supply (e.g. electric power supply, compressed air)					N/A
	Demonstration					N/A
	Feeding, filling, loading of ancillary fluids (e.g. lubricant, grease, glue)					N/A

	Fencing					N/A
	Fixing, anchoring					N/A
	Preparations for the installation (e.g. foundations, vibration isolators)					N/A
	Running the machine without load					N/A
	Testing	S1			W1	-
	Trial with load or maximum load	S1			W1	-
Setting	Adjustment and setting of protective devices and other components					N/A
Teaching/ programming and/ or process changeover	Adjustment and setting or verification of functional parameters of the machine (e.g. speed, pressure, force, travelling limits)					N/A
	Clamping / fastening the workpiece					N/A
	Feeding, filling, loading of raw material	S2	A1	G1	W1	-
	Functional test, trials					N/A
	Mounting or changing tools, tool-setting					N/A
	Programming verification					N/A
	Verification of the final product					N/A
Operation	Clamping/ fastening the workpiece					N/A
	Control/ inspection	S2	A1	G1	W1	-
	Driving the machine					N/A
	Feeding, filling, loading of raw material	S2	A1	G1	W2	1
	Manual loading/ unloading					N/A

Phase of machine life cycle	Tasks	S	A	G	W	Level
	Minor adjustments and setting of functional parameters of the machine (e.g. speed, pressure, force, travel limits)					N/A
	Operating manual controls					N/A
	Restarting the machine after stopping/ interruption					N/A
	Supervision					N/A
	Verification of the final product					N/A
Cleaning Maintenance	Adjustments					N/A
	Cleaning, disinfection	S2	A1	G1	W1	-
	Dismantling/removal of parts, components, devices of the machine	S2	A1	G1	W1	-
	Housekeeping					N/A
	Isolation and energy dissipation	S2	A1	G1	W2	1
	Lubrication					N/A
	Replacement of tools					N/A
	Replacement of worn parts					N/A
	Resetting					N/A
	Restoring fluid levels					N/A
	Verification of parts, components, device of the machine					N/A
Fault finding/	Adjustments					N/A

troubleshooting	Dismantling/removal of parts, components, devices of the machine					N/A
	Faultfinding	S2	A1	G1	W2	1
	Isolation and energy dissipation					N/A
	Recovering from control and protective devices failure					N/A
	Recovering from jam					N/A
	Repairing	S2	A1	G1	W2	1
	Replacement of parts, components, devices of the machine					N/A
	Rescue of trapped persons					N/A
	Resetting					N/A
	Verification of parts, components, devices of the machine					N/A
Decommissioning Dismantling	Disconnection and energy dissipation	S2	A1	G1	W1	-
	Dismantling					N/A
	Lifting	S2	A1	G1	W1	-
	Loading	S2	A1	G1	W1	-
	Packing					N/A
	Transportation					N/A
	Unloading					N/A

3.3 Evaluation of hazardous events

Origin related to	Hazardous event	S	A	G	W	Level
Shape and /or superficial finishing of accessible parts of the machine	Contact with rough surfaces	S2	A1	G1	W2	1
	Contact with sharp edges and corners, protruding parts	S2	A1	G1	W2	1
Moving parts of the machine	Contact with moving parts	S2	A1	G1	W2	1
	Contact with rotating open ends					N/A
Kinetic energy and/or potential energy (gravity) of the machine, parts of the machine, tools and materials used, processed, handled.	Falling or ejection of objects					N/A
Stability of the machine and/or parts of the machine	Loss of stability	S2	A1	G1	W1	-
Mechanical strength of parts of the machine, tools etc.	Break-up during operation					N/A
Pneumatic, hydraulic equipment	Displacement of moving elements					N/A
	Projection of high pressure fluids					N/A
	Uncontrolled movements					N/A
Electrical equipment	Direct contact	S2	A1	G1	W2	1
	Disruptive discharge					N/A
	Electric arc					N/A
	Fire					N/A
	Indirect contact					N/A
	Short-circuit	S2	A1	G1	W1	-

Control system	Dropping or ejection of a moving part of the machine or of a workpiece clamped by the machine					N/A
	Failure to stop moving parts					N/A
	Machine action resulting from inhibition (defeating or failure) of protective devices	S2	A1	G1	W1	-
	Uncontrolled movements (including speed change)					N/A
	Unintended/unexpected start-up	S2	A1	G1	W2	1
	Other hazardous events due to failure(s) or poor design of the control system					N/A
Materials and substances or with physical factors (temperature, noise, vibration, radiation and environment)	Contact with objects with high or low temperature					N/A
	Emission of a substance that can be hazardous					N/A
	Emission of a level of noise that can be hazardous	S2	A1	G1	W2	1

Origin related to	Hazardous event	S	A	G	W	Level
	Emission of a level of noise that can interfere with a speech communication or with acoustic signals					N/A
	Emission of a level vibration that can be hazardous					N/A
	Emission of radiation fields that can be hazardous					N/A
	Harsh environmental conditions					N/A
Workstation and/or work process design	Excessive effort					N/A
	Human errors/ misbehavior (unintentional and/or deliberately induced by the design)					N/A
	Loss of direct visibility of the working area					N/A
	Painful and tiring postures					N/A
	Repetitive handling at high frequency					N/A

NOTE: “N/A” means that the hazard is not required to assess.

IV. Risk Reduction and comparison of risks

No.	Hazards source	S	A	G	W	Level
	Mechanical hazards: Falling objects	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is working.					
Improvement result						
Method		S	A	G	W	Level

By means of protection guards.	S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Mechanical hazards: Rotating elements	S2	A1	G1	W3	2
Where	Working area.					
When	The machine is working.					
Improvement result						
Method		S	A	G	W	Level
By means of adopting the safety guard.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Mechanical hazards: Sharp edges	S1			W3	1
Where	Working area.					
When	Anytime					
Improvement result						
Method		S	A	G	W	Level
To grind the sharp edges		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Electrical hazards: Live parts	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is working.					
Improvement result						
Method		S	A	G	W	Level
By means of protection guards and warning signs.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Noise hazards: Manufacturing process (stamping, cutting, etc.)	S2	A1	G2	W2	2
Where	Working area.					
When	The machine is working.					
Improvement result						
Method		S	A	G	W	Level
By means of adopting the safety protection and signs.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Material/ substance hazards: Dust	S2	A1	G2	W1	1
Where	Working area.					
When	The machine is working.					

Improvement result					
Method	S	A	G	W	Level
By means of adopting the safety protection.	S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Hazards associated with environment in which the machine is used: Water	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is working.					
Improvement result						
Method		S	A	G	W	Level
By means of protection covers and signs.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Transport: Lifting, loading, unloading	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is in transport					
Improvement result						
Method		S	A	G	W	Level
By means of fixed equipments.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Operation: Feeding, filling, loading of raw material	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is in cleaning and maintenance					
Improvement result						
Method		S	A	G	W	Level
Adopting protection covers.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Cleaning /Maintenance: Isolation and energy dissipation	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is in cleaning and maintenance					
Improvement result						
Method		S	A	G	W	Level
Appropriate protective measures have been taken.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Fault finding/ troubleshooting: Faultfinding, Repairing	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is in fault finding/ troubleshooting					
Improvement result						
Method		S	A	G	W	Level
Appropriate protective measures have been taken.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level

	Shape and /or superficial finishing of accessible parts of the machine: Contact with rough surfaces, sharp edges and corners, protruding parts	S2	A1	G1	W2	1
Where	Working area.					
When	Anytime					
Improvement result						
Method		S	A	G	W	Level
Appropriate protective measures have been taken.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Electrical equipment: Direct contact	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is running.					
Improvement result						
Method		S	A	G	W	Level
Appropriate protective measures have been taken.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Control system: Unintended/unexpected start-up	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is running.					
Improvement result						
Method		S	A	G	W	Level
Appropriate protective measures have been taken.		S1	A1	G1	W1	-

No.	Hazards source	S	A	G	W	Level
	Materials and substances or with physical factors (temperature, noise, vibration, radiation and environment): Emission of a level of noise that can be hazardous	S2	A1	G1	W2	1
Where	Working area.					
When	The machine is running.					
Improvement result						
Method		S	A	G	W	Level
Appropriate protective measures have been taken.		S1	A1	G1	W1	-

Result: These risks have been adequately reduced.

3.2. EN 60204-1:2006+A1:2009 test report

The tested models represent all the models of this machinery including WFY3606, WFY3608, WFY3612, WFY5606, WFY5608, WFY5612, WFY5616, MSC1804, MSC1806, MSC3604, MSC3606, MSC3608, MSC5604, MSC5608, MSC5612, MSC5616, MX1804, MX1806, MX3604, MX3606, MX3608, MX5604, MX5606, MX5608, MX5612, MX5616, MX8808, MX8812, MX8816.

These models' discrepancy can't make another risk to the machine. As for their discrepancy, please check the Chapter V.

Test Report Contest

General information:

The test results presented in this report relate only to the object tested and information given from applicant or manufacturer.

Test case verdicts:

Pass=Pass, Fail=Fail, N/A=Not applicable. Placed in the column marked “Verdict”

This is a Computer generated Test Report.

×Information written in “Italic” or “Regular and bold” font style is a part of this “Test Report Form”.

CONTENT FOR ADDITIONAL INFORMATION

Clause	Requirement - test	Result	Verdict
1	Scope	-	-
	This part of EN 60204 applies to the application of electrical and electronic equipment and systems to machines not portable by hand while working, including a group of machines working together in a coordinated manner but excluding higher level system aspects	This machinery is in the scope	
	This part is applicable to the electrical equipment or parts of the electrical equipment that operate with nominal supply voltages not exceeding 1000V for alternating current and not exceeding 1500V for direct current, and with nominal frequencies not exceeding 200Hz	This machinery's power source: 3Phase-AC 380V and 50Hz	
2	Normative references	-	-
3	Definitions	-	-
4	General requirements	-	-
4.1	The risks associated with the hazards relevant to the electrical equipment shall be assessed as part of the overall requirements for risk assessment of the machine	The risk assessment regarding the electrical system has been included in the report of EN 14121-1:2007.	Pass
4.2	Selection of equipment	-	-
	Electrical components and devices shall be suitable for their intended use and shall conform to relevant IEC standards where such exist	No inappropriate components were found, and some components CE certificates were showed in the TCF.	Pass
4.3	Electrical supply	-	-
	The electrical equipment shall be designed to operate correctly with the relevant conditions of supply	The loading condition has been taken into consideration during the choice of electrical components.	Pass
4.4	Physical environment and operating conditions	-	-
	Shall be suitable for use as specified : - Electromagnetic compatibility - Ambient air temperature - Humidity - Altitude - Contaminants	It's suitable for usage, and these environment & operating conditions already explained in the manual.	Pass

Clause	Requirement - test	Result	Verdict
	Vibration, shock and bump		
4.5	Transportation and storage	-	-
	-25 ℃ to +55 ℃ and short periods not exceeding 24 h at up to +70 ℃	It is complied, and the relevant environment condition has been described in the manual.	Pass
4.6	Provisions for handling	-	-
	Heavy and bulky equipment shall be moved by cranes or similar equipment	Appropriate provision for the handling has been provided for the motor, the only heavy equipment which needs to be moved by lifting tools.	Pass
4.7	Installation and operation	-	-
	According to supplier‘s instructions	The installation of each electrical component has been made according to the supplier’s instruction.	Pass
5	Incoming supply conductors terminations and devices for disconnecting and switching off	-	-
5.1	Incoming supply conductor terminations	-	-
	Single or multiple power supply	Single power supply.	Pass
	The supply conductors are terminated at the supply disconnecting device If not, the separate terminals shall be provided	Directly connected to the supply disconnection device.	Pass
	If a neutral conductor is used, it shall be indicated clearly in the technical documentation	The manual indicates this information.	Pass
	Labelled N shall be provided for the neutral conductor	The neutral conductor labels N mark.	Pass
	No connection between the protective bonding circuit and the neutral conductor	It has been complied with.	Pass
	All terminals for the incoming supply connection shall be identified clearly	All terminals for the incoming supply connection have been identified clearly.	Pass
5.2	Terminal for connection to the external protective earthing system	-	-
	Shall be in the vicinity of the associated phase conductor terminals	It has been complied with.	Pass
	Cross-sectional area of the external protective copper conductor according to table 1	Cross section area for the PE conductor is 4mm^2	Pass

Clause	Requirement - test	Result	Verdict
	Marking of the external protective conductor with the letters "PE"	The external protective conductor has been marked with "PE".	Pass
	Other protective terminals shall be marked with the symbol	The other protective terminals has marked with symbol.	Pass
	All protective terminals shall be coloured by use of the bicolour combination Green-And-Yellow	In compliance with the requirements.	Pass
5.3	Supply disconnecting (isolating) device	-	-
5.3.1	General	-	-
	Shall disconnect (isolate) the electrical equipment of the machine from supply when required	Hand-operated power disconnection device has been used.	Pass
	If two or more supply disconnecting devices are provided, protective interlocks shall be used	Only one is provided.	Pass
5.3.2	Type	-	-
	a) Switch-disconnector according to EN 60947-3 b) A disconnector with auxiliary contact c) Circuit breaker according to EN 60947-2 d) Plug /socket combination for a machine with a rated current not exceeding 16 A and a total power rating not exceeding 3 kW	The circuit breaker according to EN60947-2 has been used for this machine.	Pass
5.3.3	Requirements	-	-
	Have one OFF and one ON position only	ON/OFF position has been found.	Pass
	Marked clearly with "I" and "O"	I/O has been marked on the circuit breaker.	Pass
	Circuit-breakers, have a reset(tripped) position between "O" and "I"	It has a reset (tripped) position between "O" and "I".	Pass
	Have an external operating handle	Have an external operating handle	Pass
	The handle should be Black or Grey	It is black.	Pass
	Could be locked in the OFF position	Satisfied.	Pass
	Disconnect all live conductors of its power supply circuit	Disconnect all live conductors.	Pass
5.3.4	Operating handle		Pass
	Shall be easily accessible and located : 0.6 m~1.9 m	It is complied with the requirement	Pass
5.3.5	Excepted circuits	-	-
	Have their own disconnecting device	Have disconnecting devices	Pass

Clause	Requirement - test	Result	Verdict
	(Recommended)		
	If no disconnecting device, the relevant safety requirements shall be complied with		
5.4	Devices for switching off for prevention of unexpected start-up	-	-
	Unexpected start-up shall be prevented (Devices described in 5.3.2 may fulfill this function)	No this situation	N/A
5.5	Devices for disconnecting electrical equipment	-	-
	Devices shall be provided for disconnecting (isolating) electrical equipment to enable work to be carried out without a risk from electric shock or burn	Disconnect all live conductor safely.	Pass
5.6	Protection against unauthorized, inadvertent and/or mistaken connection	Not applicable.	N/A
	The devices described in 5.4 and 5.5 shall be equipped with such function	It has been complied with.	Pass
6	Protection against electric shock	-	-
6.1	General	-	-
	The recommended measures are given in 6.2, 6.3 and 6.4	It has been complied with.	Pass
6.2	Protection against direct contact	-	-
6.2.1	General	-	-
	Either 6.2.2 or 6.2.3 and, where applicable , 6.2.4 shall be applied	This requirement has been complied with	Pass
	When the equipment is located in places open to all persons, measures of either 6.2.3 or 6.2.2 with a min. degree of protection against direct contact corresponding to IP4X or IPXXD shall be applied	This requirement has been complied with	Pass
6.2.2	Protection by enclosures	-	-
	Min. protection degree for live parts : IP2X or IPXXB	The protection degree is IP2X.	Pass
	Min. protection degree for top surface : IP4X or IPXXD	IP4X for the top surface.	Pass
	Opening an enclosure shall only be possible under one of the following conditions :	-	-
a)	The use of a key or tool is necessary by skilled or instructed persons	Tool and key have been used by skillful persons.	Pass
	Min. protection degree for live parts on		

Clause	Requirement - test	Result	Verdict
	the inside of doors : IP1X or IPXXA	IPXXA	Pass
	Min. protection degree for live parts inside the enclosure : IP2X or IPXXB	IP2X	Pass
b)	The disconnection of live parts inside the enclosure before the enclosure may be opened (Use of the supply disconnecting device)	By the use of hand-operated power disconnection device the requirement of this clause could be ensured.	Pass
	Min. protection degree for all parts are still have live after switching off the disconnecting device : IP2X or IPXXB	IP 2X has been used for the protection of cable inlet connection.	Pass
	Such parts shall be marked with a warning sign :	Warning sign has been marked	Pass
c)	Opening without the use of a key or a tool and without disconnection of live parts shall be possible only when the min. protection degree is IP2X or IPXXB	Not applicable.	N/A
6.2.3	Protection by insulation of live parts	-	-
	Live parts shall be covered by insulation which can only be removed by destruction	Not applicable	N/A
	Such insulation shall withstand the mechanical, chemical, electrical and thermal stresses under normal service conditions	No applicable	N/A
6.2.4	Protection against residual voltages		-
-	After disconnecting, any exposed conductive part having a residual voltage that shall be discharged to 60V or less within 5 seconds	In compliance with the requirement.	Pass
	If mentioned above is not possible, a warning notice drawing shall be provided	Not applicable	N/A
	If the withdrawal of plugs or similar devices would make the exposure of the conductors (e.g. pins),the discharge time shall not exceed 1 second ; Such conductor shall have the protection degree at least IP2X or IPXXB	In compliance with the requirement.	Pass
6.2.5	Protection by barriers	-	-
	For protection by barriers, see 432.2 of IEC 60364-4-43	Not applicable.	N/A
6.2.6	Protection by placing out of reach or protection by obstacles	-	-
	For protection by placing out of reach see 432.4 of IEC 60364-4-43	Not applicable.	N/A
	For protection by obstacles see 432.3 of	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
	IEC 60364-4-43		
	For collector wire systems or collector bar systems with a degree of protection less than IP2X see 13.8.1	Not applicable.	N/A
6.3	Protection against indirect contact	-	-
6.3.1	General	-	-
	For each circuit or part, at least one of the measures in accordance with 6.3.2 to 6.3.3 shall be applied	Not applicable.	N/A
6.3.2	Measure to prevent the occurrence of a hazardous touch voltage	-	-
6.3.2.1	General	-	-
6.3.2.2	Protection by use of class II equipment or by equivalent insulation	-	-
	Application of class II equipment or equivalent insulation	Application of equivalent insulation.	Pass
6.3.2.3	Protection by electrical separation	-	-
	Application of electrical separation	Application of electrical separation	Pass
6.3.2.4	Supply system design	-	-
	Application of a supply system *designed* with its neutral point either insulated from or having a high impedance to earth	Not applicable.	N/A
6.3.3	Protection by automatic disconnection of supply	-	-
	Use of the automatic disconnection of supply	The circuit breaker has the automatic function.	Pass
6.4	Protection by the use of PELV	-	-
6.4.1	General requirements	-	-
	PELV (protective extra-low voltage) circuits shall satisfy all of the conditions specified in this clause	Not applicable.	N/A
6.4.2	Sources for PELV	-	-
	The sources for PELV shall be one of the conditions specified in this clause	Not applicable.	N/A
7	Protection of equipment	-	-
7.1	General	-	-
7.2	Overcurrent protection	-	-
7.2.1	General	-	-
7.2.2	Supply conductors	-	-
	The supplier is not responsible for	The manufacturer does not	

Clause	Requirement - test	Result	Verdict
	providing the overcurrent device for the supply conductors	provide the over-current protection for the whole machine.	Pass
	Installation diagram with data necessary for selection of the overcurrent protective device	The data necessary for over current protective device is provided in the electrical installation diagram.	Pass
7.2.3	Power circuits	-	-
	All conductors shall be protected against overcurrent (except earthed neutral conductor)	Each power circuit has their overcurrent protective devices.	Pass
	Cross-section area of neutral conductor	-	-
	For neutral conductors smaller than phase conductors then IEC 364-4-473 shall apply	The neutral conductor is same as phase conductors	N/A
	In IT-systems, it is recommended that the neutral conductor is not used	Not applicable.	N/A
7.2.4	Control circuits	-	-
	Conductors of control circuits connected to the supply voltage and of circuits feeding control circuit transformers shall be protected against overcurrent in accordance with 7.2.3	No feeding by the control circuit transformers	N/A
7.2.5	Socket outlets and their associated conductors	-	-
	Overcurrent protection devices shall be provided in the unearthed live conductors	No socket outlet is used for this machine.	N/A
7.2.6	Lighting circuits	-	-
	All unearthed conductors of circuits supplying lighting shall be protected against the effects of short circuits by the provision of overcurrent devices separate from those protecting other circuits	Not applicable	N/A
7.2.7	Transformers	-	-
	Transformers shall be protected against overcurrent in accordance with IEC 60076-5 and IEC 60742 as appropriate	In compliance with the requirement.	Pass
	The type and setting of the overcurrent protective device should be in accordance with the recommendations of the transformer supplier	In compliance with the requirement.	Pass

7.2.8	Location of overcurrent protective device	-	-

Clause	Requirement - test	Result	Verdict
	Overcurrent protective device shall be located at the point where the conductors to be protected are connected to their supply	Overcurrent protective device has been found during the inspection of equipment.	Pass
7.2.9	Overcurrent protective devices	-	-
	Sufficient breaking capacity	In compliance with the requirement.	Pass
	Where fuses are used, a type readily available in the country of use shall be selected, or arrangement shall be made with the user for the supply of spare parts	These fuses comply with the requirements.	Pass
7.2.10	Rating and setting of overcurrent protective devices	-	-
	The rated current of fuses or the setting current of other overcurrent protective devices shall be selected as low as possible but adequate for the anticipated overcurrents	The rating and setting of overcurrent protective device is appropriate.	Pass
	The rated current or setting of an overcurrent protective device is determined by the current carrying capacity of the conductors to be protected by that device in accordance with 13.4	The rating and setting of overcurrent protective device is appropriate.	Pass
7.3	Overload protection of motors	-	-
	Overload protection of motors shall be provided for each motor rated at more than 0.5 kW	Overload protection of motor has been provided for this machine.	Pass
	In applications where an automatic interruption of the motor operation is unacceptable, the overload detection shall give a warning signal to which the operator can respond	No this condition.	N/A
	Detection of overload shall be provided in each live conductor excepted for the neutral conductor	Detection of overload has been provided in each live conductor excepted the neutral conductor.	Pass
	For motors having single-phase or d.c. power supplies, detection in only one unearthed live conductor is permitted	No single-phase or d.c power supply.	N/A
	Automatic restarting of any motor after the operation of overload protection shall be prevented	In compliance with the requirement.	Pass
7.4	Abnormal temperature protection	-	-
	Use of abnormal temperature protection	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
7.5	Protection against supply interruption or voltage reduction and subsequent restoration	-	-
	Where a voltage drop or a supply interruption can cause a hazardous condition, damage to the machine, or to the work in progress, under- voltage protection shall be provided	Those wouldn't cause the hazardous condition in this line.	N/A
	The operation of the under-voltage device shall not impair the operation of any stopping control of the machine	In compliance with the requirement.	Pass
	Upon restoration of the voltage or upon switching on the incoming supply, automatic or unexpected restarting of the machine shall be prevented	Not applicable.	N/A
	Where only a part of the machine or of the group of machines working together in a coordinated manner is affected by the voltage reduction or supply interruption, the undervoltage protection shall initiate appropriate control responses to ensure co-ordination	In compliance with the requirement.	Pass
7.6	Motor overspeed protection	-	-
	Use of the motor overspeed protection	Overcurrent protection devices have been provided.	N/A
7.7	Earth fault/residual current protection	-	-
	Use of earth fault/residual current protection for automatic disconnection	Not applicable.	N/A
7.8	Phase sequence protection	-	-
	Where an incorrect sequence of the supply voltage can cause a hazardous condition or damage to the machine, protection shall be provided	It is complied with.	Pass
7.9	Protection against overvoltage due to lighting and to switching surges	-	-
	Protective devices can be provided to protect against the effects of overvoltages due to lighting or to switching surges	Not applicable.	N/A
8	Equipotential bonding	-	-
8.1	General	-	-
8.2	Protective bonding circuit	-	-
8.2.1	General	-	-
	On mobile machines with on-board power supplies, it shall be connected to a protective bonding terminal to provide	No mobile machines have been found.	N/A

Clause	Requirement - test	Result	Verdict
	protection against electric shock		
	When a mobile machine is also capable of being connected to an external incoming supply, the protective bonding terminal shall be the connection point for the external protective conductor	No mobile machines.	N/A
	All parts of the protective bonding circuit shall be so designed that they are capable of withstanding the highest thermal and mechanical stresses	It is complied with the requirement	Pass
	Any structural part of the electrical equipment or of the machine may be used as part of protective bonding circuit	Some of structural part has been provide as part of provided bonding circuit so as to get the better effect for protective bonding.	Pass
	If an IT distribution system is used, the machine structure shall be used as part of the protective bonding circuit in conjunction with an earth fault supervision system	Not applicable.	N/A
	The structural bonding is not required where all the equipment provided is in accordance with 6.3.2.2	Some of structural parts have been provided as part of protective bonding circuit so as to get the better effect of protective bonding.	Pass
8.2.2	Protective conductors	-	-
	Protective conductors shall be identified according to 14.2.2	Appropriate identification has been made in accordance with 14.2.2	Pass
	Copper conductors should be used	Copper conductors are used.	Pass
	Where a conductor material other than copper is used, its electrical resistance per unit length shall not exceed that of the allowable copper conductor and such conductors shall not be less than 16 mm^2 in cross-sectional area	Not applicable.	N/A
	The cross-sectional area of protective conductors shall be determined according to the requirements of : - 543 of IEC 60364-5-54; or - 7.4.3.1.7 of IEC 60439-1, as appropriate	The cross sectional area of protective conductors is complied with appropriate requirements.	Pass
8.2.3	Continuity of the protective bonding circuit	-	-
	All exposed conductive parts shall be connected to the protective bonding	It is complied with.	Pass

Clause	Requirement - test	Result	Verdict
	circuit		
	Where a part is removed for any reason, the protective bonding circuit for the remaining parts shall not be interrupted	It is complied with.	Pass
	Connection and bonding points shall be so designed that their current-carrying capacity is not impaired by mechanical, chemical, or electrochemical influence	It is complied with.	Pass
	Metal ducts of flexible or rigid construction and metallic cable sheathes shall not be used as protective bonding conductors	It is complied with.	Pass
	Nevertheless such metal ducts and the metal sheathing of all connecting cables shall be connected to the protective bonding circuit	Not applicable.	N/A
	Where the electrical equipment is mounted on lids, doors, or cover plates, continuity of the protective bonding circuit shall be ensured and it is recommended that a protective conductor is used	It is complied with.	Pass
	Otherwise fastenings, hinges or sliding contacts designed to have a low resistance shall be used	Not applicable.	N/A
	The continuity of the protective conductor in cables that are exposed to damage shall be ensured by appropriate measures	It is complied with.	Pass
	For requirements for the continuity of the protective conductor using collector wires, collector bars and slip-ring assemblies (see 13.8.2)	It is complied with.	Pass
8.2.4	Exclusion of switching devices from the protective bonding circuit	-	-
	Shall not incorporate a switching device, an overcurrent protective device nor a means for current detection for such devices	It is complied with.	Pass
	The only means permitted for interruption shall be carried out b y instructed or skilled persons by using a tool	I It is complied with.	Pass
8.2.5	Parts that need not to be connected to the protective bonding circuit	No connection of protective bonding circuit between screws, rivets, and magnetic contactor	Pass
8.2.6	Interruption of the protective bonding circuits		

Clause	Requirement - test	Result	Verdict
		I It is complied with.	Pass
8.2.7	Protective conductor connecting points	-	-
	All protective conductors shall be terminated in accordance with 14.1.1	Check with clause 14.1.1	Pass
	Shall have no other function and shall not be used to attach or connect appliances or parts	They have no other function and are used to attach or connect appliances or parts.	Pass
	Use of earthing symbol	Earthing symbol is used.	Pass
	By the bicolour combination GREEN-AND-YELLOW	It is in compliance with this requirement.	Pass
8.3	Bonding for operational purposes		
8.3.1	General	-	-
8.3.2	Bonding to the protective circuit	-	-
	One method for protection against unintended operation as a result of insulation failure is achieved by connecting one side of a control circuit fed by a transformer to the protective bonding circuit	Not applicable.	N/A
8.3.3	Bonding to a common reference potential	-	-
	Use of bonding to a common reference potential	No this situation.	N/A
9	Control circuits and control functions	-	-
9.1	Control circuits	-	-
9.1.1	Control circuit supply	-	-
	Transformers shall be used for supplying the control circuits	It is in compliance with this requirement.	Pass
9.1.2	Control circuit voltages	-	-
	The nominal voltage shall not exceed 277 V when supplied from a transformer	The nominal voltage supplied from transformer is not exceed 277V.	Pass
9.1.3	Protection	-	-
	Overcurrent protection shall be provided according to 7.2.4 and 7.2.10	Appropriate overcurrent protective has been provided for the control circuit.	Pass
9.1.4	Connection of control devices	-	-
	Appropriate connection for control devices	The relevant information for the connection of control device has	

Clause	Requirement - test	Result	Verdict
		been provided.	Pass
9.2	Control functions	-	-
9.2.1	Start functions	-	-
	Start functions shall operate by energizing the relevant circuit	Start function are operated properly.	Pass
9.2.2	Stop functions	-	-
	Each machine shall be equipped with appropriate stop functions	Appropriate stop function is adopted for this machine.	Pass
9.2.3	Operating modes	-	-
	When hazardous conditions can arise from mode selection, such selection shall be prevented by suitable means	The entire different operation mode has been well protected under the same safety device of this machine.	Pass
	Mode selection by itself shall not initiate machine operation (A separate action by the operator shall be required)	No any additional mode selection other than the start operation is used for this machine.	Pass
	Safeguarding shall remain effective for all operating modes	The safeguarding means remain effective for the all three different operation mode.	Pass
	Indication of the selected operating mode shall be provided	Indication of the selected operating mode has been provided for this machine.	Pass
9.2.4	Suspensions of safeguarding	-	-
	Where it is necessary to suspend safeguarding, a secure provision shall be provided to prevent automatic operation	Not applicable	N/A
9.2.5	Operation	-	-
9.2.5.1	General	-	-
	The necessary interlocks(see 9.3) shall be provided for safe operation	No interlocks	N/A
	Measures shall be taken to prevent movement of the machine in an unintended manner after any stopping of the machine	Not applicable	N/A
9.2.5.2	Start	-	-
	The start of an operation shall be possible only when all the safeguards are in place and functional (except described in 9.2.4)	The start of an operation is possible only when all the safeguards are in place and	

Clause	Requirement - test	Result	Verdict
		function.	Pass
	Hold-to-run control shall be used for the others machines, as appropriate	Hold-to-run control is used for this extrusion line.	Pass
	Suitable interlocks shall be provided to secure correct sequential starting	Appropriate interlock has been provided for this machine.	Pass
9.2.5.3	Stop	-	-
	Category 0, category 1 and/or category 2 stops shall be provided where indicated by the risk assessment and the functional requirements of the machines	Category 0 stop is provided for the machine.	Pass
	Category 0 and category 1 shall be operational regardless of operating modes and category 0 shall take priority	Category 0 stop is provided for the machine.	Pass
	Stop functions shall override related start functions	Checking from the control circuit, the stop function could override the related start function.	Pass
9.2.5.4	Emergency operations (emergency stop, emergency switching off)	-	-
9.2.5.4.1	General	-	-
9.2.5.4.2	Emergency stop	-	-
	Shall function either as a category o stop or as a category 1 stop	There are category 0 stop.	Pass
	Where a category 0 stop is used for emergency stop function, it shall have only hard-wired electromechanical components	hard-wired electromechanical components	Pass
	The operation of emergency stop shall not depend on electronic logic or on the transmission of commands over a communications network or link	Depend on electromechanical components	Pass
	Where a category 1 stop is used for the emergency stop function, final removal of power to the machine actuators shall be ensured and carried out by means of electromechanical components	Not applicable.	Pass
9.2.5.4.3	Emergency switching off	-	-
	Use of emergency switching off	Not applicable.	N/A
9.2.5.5	Monitoring of command actions	-	-
	Movement or action of a machine or part of a machine that can result in a hazardous condition shall be monitored	Monitors are adopted.	Pass
9.2.5.6	Hold-to-run controls	-	-

Clause	Requirement - test	Result	Verdict
	Hold-to-run controls shall require continuous actuation of the control devices to achieve operation	Hold-to-run control is used for this extrusion line.	Pass
9.2.5.7	Two-hand control	-	-
	Three types of two-hand control are available, the selection of which is determined by the assessment	No two-hand control adopted in the machinery lines.	N/A
9.2.5.8	Enabling device	-	-
	It shall be designed to allow motion when actuated in one position only (In any other position motion shall be stopped)	In compliance with the requirement.	Pass
9.2.6	Combined start and stop controls	-	-
	Push-buttons and similar devices that, when operated, alternately initiate and stop motion shall only be used for functions which cannot result in a hazardous condition	In compliance with the requirement.	Pass
9.2.7	Cableless control	-	-
9.2.7.1	General	-	-
	Means shall be provided to readily remove or disconnect the power supply of the operator control station	Not applicable.	N/A
	Means shall be provided, as necessary, to p revent unauthorized use of the o p erator control station	Not applicable.	N/A
	Each operator control station shall carry an unambiguous indication of which machine is intended to be controlled by that operator control station	Not applicable.	N/A
9.2.7.2	Control limitation	-	-
	Measures shall be taken to prevent the machine from responding to signals other than those from the intended operator control station	Not applicable.	N/A
	Where necessary, means shall be provided so that the machine can only be controlled from o p erator control station in one or more predetermined zones or locations	Not applicable.	N/A
9.2.7.3	Stop	-	-
	Operator control stations shall include a separate and clearly identifiable means to initiate the stop function of the machine or of all the motions that can cause a	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
	hazardous condition		
	The actuating means to initiate this stop function shall not be marked or labelled as an emergency stop device	Not applicable.	N/A
	A machine which is equipped with cableless control shall have a means of automatically initiating the stopping of the machine and of preventing a potentially hazardous operation	Not applicable.	N/A
9.2.7.4	Series data communication	-	-
	In a machine where the control of safety-related functions relies on series data transfer, correct communications shall be ensured by using an error detection method that is able to cope with up to three error bits in any command sequence	Not applicable.	N/A
9.2.7.5	Use of more than one operator control station	-	-
	Where a machine has more than one operator control station, measures shall be taken to ensure that only one control station can be enabled at a given time	Not applicable.	N/A
	An indication of which operator control station is in control of the machine shall be provided at suitable locations as determined by the risk assessment of the machine	Not applicable.	N/A
9.2.7.6	Battery-powered operator control stations	-	-
	A variation in the battery voltage shall not cause a hazardous condition	Not applicable.	N/A
	If one or more potentially hazardous motions are controlled using a battery-powered operator control station, a clear warning shall be given to the operator when a variation in battery voltage exceeds specified limits	Not applicable.	N/A
	Under those circumstances, the operator control station shall remain functional long enough to put the machine into a non-hazardous condition	Not applicable.	N/A
9.3	Protective interlocks	-	-
9.3.1	Reclosing or resetting of an interlocking safeguard	-	-

Clause	Requirement - test	Result	Verdict
	The reclosing or resetting of an interlockin g safe guard shall not initiate machine motion or operation	Not applicable	N/A
9.3.2	Overtravel limits	-	-
	Use of a position sensor or limit switch	Not applicable.	N/A
9.3.3	Operation of auxiliary functions	-	-
	The correct operation of auxiliary functions shall be checked by appropriate devices	In compliance with the requirement	Pass
	Use of appropriate interlocking	Appropriate interlocks are used	Pass
9.3.4	Interlocks between different operations and for contrary motions	-	-
	Interlocking shall be provided against incorrect operation	In compliance with the requirement.	Pass
9.3.5	Reverse current braking	Not applicable.	N/A
9.4	Control functions in the event of failure	-	-
9.4.1	General requirements	-	-
	Provision of control functions in case of failure according to the level of risk assessment	The appropriate provision has been provided.	Pass
9.4.2	Measures to minimize risk in the event of failure	-	-
9.4.2.1	Use of proven circuit techniques and components	The proven circuit and component have been used as far as possible.	Pass
9.4.2.2	Provisions for redundancy	The redundancy for the interlocking of movable door has been constructed.	Pass
9.4.2.3	Use of diversity	Not applicable.	N/A
9.4.2.4	Functional tests	Machine is provided with functional test on the instruction manual.	Pass
9.4.3	Protection against maloperation due to earth faults, voltage interruptions and loss of circuit continuity	-	-
9.4.3.1	Earth faults	According to the circuit diagram, connection of control circuit from transformer is fulfilled with this statement	Pass
9.4.3.2	Voltage interruptions	-	-
	Where a memory device is used, proper functioning in the event of power failure		

Clause	Requirement - test	Result	Verdict
	shall be ensured to prevent any loss of memory that can result in a hazardous condition	Not applicable	N/A
9.4.3.3	Loss of circuit continuity	-	-
	Where the loss of continuity of safety-related control circuits depending upon sliding contacts can result in a hazardous condition, appropriate measures shall be taken	For this machine, no this kind of risk is found.	N/A
10	Operator interface and machine-mounted control devices	-	-
10.1	General	-	-
10.1.1	General device requirements	-	-
	As far as is practicable, those devices shall be selected, mounted, and identified or coded according to IEC 60073 and IEC 60437	Mostly the relevant standard has been followed.	Pass
10.1.2	Location and mounting	-	-
	Appropriate location mounting for machine- mounted and hand- operated control devices	The mounting of control device has followed the requirement.	Pass
10.1.3	Protection	-	-
	Operator and machine mounted control devices shall withstand the stress of expected use	The appropriate specification of component used has been provided to withstand the stress of expected use.	Pass
	The operator interface control devices shall have a min. degree of protection : IPXXD	In compliance with the requirement.	Pass
10.1.4	Position sensors	-	-
	Position sensors shall not be damaged in the event of overtravel	Not applicable	N/A
	Position sensors used in circuits with safety-related functions either shall have positive opening operation or shall provide similar reliability	The necessary positive opening operation for the protection device has been provided.	Pass
10.1.5	Portable and pendant control stations	-	-
	Portable and pendant control stations and their control devices shall be so selected and arranged as to minimize the possibility of inadvertent machine	No portable and pendant control station is used.	N/A

Clause	Requirement - test	Result	Verdict
	operations caused by shocks and vibrations		
10.2	Push-buttons	-	-
10.2.1	Colors	-	-
	Push-button actuators shall be color-coded according to table 2	Suitable colors are chosen according to table 2.	Pass
10.2.2	Markings	-	-
	Use of adequate markings for push-buttons	Appropriate marking for push buttons have been checked.	Pass
10.3	Indicator lights and displays	-	-
10.3.1	Modes of use	The models of indicating lights have been indicated.	Pass
10.3.2	Colors	-	-
	Color-coded according to table 3 (Unless otherwise agree between the supplier and the user)	Suitable colors are chosen according to table 3.	N/A
10.3.3	Flashing lights	-	-
	Use of flashing lights	No this situation.	N/A
10.4	Illuminated push-buttons	-	-
	Colour-coded according to table 2 and 3	Colour-coded according to table 2 and 3	Pass
10.5	Rotary control devices	-	-
	Devices having a rotational member shall be mounted to prevent rotation of the stationary member (Friction alone shall not be sufficient)	It has been complied with.	Pass
10.6	Start devices	-	-
	Shall be constructed and mounted to minimise inadvertent operation	Start device is so constructed and mounted that could minimize inadvertent operation.	Pass
10.7	Devices for emergency stop	-	-
10.7.1	Location	Emergency stop device is adopted.	Pass
10.7.2	Types	-	-

Clause	Requirement - test	Result	Verdict
	Use of type - a push-button operated switch - a pull-cord operated switch - a pedal-operated switch without a mechanical guard	Use push-button operated switch.	Pass
	Shall be of the self-latching type and shall have positive opening operation	positive opening operation	Pass
10.7.3	Restoration of normal function after emergency stop	-	-
	It shall not be possible to restore an emergency stop circuit until all emergency stop devices have been manually reset	In compliance with the requirement.	Pass
10.7.4	Actuators	-	-
	Shall be colored Red and background be colored Yellow	Colored red and background be colored yellow.	Pass
	The actuator of a push-button operated switch shall be of the palm or mushroom head type	Mushroom head type	Pass
10.7.5	Local operation of the supply disconnecting device to effect emergency stop	-	-
	The supply disconnecting device may be locally operated to serve the function of emergency stop when : - readily accessible of the type described in 5.3.2 a), b) or c)	In compliance with the requirement.	Pass
	It shall meet the colour requirements of 10.7.4	In compliance with the requirement.	Pass
10.8	Devices for emergency switching off	-	-
10.8.1	Location	-	-
	Emergency switching off devices shall be located as necessary for the given application	In compliance with the requirement.	Pass
10.8.2	Types		
	The type of device for emergency switching off include : - a push-button operated switch; a pull-cord operated switch	A push-button operated switch is used	Pass
	The devices shall be of the self-latching type and shall have positive (or direct) opening operation	In compliance with the requirement.	Pass
	The push-button operated switch may be in a break-glass enclosure	In compliance with the requirement.	Pass
10.8.3	Restoration of normal function after	-	-

Clause	Requirement - test	Result	Verdict
	emergency switching off		
	It shall not possible to restore an emergency switching off circuit until the emergency switching off device has been manually reset	In compliance with the requirement.	Pass
10.8.4	Actuators		
	Shall be coloured RED	Used Red.	Pass
	The background immediately around the device actuator should be coloured YELLOW	In compliance with the requirement.	Pass
	The actuator of a push-button operated emergency switching off device shall be of the palm or mushroom head type	Use mushroom head type	Pass
10.8.5	Local operation of the supply disconnecting device to effect emergency switching off	In compliance with the requirement.	Pass
	Where the supply disconnecting device is to be locally operated for emergency switching off, it shall be readily accessible and should meet the colour requirements of 10.8.4	In compliance with the requirement.	Pass
10.9	Displays	-	-
	Displays shall be selected and installed in such a manner as to be visible from the normal position of the operator	In compliance with the requirement.	Pass
11	Electronic equipment		
11.1	General		
11.2	Basic requirements	-	-
11.2.1	Inputs and outputs	-	-
	Status indication of all digital inputs and outputs should be provided	In compliance with the requirement.	Pass
11.2.2	Equipotential bonding		
	Electrically bonded together according to the supplier’s specifications	In compliance with the requirement.	Pass
11.3	Programmable equipment	-	-
11.3.1	Programmable controllers	-	-
	Programmable controllers shall conform to relevant IEC standards	Not applicable	NA
11.3.2	Memory retention and protection	-	-
	Means shall be provided to prevent memory alternation by unauthorized persons and the requirements detailed in 9.4.3.2 shall apply	In compliance with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
11.3.3	Software verification	-	-
	Shall have means for verifying	Not applicable.	N/A
11.3.4	Use in safety-related functions	-	-
	Programming electronic equipment shall not be used for category 0 emergency stop functions	Not applicable.	N/A
12	Controlgear: location, mounting, and enclosures	-	-
12.1	General requirements	-	-
12.2	Location and mounting	-	-
12.2.1	Accessibility and maintenance	-	-
	All controlgears can be identified without moving or the wiring	All controlgears could be identified without moving or the wiring.	Pass
	Replacement without dismantling other equipment or parts of the machine	Easy replacement of parts has been found.	Pass
	Terminals not associated with controlgear shall also comply with the requirements mentioned above	All the terminals are found to comply with the requirement mentioned above.	Pass
	Facilitate operation and maintenance from the front	The control gears of this machine are found to facilitate operation and maintenance from the front	Pass
	Use of special tools(if necessary)	Not required.	N/A
	If access is required for regular maintenance or adjustment, the devices shall be located between 0.4 m and 2.0 m above the severing leve	Not required.	N/A
	It is recommended that terminals be at least 0.2 m above the servicing level and so placed that connectors and cables can be easily connected to them	No any terminal was located at the position, which is lower than 0.2m form ground plane.	N/A
	Except those for operating, indicating, measuring and cooling, no devices shall be mounted on doors, and normally removable access covers, of enclosures	Only operational and indication component was found at the door of control cabinet.	Pass
	If control devices are connected through plug-in arrangements, their association shall be made clear by type(shape), marking or designation, singly or in combination	No this kind of device is provided for this machine.	N/A
	Plug-in devices shall be provided with non-interchangeable features	No plug-in device is used for this machine.	N/A

Clause	Requirement - test	Result	Verdict
	Use of plug/socket combinations shall be unobstructed access	No plug/socket combination.	N/A
12.2.2	Physical separation or grouping	-	-
	Non-electrical parts and devices not directly associated with the electrical equipment shall not be located within enclosures containing control gear	No non-electrical part is found within the enclosure containing control gear.	Pass
	Devices such as solenoid valves should be separated from the other electrical equipment	In compliance with the requirement.	Pass
	Control devices mounted in the same location and connected to the supply voltage, or to both supply and control voltages, shall be grouped separately from those connected only to the control voltages	Appropriate separation has been made between the circuits of connected to supply voltage and the control voltage.	Pass
	Terminals shall be separated into groups for : - power circuits; - associated control circuits other control circuits, fed from external sources	Appropriate separation has been checked between the terminal of power circuit and control circuit.	Pass
	The clearances and creepage distances specified for the devices shall be maintained	The clearances and creepage distances for the devices could be maintained.	Pass
12.2.3	Heating effects	-	-
	Heat generating components shall be located so that the temperature of each component in the vicinity remains within the permitted limit	In compliance with the requirement.	Pass
12.3	Degrees of protection	-	-
	Enclosures of controlgear : at least IP 22	The degree of protection of control enclosure is found to be greater than IP22.	Pass
12.4	Enclosures, doors and openings	-	-
	Enclosure shall be constructed using materials capable of withstanding the mechanical, electrical and thermal stresses	The material of control enclosure is SS-43 steel plate, witch is found capable of withstand the mechanical, electrical and thermal stresses.	Pass
	Fasteners used to secure doors and covers should be of the captive type	Fasteners used to secure the cover of control enclosure are found to be captive type.	Pass
	Windows provided for viewing internally	The door of control enclosure has	Pass

Clause	Requirement - test	Result	Verdict
	mounted indicating devices shall be of a material suitable to withstand mechanical stress and chemical attack	been checked to meet the requirement of this clause.	
	It is recommended that enclosures doors shall have: - Not wider than 0.9 m - Vertical hinges - Lift-off type Angle of opening at least 95 °	The door of control enclosure has been checked to meet the requirement of this clause.	Pass
	If enclosures which readily allow a person fully to enter, the relevant requirements specified in this clause shall be comply	Not applicable.	N/A
	The joints or gaskets of doors, lids, covers and enclosures shall withstand the chemical effects of the aggressive liquids, vapours, or gases used on the machine	In compliance with the requirement.	Pass
	The means used to maintain the degree of protection of an enclosure on doors, lids and covers that require opening or removal for operation or maintenance shall be secured	In compliance with the requirement.	Pass
	The degree of protection for all openings in the enclosures shall be secured	In compliance with the requirement.	Pass
	Openings for cable shall be easily re-opened on site	In compliance with the requirement.	Pass
	There shall be no opening between enclosures containing electrical equipment and compartments containing coolant, lubricating or hydraulic fluids, or those into which oil, other liquids, or dust can penetrate	In compliance with the requirement.	Pass
	The requirement mentioned above does not apply to electrical devices specially designed to operate in oil nor to electrical equipment in which coolants are used		
	Where there are holes in an enclosure for mounting purpose, the degree of protection for the enclosure shall be secured	No this situation.	N/A
	Equipment that, can attain a surface temperature sufficient to cause a risk of fire or harmful effect to an enclosure	In compliance with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	material, the relevant requirements shall be complied		
12.5	Access to controlgear	-	-
	The min. dimensions of gangways in front of and between controlgear shall be according to 481.2.4 of IEC 60364-4-481	Not applicable.	N/A
	Doors in gangways and for access to electrical operating areas shall: - be at least 0.7 m wide and 2.0 m high; - open outward; have a means to allow opening from the inside without the use of a key or tool	Not applicable.	N/A
13	Conductors and cables	-	-
13.1	General requirements	-	-
	Conductors and cables shall be selected so as to be suitable for the operating conditions and external influences	Conductors and cables are selected so as to be suitable for the operating conditions and external influences.	Pass
13.2	Conductors	-	-
	Conductors shall be of copper	Conductors are made of copper.	Pass
	Conductors of any other material shall have a nominal cross-sectional area such that, carrying the same current, the max. temperature shall not exceed the value given in table 4	Not applicable.	N/A
	If aluminium is used, the cross-sectional area shall be at least 16 mm^2	Not applicable.	N/A
	All conductors that are subject to frequent movement shall have flexible stranding of class 5 or class 6 (see table C.4)	Class 5 conductor is used for the conductor of movable part.	Pass
13.3	Insulation	-	-
	Dielectric strength test for insulation conductors and cables : - 2000 V a.c. for a duration of 5 min. (for operating voltage higher than 50 V a.c. or 120 V d.c.) - 500 V a.c. for a duration of 5 min. (for separate PELV circuit)	2000Vac for duration of 5 min is used for this dielectric strength test of insulation conductors.	Pass
	The mechanical strength and thickness of the insulation shall not be damaged in operation or during laying, especially for cables pulled into ducts	The mechanical strength and thickness of the insulation has no damage in operation or during laying.	Pass
13.4	Current-carrying capacity in normal	-	-

Clause	Requirement - test	Result	Verdict
	service		
	Max. allowable temperature for conductors shall not exceed the values given in table 4	Temperature rise for conductors have been tested under the limit of table 4.	Pass
13.5	Conductor and cable voltage drop	-	-
	The voltage drop for conductors and cables shall not exceed 5 % of the nominal voltage	In compliance with the requirement.	Pass
13.6	Minimum cross-section area	-	-
	To ensure adequate mechanical strength, the cross-sectional area of conductors should not be less than as shown in table 6	In compliance with the requirement.	Pass
13.7	Flexible cables	-	-
13.7.1	General	-	-
	Flexible cables shall have class 5 or class 6 conductors	The class 6 flexible cable is provided for this equipment.	Pass
	Cables that are subjected to severe duties shall be of adequate construction	Not applicable.	N/A
13.7.2	Mechanical rating	-	-
	The tensile stress for copper conductors shall not exceed 15 N/mm^2 of the copper cross-sectional area	In compliance with the requirement.	Pass
	If the demands of the application exceed the tensile stress limit of 15 N/mm^2, cables with special construction features should be used and the allowed max. tensile stress strength should be agreed with the cable manufacturer	Not applicable.	N/A
13.7.3	Current-carry capacity of cables wound on drums	-	-
	Cables to be wound on drums shall be selected with conductors having a cross-sectional area such that, when fully wound on the drum and carrying the normal service load, the max. allowable conductor temperature is not exceeded	Not applicable.	N/A
	For cables of circular cross-sectional area installed on drums, the max. current-carrying capacity in free air should be derated according to table 7	Not applicable.	N/A
13.8	Collector wires, collector bars and	-	-

Clause	Requirement - test	Result	Verdict
	slip-ring assemblies		
13.8.1	Protection against direct contact	-	-
	Collector wires, collector bars and slip-ring assemblies shall be installed or enclosed by the application of one of the following protective measures: - by partial insulation of live parts by enclosures or barriers of at least IP2X	Every wires are protected with the control enclosure of IP3X	Pass
	Min. protection degree of horizontal top surface of barriers or enclosures that are readily accessible : IP4X	The degree of protection for the horizontal top surface of control enclosure is IP54.	Pass
	If the required degree of protection is not achieved, protection by placing live parts out of reach in combination with emergency switching off according to 9.2.5.4.3 shall be applied	Not applicable.	N/A
	Collector wires and collector bars shall be so placed and/or protected as to : - prevent contact - prevent damage from a swinging load	In compliance with the requirement.	Pass
13.8.2	Protective conductor circuit	-	-
	Where collector wires, collector bars and slip-ring assemblies are installed as part of the protective bonding circuit, they shall not carry current in normal operation	Not applicable.	N/A
	The of the protective conductor circuit using sliding contacts shall be ensured by taking appropriate measures	Not applicable.	N/A
13.8.3	Protective conductor current collectors	-	-
	Not interchangeable with the other current collectors	Not applicable.	N/A
	Not interchangeable with the other current collectors	Not applicable.	N/A
	such current collectors shall be of the sliding contact type	Not applicable.	N/A
13.8.4	Removable current collectors with a disconnector function	-	-
	Shall be so designed that the protective conductor circuit is interrupted only after the live conductors have been disconnected, and the continuity of the protective conductor circuit is re-established before any live conductor is reconnected	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
13.8.5	Clearance in air	-	-
	Shall be suitable for operation in pollution degree 3 conditions	Not applicable.	N/A
13.8.6	Creepage distances	-	-
	Shall be suitable for operation in pollution degree 3 conditions	Not applicable.	N/A
13.8.7	Conductor system sectioning	-	-
	If collector wires or collector bars can be divided into isolated sections, suitable design measures shall be employed to prevent the energization of adjacent sections by the current collectors themselves	Not applicable.	N/A
13.8.8	Construction and installation of collector wire, collector bar systems and slip-ring assemblies	-	-
	Used for power circuits shall be grouped separately from those used for control circuit	Not applicable.	N/A
	Shall be capable of withstanding, without damage, the mechanical forces and thermal effects of short-circuit currents	Not applicable.	N/A
	Removable covers shall not be opened by one person without the aid of a tool	Not applicable.	N/A
	If collector bars are installed in a common metal enclosure, the individual sections of the enclosure shall be bonded together and earthed at several points depending upon their length	Not applicable.	N/A
	Metal covers of collector bar laid underground or underfloor shall also be bonded together and earthed	-	-
	Underground and underfloor collector bar ducts shall have drainage facilities	-	-
14	Wiring practices	-	-
14.1	Connections and routing	-	-
14.1.1	General requirements	-	-
	All connections shall be secured against accidental loosening	In compliance with the requirement.	Pass
	The means of connection shall be suitable for the cross-sectional areas and neutral of the conductors being terminated	In compliance with the requirement.	Pass
	The connection of two or more conductors to one terminal is permitted		

Clause	Requirement - test	Result	Verdict
	(only when the terminal is designed for that purpose)	In compliance with the requirement.	Pass
	One protective bonding circuit conductor shall be connected to one terminal connecting point	In compliance with the requirement.	Pass
	Soldered connections shall only be permitted if terminals are suitable for soldering	In compliance with the requirement.	Pass
	Terminals on terminal blocks shall be plainly identified to correspond with markings on the diagrams	In compliance with the requirement.	Pass
	The installation of flexible conduits and cables shall be such that liquids shall drain away from the fittings	In compliance with the requirement.	Pass
	Means of retaining conductor strands shall be provided (Solder shall not be used for that purpose)	In compliance with the requirement.	Pass
	Shielded conductors shall be so terminated as to prevent fraying of strands and to permit easy disconnection	In compliance with the requirement.	Pass
	Identification tags shall be legible, permanent, and appropriate for the physical environment	In compliance with the requirement.	Pass
	Terminal blocks shall be so mounted and wired, that the internal and external wiring does not cross over the terminals	In compliance with the requirement.	Pass
14.1.2	Conductor and cable runs	-	-
	Shall be run from terminal to terminal without splices or joints	In compliance with the requirement.	Pass
	If it is necessary to connect and disconnect cables assemblies, a sufficient extra length shall be provided	In compliance with the requirement.	Pass
	The terminations of cables shall be adequately supported to prevent mechanical stresses at the terminations of the conductors	In compliance with the requirement.	Pass
14.1.3	Conductors of different circuits	In compliance with the requirement.	Pass
14.2	Identification of conductors	-	-
14.2.1	General requirements	-	-
	Conductors shall be identifiable at each		

Clause	Requirement - test	Result	Verdict
	termination according to the technical documentation (see clause 18)	In compliance with the requirement.	Pass
	Use of colour-coding for identification of conductors	Appropriate color has been used for the identification.	Pass
	Colour GREEN or YELLOW should not be used	In compliance with the requirement.	Pass
14.2.2	Identification of the protective conductor	-	-
	Shall be readily distinguishable by shape, location, marking or colour	By the bicolour conductor GREEN-AND-YELLOW.	Pass
	When identification is by colour alone, the bicolour combination GREEN-AND-YELLOW shall be used	Green-and-Yellow was used when indentification.	Pass
	For the bicolour combination GREEN-AND-YELLOW : one of the colour covers at least 30% and not more than 70 % of the surface of the conductor, the other colour covering the remainder of the surface	Appropriate proportion of color has been checked for the earth conductors.	Pass
	Use of graphical symbol	In compliance with the requirement.	Pass
14.2.3	Identification of the neutral conductor	-	-
	The colour shall be Light Blue	In compliance with the requirement.	Pass
	Requirements for bare conductors used as neutral conductors	In compliance with the requirement.	Pass
14.2.4	Identification of other conductors	-	-
	Identification of other conductors shall be by colour, number, alphanumeric, or a combination of colour and numbers or alphanumeric	In compliance with the requirement.	Pass
14.3	Wiring inside enclosures	-	-
	Panel conductors shall be supported where necessary to keep them in place	In compliance with the requirement.	Pass
	Non-metallic ducts shall be permitted only when they are made with a flame-retardant insulating material	In compliance with the requirement.	Pass
	Connections to devices mounted on doors or to other movable parts shall be made using flexible conductors according to 13.2	In compliance with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	The conductors shall be anchored to the fixed part and to the movable part independently of the electrical connection	In compliance with the requirement.	Pass
	Conductors and cables that do not run in ducts shall be adequately supported	In compliance with the requirement.	Pass
	Terminal blocks or plug-socket combinations shall be used for control wiring that extends beyond the enclosure	In compliance with the requirement.	Pass
14.4	Wiring outside enclosures	-	-
14.4.1	General requirements	-	-
	The protection degree shall be ensured when cables or ducts are introduced into the enclosure	In compliance with the requirement.	Pass
14.4.2	External ducts	-	-
	Shall be enclosed in suitable ducts as described in 14.5 except for suitably protected cables	Suitable protections have been offered.	Pass
	Fittings used with ducts or Multi-conductor cable shall be suitable for the physical environment	In compliance with the requirement.	Pass
	Flexible conduit or flexible Multi-conductor cable shall be used where it is necessary to employ flexible connections to pendant push-button stations	In compliance with the requirement.	Pass
	The weight of the pendant stations shall be supported by means other than the flexible conduit or the flexible multi-conductor cable	In compliance with the requirement.	Pass
	Flexible conduit or flexible Multi-conductor cable shall be used for connections involving small or infrequent movements	In compliance with the requirement.	Pass
14.4.3	Connection to moving elements of the machine	-	-
	Connection to frequently moving parts shall be made using conductors according to 13.2	The appropriate conductor has been chosen according to the requirement of 13.2	Pass
	Flexible cable and flexible conduit shall be so installed as to avoid excess flexing and straining, particularity at the fittings	Flexible cable and flexible conduit have been so installed as to avoid excess flexing and straining,	Pass

Clause	Requirement - test	Result	Verdict
		particularity at the fittings.	
	Cables subject to movement shall be supported in such a way that there is no mechanical strain on the connection points nor any sharp flexing	In compliance with the requirement.	Pass
	If the requirement mentioned above is achieved by using of a loop, it shall have sufficient length to provide for a bending radius of the cable of at least 10 times the diameter of the cable	In compliance with the requirement.	Pass
	Flexible cables of machines shall be protected to minimize the possibility of external damage	In compliance with the requirement.	Pass
	The cable sheath shall be resistant to the normal wear that can be expected from movement and to the effects of atmospheric contaminants	In compliance with the requirement.	Pass
	If cables subject to movement are close to moving parts, it shall have a space of at least 25 mm between the moving parts and the cables	In compliance with the requirement.	Pass
	Where the distance mentioned above is not practicable, fixed barriers shall be provided between the cables and the moving parts	Not applicable.	N/A
	The cable handing system shall be so designed that the lateral cable angles do not exceed 5 °, avoiding torsion in the cable	In compliance with the requirement.	Pass
	Measures shall be taken to ensure that at least two turns of flexible cables always remain on a drum	In compliance with the requirement.	Pass
	Min. permitted bending radii for the forced guiding of flexible cables shall not less than the values given in table 8	In compliance with the requirement.	Pass
	The strength section between two bends in an S-shaped length or a bend into another plane shall be at least 20 times the diameter of the cable	In compliance with the requirement.	Pass
	Where flexible conduit is adjacent to moving parts, the construction and supporting means shall prevent damage to the flexible conduit under all conditions of operation	In compliance with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	Flexible metallic conduit shall not be used for rapid or frequent movements	In compliance with the requirement.	Pass
14.4.4	Interconnection of devices on the machine	-	-
	The connections shall be made through terminals forming intermediate test points	In compliance with the requirement.	Pass
	Such terminals shall be conveniently placed, adequately protected, and shown on the relevant diagrams	In compliance with the requirement.	Pass
14.4.5	Plug/socket combinations	-	-
	Shall be of adequate size and shall have sufficient contact pressure and a wiping action to ensure electrical continuity	No plug/socket combination is used for this machine.	N/A
	Clearances between contacts shall be adequate for the voltages used and shall be maintained during insertion and removal of the connectors	Not applicable.	N/A
	Prevent unintentional contact with live parts at any time	Not applicable.	N/A
	Protective bonding circuit connection shall be made before any live connections are made, and shall not disconnected until all live connections in the plug are disconnected	Not applicable.	N/A
	Rated at more than 16 A or that remain connected during normal service shall be of a remaining type to prevent unintended disconnection	Not applicable.	N/A
	Rated at 63 A or above shall be of an interlocked type with a switch, so that connection and disconnection is possible only when the switch is in the OFF position	Not applicable.	N/A
	If more than one plug-socket combination is used in the same electrical equipment, they shall be clearly identifiable	Not applicable.	N/A
	It is recommended that mechanical coding be used to prevent incorrect insertion	Not applicable.	N/A
	According to IEC 60309-1 or of a type used for domestic application shall not be used for control circuits	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
14.4.6	Dismantling for shipment	-	-
	Terminals shall be suitably enclosed and plug/socket combinations shall be protected from the physical environment during transportation and storage	Compliance with inspection of instruction manual	Pass
14.4.7	Additional conductors	-	-
	Spare conductors shall be connected to spare terminals or isolated to prevent contact with live parts	Spare conductors have been connected to spare terminals.	Pass
14.5	Ducts, connection boxes and other boxes	-	-
14.5.1	General requirements	-	-
	Min. protection degree for ducts : IP 33	It is complied with.	Pass
	Appropriate protection for conductors insulation	It is complied with.	Pass
	Drain holes of 6 mm diameter are permitted	It is complied with.	Pass
	Ducts and cables trays shall be rigidly supported and positioned at a sufficient distance from moving parts	It is complied with..	Pass
	In areas where human passage is required, the ducts and cable trays shall be mounted at least 2 m above the working surface	It is complied with.	Pass
	Ducts shall be provided only for mechanical protection	It is complied with.	Pass
	Cable trays that are partially covered should not be considered to be ducts or cable trunking system, and the cables used shall be suitable for installation on cable trays	It is complied with.	Pass
14.5.2	Percentage fill of ducts	-	-
	The dimensions and arrangement of the ducts be such as to facilitate the insertion of the conductors and cables	It is complied with.	Pass
14.5.3	Rigid metal conduit and fittings	-	-
	Shall be of galvanized steel or of a corrosion-resistant material	It is complied with.	Pass
	Conduits shall be securely held in place and supported at each end	It is complied with.	Pass
	Fittings shall be threaded	It is complied with.	Pass
	Where threadless fittings are used, the conduit shall be securely fastened to the equipment	It is complied with.	Pass

Clause	Requirement - test	Result	Verdict
	The conduit shall not be damage and the internal diameter of the conduit shall not be effectively reduced when it is bent	It is complied with.	Pass
14.5.4	Flexible metal conduit and fittings	-	-
	Flexible metal tubing and suitable for the expected physical environment	No metal conduit is used in this extrusion line.	N/A
14.5.5	Flexible non-metal conduit and fittings	-	-
	Shall be resistant to kinking and suitable for the expected physical environment	It is in compliance with this requirement	Pass
14.5.6	Cable trunking systems	-	-
	Shall be rigidly supported and clear of all moving or contaminating portions of the machine	Not applicable.	N/A
	Covers shall be shaped to overlap the sides; gasket shall be permitted	Not applicable.	N/A
	Covers shall be attached to cable trunking systems by hinges or chain and held closed by means of captive screws or other suitable fasteners	Not applicable.	N/A
	On horizontal cable trunking systems, the cover shall not be on the bottom	Not applicable.	N/A
	Where the cable trunking system is furnished in sections, the joints between sections shall fit tightly but need not be gasketed	Not applicable.	N/A
	The only openings permitted shall be those required for wiring or for drainage	Not applicable.	N/A
	Cable trunking systems shall not have opened but unused knockouts	Not applicable.	N/A
14.5.7	Machines compartments and cable trunking systems	-	-
	Are isolated from coolant or oil reservoirs and are entirely enclosed	Not applicable.	N/A
	Conductors run in enclosed compartment and cable trunking systems shall be so secured and arranged that they are not subject to damage	Not applicable.	N/A
14.5.8	Connection boxes and other boxes	-	-
	Shall be readily accessible for maintenance	In compliance with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	Shall provide protection against the ingress of solid bodies and liquids	In compliance with the requirement.	Pass
	Shall not have opened but unused knockouts nor any other opening and shall be so constructed as to exclude materials such as dust, flyings, oil, and coolant	In compliance with the requirement.	Pass
14.5.9	Motor connection boxes	-	-
	Shall enclose only connections to the motor and motor-mounted devices	In compliance with the requirement.	Pass
15	Electric motors and associated equipment	-	-
15.1	General requirements	-	-
	Electric motor should conform to the requirements of IEC 60034-1	In compliance with the requirement.	Pass
	Motor control equipment shall be located and mounted according to clause 12	In compliance with the requirement.	Pass
15.2	Motor enclosures	-	-
	Protection degree shall be at least IP 23	Protection degree of motor enclosure is IP 33.	Pass
15.3	Motor dimensions	-	-
	As far as is practicable, the dimensions of the motors shall comply with IEC 60072-1 and IEC 60072-2	The dimensions of the motors have been compliance with IEC 60072-1 and IEC 60072-2.	Pass
15.4	Motor mounting and compartments	-	-
	Each motor and its associated couplings, belts and pulleys, or chains, shall be so mounted that they are adequately protected and are easily for inspection	Appropriate mounting are offered.	Pass
	Shall be such that all motor hold-down means can be removed and all terminal boxes are accessible	In compliance with the requirement.	Pass
	The proper cooling shall be ensured and the temperature rise remains within the limits of the insulation class	In compliance with the requirement.	Pass
	Motor compartment should be clean and dry, and shall be ventilated directly to the	In compliance with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	exterior of the machine		
	The vents shall be such that ingress of swarf, dust, or water spray is at an acceptable level	In compliance with the requirement.	Pass
	There shall be no opening between the motor compartment and any other compartment that does not meet the motor compartment requirements	Nno opening between the motor compartment and any other compartment that does not meet the motor compartment requirements.	Pass
	If a conduit or pipe is run into the motor compartment from another compartment not meet the motor compartment requirements, any clearance around the conduit or pipe shall be sealed	In compliance with the requirement.	Pass
15.5	Criteria for motor selection	-	-
	Shall be selected according to the anticipated service and physical	In compliance with the requirement.	Pass
15.6	Protective devices for mechanical brakes	-	-
	Operation of the overload and overcurrent protective devices for mechanical brake actuators shall initiate the simultaneous de-energization (release) of the associated machine actuators	Appropriate motor has been used for this machine.	Pass
16	Accessories and lightning	-	-
16.1	Accessories	-	-
	Socket-outlets for accessory equipment shall comply:	Not applicable.	N/A
	Should conform to IEC 60309-1 (if this is not possible, they should be clearly marked with the voltage and current ratings)	Not applicable.	N/A
	The continuity of the protective bonding circuit to the socket-outlet shall be ensured	In compliance with the requirement.	Pass
	All unearthed conductors : Overcurrent or overload protection according to 7.2 and 7.3 separately from the protection of other circuits	In compliance with the requirement.	Pass
	If the power supply to the socket outlet is not disconnected by the supply disconnecting device, the clause 5.3.5 shall apply	Not applicable.	N/A
16.2	Local lighting of the machine and	-	-

Clause	Requirement - test	Result	Verdict
	equipment		
16.2.1	General	-	-
	Connections to the protective bonding circuit according to 8.2.2	In compliance with the requirement.	Pass
	The ON-OFF switch shall not be inco rporated in the lam p holder or in the flexible connecting cords	In compliance with the requirement.	Pass
	Stroboscopic effects from lights shall be avoided	In compliance with the requirement.	Pass
16.2.2	Supply	-	-
	The nominal voltage of the local lighting circuit shall not exceed 250 V	In compliance with the requirement.	Pass
	Lighting circuits shall be supplied from one of the sources s p ecified in this clause	In compliance with the requirement.	Pass
16.2.3	Protection	-	-
	Local lighting shall be protected according to 7.2.6	In compliance with the requirement.	Pass
16.2.4	Fittings	-	-
	Adjustable lighting fittings shall be suitable for the physical environment	In compliance with the requirement.	Pass
	The lamp holders shall be : - according to the relevant IEC publication; - constructed with an insulating material protecting the lamp cap so as to prevent unintended contact	In compliance with the requirement.	Pass
	Reflectors shall be supported by a bracket and not by the lampholder	In compliance with the requirement.	Pass
17	Marking, warning signs and reference designations	-	-
17.1	General	-	-
	The electrical equipment shall be marked with the supplier's name, trade mark, or other identifying symbol and, when required, with a certification mark	The supplier's trademark as well as CE mark is found on the machine.	Pass
	Shall be of sufficient durability to withstand the physical environment involved	The durability of marking has been tested during inspection.	Pass
17.2	Warning signs	-	-
	Enclosures shall be marked with the warning sign	In compliance with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	The warning sign shall be plainly visible on the enclosure door or cover	It is plainly visible on the enclosure door.	Pass
17.3	Functional identification	-	-
	Control devices, visual indicators and displays, used in man-machine interface shall be clearly and durably marked with regard to their functions either on or adjacent to the item	In compliance with the requirement.	Pass
	Preference should be given to the use of standard symbols given in IEC 60437 and ISO 7000	The symbols referred to IEC 60437 and/or ISO-7000 have been used for the operational function of this machine.	Pass
17.4	Marking of control equipment	-	-
	Control equipment shall be legibly and durably marked in a way that is plainly visible after the equipment is installed	In compliance with the requirement.	Pass
	A nameplate giving the relevant information specified in this clause shall be attached to the enclosure	In compliance with the requirement.	Pass
	The full-load current shown on the nameplate shall be sufficient	Full-load current has been showed on the nameplate.	Pass
17.5	Reference designations	-	-
	All enclosures, assemblies, control devices, and components shall be plainly identified with the same reference designations as shown in the technical documentation	They are in same designations.	Pass
	Where size or location preclude the use of an individual reference designation, group reference designation shall be used	Not applicable.	N/A
18	Technical documentation	-	-
18.1	General	-	-
	The information necessary for installation, operation, and maintenance of the electrical equipment of a machine shall be supplied in the form of drawings, diagrams, charts, tables and instructions	All these information are included in the techinical documentation.	Pass
	The information shall be in an agreed language	In English.	Pass
	The supplier shall ensure that the technical documentation in this clause is	In compliance with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	provided with each machine		
18.2	Information to be provided	-	-
	The information provided with the electrical equipmentshall include the requirements specified in this clause	In compliance with the requirement.	Pass
18.3	Requirements applicable to all documentation	-	-
	Relevant requirements according to 18.4 to 18.10 shall be complied	Please see the following statements.	Pass
18.4	Basic information	-	-
	Min. requirements for he technical documentation shall be contained	In compliance with the requirement.	Pass
18.5	Installation diagram	-	-
	Use and requirements for installation diagram	Installation diagram is included in the technical documantation.	Pass
18.6	Block (system) diagrams and function diagrams	-	-
	Use and requirements for system (block) diagram	Not applicable.	N/A
18.7	Circuit diagrams	-	-
	Use and requirements for circuit diagrams	Circuit diagrams are included in the technical documantation.	Pass
18.8	Operating manual	-	-
	Use and requirements for operating manual	Operating manual is included in the technical documantation.	Pass
18.9	Maintenance manual	-	-
	Use and requirements for maintenance manual	Necessary maintenance is included in the technical documantation.	Pass
18.10	Parts list	-	-
	Use and requirements for parts list	Component part list has been provided on this report.	Pass
19	Testing and verification	-	-
19.1	General	-	-
	When these tests are performed, it is recommended that they follow the sequence listed	Test has been carried out as the sequence listed below.	Pass
	When the electrical equipment is modified, the requirements stated in 19.7		

Clause	Requirement - test	Result	Verdict
	shall apply	Not applicable.	N/A
19.2	Continuity of the protective bonding circuit	-	-
	Test conditions : a current of at least 10 A at 50 Hz or 60 Hz	Appropriate test condition has been set according to this requirement.	Pass
	The measured voltage shall not exceed the values given in table 9	Appropriate test condition has been set according to this requirement.	Pass
19.3	Insulation resistance tests	Satisfied requirements as the test.	Pass
19.4	Voltage tests	Satisfied requirements as the test.	Pass
19.5	Protection against residual voltages	Satisfied requirements as the test.	Pass
19.6	Functional tests	In compliance with the requirement.	Pass
19.7	Retesting	-	-
	Where a portion of the machine and its associated equipment is changed or modified, that portion shall be reverified and retested, as is appropriate	Not applicable.	N/A

3.3. EN 61000-6-2:2005 test report

The tested models represent all the models of this machinery including WFY3606, WFY3608, WFY3612, WFY5606, WFY5608, WFY5612, WFY5616, MSC1804, MSC1806, MSC3604, MSC3606, MSC3608, MSC5604, MSC5608, MSC5612, MSC5616, MX1804, MX1806, MX3604, MX3606, MX3608, MX5604, MX5606, MX5608, MX5612, MX5616, MX8808, MX8812, MX8816..

These models' discrepancy can't make another risk to the machine. As for their discrepancy, please check the Chapter V.

EMC COMPLIANCE TEST REPORT

for

Automatic winding machine

Trade Name	: Roaster
Model Number	:HA-BW70 (It also covers other models.)
Serial NUMBER	: 14111014A
Report Number	: HA2014CE1-06
Date	: 01/06/2014
Regulations	: See below

Standards	Results(Pass/Fail)
EN 61000-6-2:2005	PASS

Wuxi Hong' an Precision Machinery Co.; Ltd.

No.15, Gaokai Road, Binhu District，Wuxi City, Jiangsu Province, China.

VERIFICATION OF COMPLIANCE

Equipment under Test:	Roaster
Trade Name:	Roaster
Model Number:	HA-BW70 (It also covers other models.)
Serial Number:	14111014A
Manufacturer:	Wuxi Hong' an Precision Machinery Co.; Ltd.
Technical Standards:	EN 61000-6-2:2005 Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards-Immunity for industrial environments.

File Number:	HA2014CE1-06
Date of test:	01/06/2014
Condition of Test Sample:	Normal

The above equipment was tested for compliance with the requirements set forth and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum immunity levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used for testing. The equipment conforms to the CISPR 16-1/ANSI C63.2-1988 Specifications for Electromagnetic Interference testing Instrumentation from 20Hz to 26.5GHz.

Equipment used during the tests:

EQUIPMENT TYPE	MAFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
EMI Test Receiver	R&S	ESIB26	831438	28/02/2010	27/08/2012
Bilog Antenna	CHASE	CBL6112A	2189	20/04/2010	19/09/2012
Turndisk	DESSEL	DS415S	N/A	N.C.R	N.C.R
Controller	DESSEL	HD100	100/668	N.C.R	N.C.R
LISN	R&S	ESH3-Z5	829996/012	20/04/2010	19/09/2012

SECTION 1 RADIATED IMMUNITY TEST(EN 61000-6-2:2005)

MEASUREMENT PROCEDURE

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 61000-6-2:2005 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 10mm non-conductive covering to insulate the EUT from the ground plane.
2) Support equipment, if needed, was placed as per EN 61000-6-2:2005.
3) All I/O cables were positioned to simulate typical actual usage as per EN 61000-6-2:2005.
4) The EUT received AC power source from the outlet socket under the turntable.
5) The antenna was placed at 3 meter away from the EUT and connected to the receiver via a cable and at times a pre-amplifier would be used.
6) The Receiver scanned from 30MHz to 1000MHz. The EUT test program was started. IMMUNITYs were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the immunity reading level.

Recorded at least the six highest immunity. Immunity frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the immunity level and compare reading to the applicable limit and only Q.P. reading is presented.

RADIATED LIMIT (CLASS A)

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBμV/m,Q.P.)
30 ~ 230	10	40
230 ~ 1000	10	47

Note: The lower limit shall apply at the transition frequency.

CETC 52 TEST

EUT: Roaster

Manufacturer: Wuxi Hong' an Precision Machinery Co.; Ltd.

Operating Condition: 28℃, 56%RH

Test Site: lab 52 EMC Chamber (3m)

Operator: Huang Daming, Cai Xinqing

Test Specification: EN 61000-6-2:2005

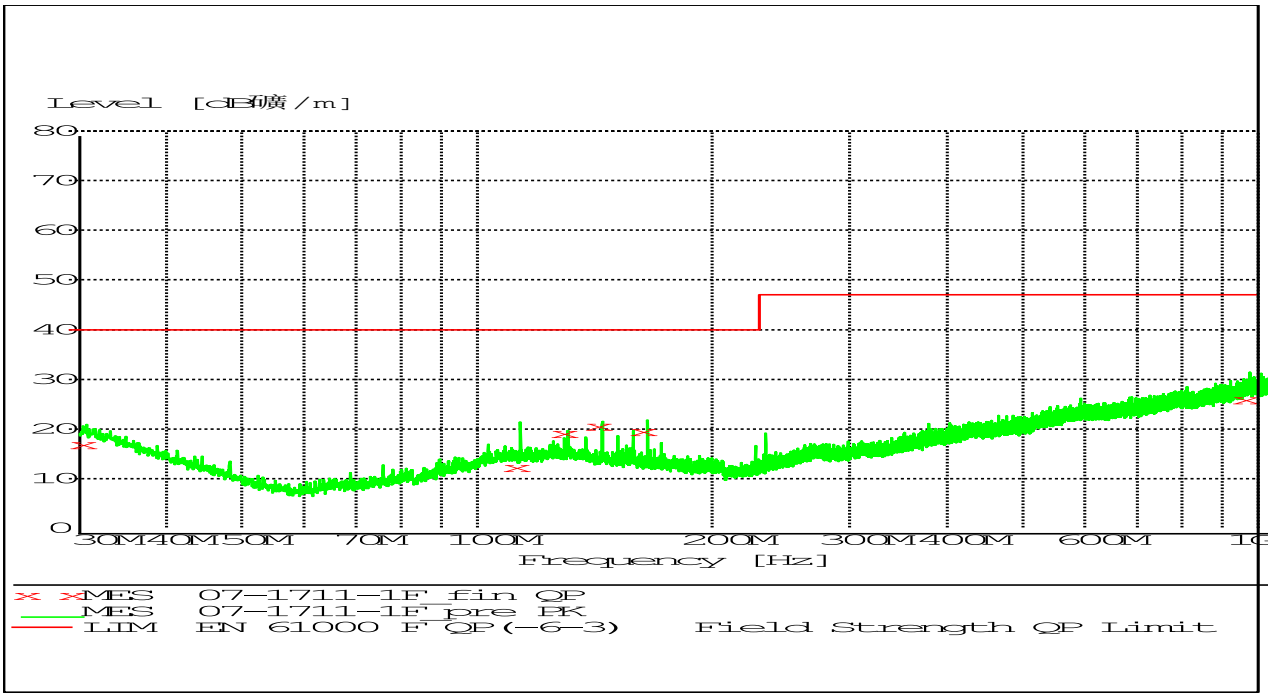
Comment: EUT operated continuously

Start of Test: 01/06/2014 09:43:08AM

SCAN TABLE: "EN 61000 Field fin"

Short Description: EN 61000-6-2:2005 Field Strength

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	CBL 6112B-3



MEASUREMENT RESULT: "07-1711-1F_fin QP"

20/06/2012 09:18AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
30.600000	16.80	20.0	40.0	23.2	129.0	313.00	HORIZONTAL
110.040000	12.30	13.8	40.0	27.7	100.0	41.00	VERTICAL
126.660000	19.10	14.0	40.0	20.9	100.0	335.00	VERTICAL
140.040000	20.60	13.3	40.0	19.4	104.0	303.00	HORIZONTAL
160.020000	19.50	12.2	40.0	20.5	106.0	225.00	HORIZONTAL
945.120000	25.90	26.2	47.0	21.1	113.0	236.00	HORIZONTAL

3.4. EN 61000-6-4:2007+A1:2011 test report

The tested models represent all the models of this machinery including WFY3606, WFY3608, WFY3612, WFY5606, WFY5608, WFY5612, WFY5616, MSC1804, MSC1806, MSC3604, MSC3606, MSC3608, MSC5604, MSC5608, MSC5612, MSC5616, MX1804, MX1806, MX3604, MX3606, MX3608, MX5604, MX5606, MX5608, MX5612, MX5616, MX8808, MX8812, MX8816..

These models' discrepancy can't make another risk to the machine. As for their discrepancy, please check the Chapter V.

EMC COMPLIANCE TEST REPORT

for

Automatic winding machine

Trade Name	: Roaster
Model Number	: HA-BW70 (It also covers other models.)
Serial NUMBER	: 14111014A
Report Number	: HA2014CE1-07
Date	: 01/06/2014
Regulations	: See below

Standards	Results(Pass/Fail)
EN 61000-6-4:2007+A1:2011	PASS

Wuxi Hong' an Precision Machinery Co.; Ltd.

No.15, Gaokai Road, Binhu District，Wuxi City, Jiangsu Province, China.

VERIFICATION OF COMPLIANCE

Equipment under Test:	Roaster
Trade Name:	Roaster
Model Number:	HA-BW70 (It also covers other models.)
Serial Number:	14111014A
Manufacturer:	Wuxi Hong' an Precision Machinery Co.; Ltd.
Technical Standards:	EN 61000-6-4:2007+A1:2011 Electromagnetic compatibility (EMC) — Part 6-4: Generic standards — Emission standard for industrial environments.
File Number:	HA2014CE1-07
Date of test:	01/06/2014
Condition of Test Sample:	Normal

The above equipment was tested for compliance with the requirements set forth and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the emission endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

TEST EQUIPMENT LIST (EMISSION)

Instrumentation: The following list contains equipment used for testing. The equipment conforms to the CISPR 16-1/ANSI C63.2-1988 Specifications for Electromagnetic Interference testing Instrumentation from 20Hz to 26.5GHz.

Equipment used during the tests:

EQUIPMENT TYPE	**MAFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
EMI Test Receiver	R&S	ESU26	100180	26/03/2011	27/08/2012
Bilog Antenna	ETS	SWB-VULB 9163	9163-379	03/02/2010	04/09/2012
Turndisk	ETS	2090	N/A	N.C.R	N.C.R
Controller	ETS	2090	N/A	N.C.R	N.C.R

SECTION 1 RADIATED EMISSION TEST(EN 61000-6-4:2007+A1:2011)

MEASUREMENT PROCEDURE

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 61000-6-4:2007+A1:2011 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 10mm non-conductive covering to insulate the EUT from the ground plane.
2) Support equipment, if needed, was placed as per EN 61000-6-4:2007+A1:2011.
3) All I/O cables were positioned to simulate typical actual usage as per EN 61000-6-4:2007+A1:2011.
4) The EUT received AC power source from the outlet socket under the turntable.
5) The antenna was placed at 3 meter away from the EUT and connected to the receiver via a cable and at times a pre-amplifier would be used.
6) The Receiver scanned from 30MHz to 1000MHz. The EUT test program was started. EMISSIONs were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Recorded at least the six highest emission. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

RADIATED EMISSION LIMIT (CLASS A)

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBμV/m,Q.P.)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: The lower limit shall apply at the transition frequency.

CETC 52 TEST

EUT: Roaster

Manufacturer: Wuxi Hong' an Precision Machinery Co.; Ltd.

Operating Condition: 28℃, 56%RH

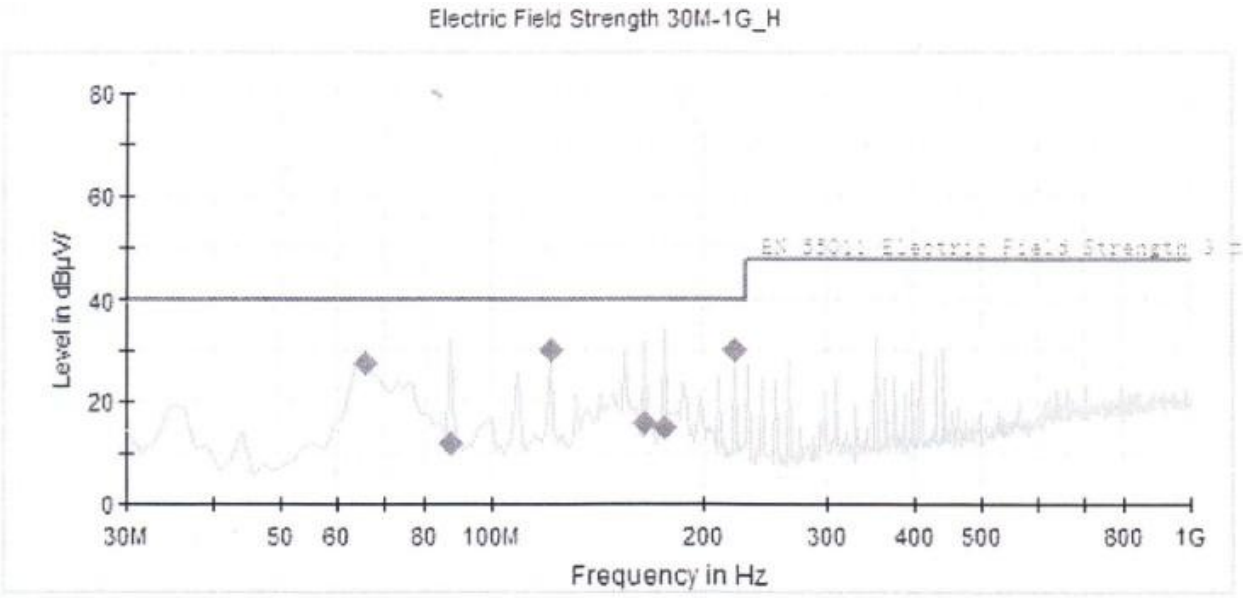
Test Site: lab 52 EMC Chamber (3m)

Operator: Huang Daming, Cai Xinqing

Test Specification: EN 61000-6-4:2007+A1:2011

Comment: EUT operated continuously

Start of Test: 01/06/2014 10:33:08 Am

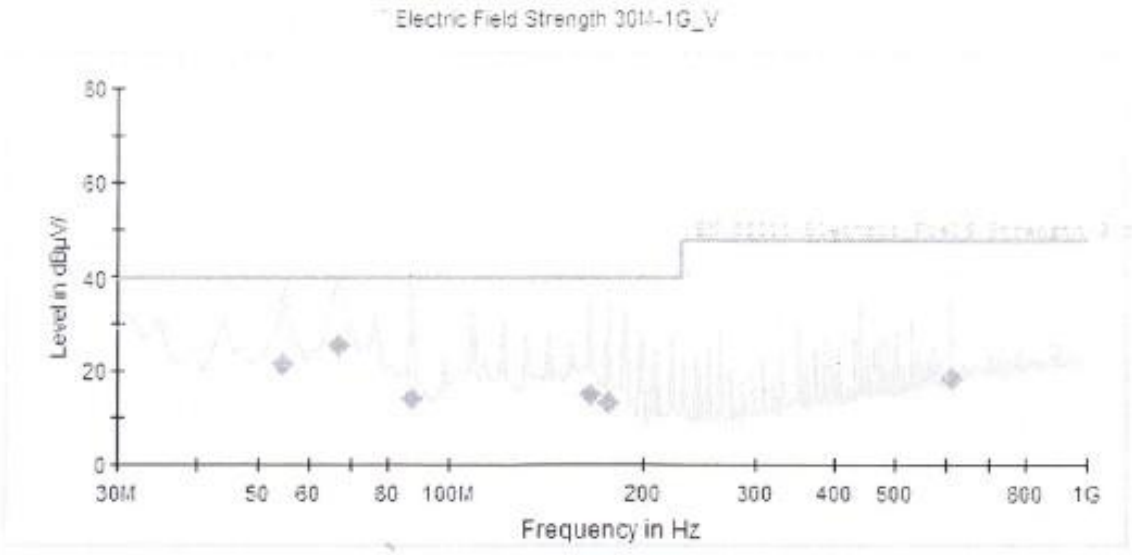


Final Result 1

Frequency (MHz)	QuasiPeak (dB µ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB µ V/m)
66.053205	27.6	1000.000	120.000	100.0	H	161.0	-23.7	12.4	40.0
87.336026	11.8	1000.000	120.000	125.0	H	138.0	-22.1	28.2	40.0
121.654744	30.0	1000.000	120.000	125.0	H	128.0	-22.4	10.0	40.0
165.300385	15.6	1000.000	120.000	125.0	H	127.0	-20.2	24.4	40.0
175.821795	15.0	1000.000	120.000	100.0	H	128.0	-19.9	25.0	40.0
221.201923	30.2	1000.000	120.000	100.0	H	128.0	-18.3	9.8	40.0

(continuation of the "Final Result 1" table from column 10 ...)

Frequency (MHz)	Comment
66.053205	
87.336026	
121.654744	
165.300385	
175.821795	
221.201923	



Final Result 1

Frequency (MHz)	QuasiPeak (dB µ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB µ V/m)
54.691795	21.4	1000.000	120.000	100.0	V	84.0	-22.9	18.6	40.0
67.247692	25.3	1000.000	120.000	100.0	V	265.0	-23.8	14.7	40.0
87.756026	14.1	1000.000	120.000	125.0	V	197.0	-22.1	25.9	40.0
165.060385	15.1	1000.000	120.000	100.0	V	292.0	-20.2	24.9	40.0
176.481795	13.2	1000.000	120.000	100.0	V	8.0	-19.9	26.8	40.0
614.487179	18.2	1000.000	120.000	125.0	V	15.0	-7.4	28.8	47.0

(continuation of the "Final Result 1" table from column 10 ...)

Frequency (MHz)	Comment
54.691795	
67.247692	
87.756026	
165.060385	
176.481795	
614.487179	