



# Technical Construction File

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According to

**2006/42/EC Machinery Directive**

related to

**Inkjet Printer**

1701-DX5; 1702-DX11; 2002-DX5; 2002-3200; 3302-DX5 ;  
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presented by

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*Essential health and safety requirements*

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 constructed that it is fitted for its function, and can be adjusted and maintained without putting person at risk when these operations are carried out under the conditions foreseen by the manufacturer	Pass. This machine is used to stack and reclaim materials.
	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 and dismantling, even where risks of accident arise from foreseeable abnormal situations	Pass. These requirements have been complied with.
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	Pass Manufacturer has provided enough safety devices to eliminate or reduce risks.
	- take the necessary protection measure in relation to risks that can't be eliminated	Pass. Safety guards and other devices are used.
	- 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	Pass. Enough warnings are provided in the appropriate spot.
c)	When designing and constructing machinery, and when drafting the instruction, the manufacturer must envisage not the normal use of the machinery but also uses which could reasonably be expected	Pass. All the conditions are considered by the manufacturer, and the related information also has been provided within the instruction manual.
	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	Pass. These requirements have been complied with, and the related information also has been provided within the instruction manual.
d)	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	Pass. These requirements have been taken into account during the design of this machine.
e)	When designing and constructing machinery, the	Pass.

	manufacturer must taken account of the constraints to which the operator is subject as a result of the necessary or foreseeable use of personal protection equipment	These requirements have been taken into account during the design of this machine.
f)	Machinery must be supplied with all the essential special equipment and accessories to enable it to be adjusted, maintained and used without risk	Pass. All the essential special equipment and related accessories have been supplied.
1.1.3	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	Pass. They cannot endanger exposed person's safety or health.
	In particular, where fluids are used, machinery must be designed and constructed for use without risks due to filling, use, recovery or draining	Pass. This requirement has been taken into account during design.
1.1.4	Lighting	-
	The manufacturer must supply integral lighting suitable for the operations concerned where its lack is likely to cause a risk despite ambient lighting of normal intensity	Pass. Appropriate lighting is provided.
	The manufacturer must ensure 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	Pass. No this situation.
	Internal parts requiring frequent inspection, and adjustment and maintenance areas, must be provided with appropriate lighting	Not applicable.
1.1.5	Design of machinery to facilitate its handling	-
	Machinery or each component part thereof must:	-
	- be capable of being handle safely	Pass. Enough measures have been taken to ensure the safe of the handling.
	- be packaged or designed so that it can be stored safely and without damage	Pass.
	Where the weight, size or shape of 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	Pass.
	- be designed so that it can be fitted with such attachments, or	Pass.
	- be shaped in such a way that standard lifting gear can easily be attached	Pass.

	Where machinery or one of its component parts is to be moved by hand, it must:	-
	- either be easily movable, or	Not applicable.
	- be equipped for picking up and moving in complete safety	Not applicable.
	Special arrangement must be made for the handling of tools and/or machinery parts, even if lightweight, which could be dangerous	Not applicable.
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	Pass. The control system for this machine is safe and reliable by appropriate designing
	Above all they must be designed and constructed:	-
	- they can withstand the rigors of normal use and external factors	Pass. The control system can withstand related effects during normal operation.
	- errors in logic don't lead to dangerous situations	Pass. Any error in logic doesn't lead to dangerous situations.
1.2.2	Control devices	-
	Control devices must be:	-
	- clearly visible and identifiable and appropriately marked where necessary	Pass. Appropriate labels and markings are provided. This requirement has been complied with.
	- positioned for safe operation without hesitation or loss of time, and without ambiguity	Pass. Appropriate positions have been taken into account during design.
	- designed so that the movement of the control is consistent with its effect	Pass. This requirement has been complied with.
	- located outside the danger zones, except for certain controls where necessary, such as emergency stop, console for training of robots	Pass. All control devices have been located outside the danger zones.
	- positioned or that their operation can't cause additional risk	Pass. All operation of control devices won't cause additional risk.
	- designed or protected so that the desired effect, where a risk is involved, can't occur without an intentional operation	Pass. Appropriate safety devices have been used to comply with this requirement.

	- made so as to withstand foreseeable strain, particular attention must be paid to emergency stop devices liable to be subjected to considerable strain	Pass. The emergency stop and other control devices have enough strength to withstand foreseeable strain.
	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	Not applicable.
	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	Pass. These requirements have been taken into account during design.
	Constraints due to the necessary foreseeable use of personal protection equipment must be taken into account	Not applicable.
	Machinery must be fitted with indicators as required for safe operation	Pass. The indicators have been provided.
	The operator must be able to read them from the control position	Pass. The indicators are clearly visible in the control position.
	From the main control position the operator must be able to ensure that there are no exposed persons in the danger zones	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	Not applicable.
	The exposed person must have the time and the means to take rapid action to prevent the machinery starting up	Pass. Emergency stop, main switch and other related devices have been provided for the exposed person.
1.2.3	Starting	-
	It must be possible to start machinery only by voluntary actuation of a control provided for the purpose	Pass. Devices preventing unintended starting have been provided.
	The same requirement applies:	-
	- when restarting the machinery after stoppage, whatever the cause	Pass. Reset is necessary before restarting.
	- when effecting a significant change in the operating	Pass.

	conditions	These requirements have been complied with.
	Unless such restarting or change in operating conditions is without risk to exposed persons	-
	This essential requirement doesn't apply to the restarting of the machinery or to the change in operating conditions resulting from the normal sequence of an automatic cycle	Pass. These requirements have been complied with by appropriate design.
	Where machinery has several starting controls and the operators can therefore put each other in danger, additional devices must be fitted to rule out such risks	Not applicable.
	It must be possible for automated plant functioning in automatic mode to be restarted easily after a stoppage once the safety conditions have been fulfilled	Pass. These requirements have been complied with by appropriate design.
1.2.4	Stopping device	-
	Normal stopping	-
	Each machine must be fitted with a control whereby the machine can be brought safety to a complete stop	Pass. A normal stop control has been provided.
	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	Pass. A normal stop control has been provided.
	The machinery's stop control must have priority over the start controls	Pass. It has priority over the start control.
	Once the machinery or its dangerous parts have stopped, the energy supply to the actuators concerned must be cut off	Pass. The stops belong to the category 0, or category 1 stops.
	Emergency stop	-
	Each machinery must be fitted with one or more emergency stop devices to enable actual or impending danger to be averted	Pass. Emergency stop is provided on every working station.
	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.
	The emergency stop device must:	-
	- have clearly identifiable, clearly visible and quickly accessible controls	Pass. The emergency sop has red button, yellow background and marked with "emergency stop"

	- stop the dangerous process as quickly as possible, without creating additional hazards	Pass. The emergency stop will stop the machine as soon as it is pressed and it will not create any additional hazards.
	- where necessary, trigger or permit the triggering of certain safeguard movements	Not applicable.
	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	Pass. After the action of the emergency stop, machine can not be restarted until reset the emergency stop.
	It must be possible to disengage the device only by an appropriate operation, and disengaging the device must not restart the machinery but only permit restarting	Pass. Operator should turn the emergency stop to disengage the device.
	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	Pass. Any emergency stop of the machine can stop the entire machine in the same time.
1.2.5	Mode selection	-
	The control mode selected must override all other control systems with the exception of the emergency stop	Pass. The emergency stop is effective regardless of operating modes.
	If machinery has been designed and built to allow for 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.
	Each position of the selector must correspond to a single operating or control mode	Not applicable.
	The selector may be replaced by another selection method which restricts the use of certain functions of the machinery or certain categories of operator	Not applicable. No this situation.
	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
	- permit movements only by controls requiring sustained action	Not applicable

	- permit the operation of dangerous moving parts only in enhanced safety conditions while preventing hazards from linked sequences	Not applicable
	- prevent any movement liable to pose a danger by acting voluntarily or involuntarily on the machine's internal sensors	Not applicable
	In addition, the operator must be able to control operation of the parts he is working on at the adjustment point	Pass.
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	Pass. No dangerous situation has been found.
	In particular:	-
	- the machinery must not start unexpectedly	Pass. Reset is necessary before restarting the machine.
	- the machinery must not be prevented from stopping if the command has already been given	Pass. The stop command has the priority over all other devices
	- no moving part of the machinery or piece held by the machinery must fall or be ejected	Pass. No such part is found.
	- automatic or manual stopping of the moving parts whatever they may be must be unimpeded	Pass. Stopping of the moving parts is always effective.
	- the protection devices must remain fully effective	Pass. The protection devices remain effective after the failure of the power supply.
1.2.7	Failure of the control circuit	-
	A fault in the control circuit, or failure of or damage to the control circuit must not lead to dangerous situations	Pass. No dangerous situation is found.
	In particular:	-
	- the machinery must not start unexpectedly	Pass. Reset is necessary before restarting the machine.
	- the machinery must not be prevented from stopping if the command has already been given	Pass. The stop command has the priority over all other devices
	- no moving part of the machinery or piece held by the machinery must fall or be ejected	Pass. No such part is found.
	- automatic or manual stopping of the moving parts	Pass.

	whatever they may be must be unimpeded	Stopping of the moving parts is always available.
	- the protection device must remain fully effective	Pass. The protection devices remain effective after the failure of the control circuit
1.2.8	Software	-
	Interactive software between the operator and the command or control system of a machine must be user-friendly	Pass. This requirement has been taken into account during design.
1.3	Protection against mechanical hazards	-
1.3.1	Stability	-
	Machinery, components and fittings there of 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	Pass. These requirements have been taken into account design
	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	Not applicable. The sufficient stability has been offered for this machine.
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 when as foreseen by the manufacturer	Pass.
	The durability of the materials used must be adequate for the nature of the workplace foreseen by the manufacturer, in particular as regards the phenomena of fatigue, aging, corrosion and abrasion	Pass. All materials used for this machine are appropriate for their intended use and have adequate life.
	The manufacturer 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	Pass. The related information have been provided within the instruction manual.
	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	Not applicable.
	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	Pass. These requirements have been taken into account during design.

	stresses and strains, precaution must be taken to ensure that no risk is posed by a rupture	
	Where the material to be processed is fed to 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	Not applicable.
	- when the tool starts and/or stops the feed movement and the tool movement must be coordinated	Not applicable.
1.3.3	Risked due to falling or ejected objects	-
	Precautions must be taken to prevent risks from falling or ejected object	Pass. Appropriate guards have been provided.
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	Pass. No this kind injury has been found.
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 element constituting a danger or risk for the exposed person	Not applicable. No this kind of combined machinery.
	For this purpose, it must be possible to start and stop separately and elements that are not protected	Not applicable. No this kind of combined machinery.
1.3.6	Risks relating to variations in the rotation speeds 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	Pass. The machine has been mounded appropriately.
1.3.7	Prevention of risks related to moving parts	-
	The moving parts of machinery must be designed, built and laid out to avoid hazards or, where hazards persist, fixed with guards or protective devices in such a way as to prevent all risk of contact which could lead to accidents	Pass. This kind of hazards has been prevented by appropriate guards.
	All necessary steps must be taken to prevent accidental blockage of moving parts involved in the work	Pass. All necessary steps have been taken.
	In cases where, despite the precaution taken, a blockage is likely to occur, specific protection devices or tools, the	Not applicable. No this kind of need.

	instruction handbook and possibly a sign on the machinery should be provided by the manufacturer to enable the equipment to be safely unblocked	
1.3.8	Choice of protection against risk related to moving parts	-
	Guards or protection devices used to protect against the risks related to moving parts must be selected on the basis of the type of risk	Pass. It is in accordance with the risk assessment.
	The following guidelines must be used to help make the choice	-
	Moving transmission parts Guards designed to protect exposed persons against the risks associated with moving transmission parts must be :	-
	- either fixed, complying with requirements 1.4.1 and 1.4.2.1 or	See the related clauses.
	- movable, complying with requirements 1.4.1 and 1.4.2.2.A	See the related clauses.
	Moving parts directly involved in the process Guards or protection devices designed to protect exposed persons against the risks associated with moving parts contributing to the work must be :	-
	- wherever possible fixed guards complying with requirements 1.4.1 and 1.4.2.1	See the related clauses.
	- otherwise, movable guards complying with requirements 1.4.1 and 1.4.2.2.B or protection devices such as sensing devices, remote-hold protection devices, or protection devices intended automatically to prevent all part of the operator's body from encroaching to the danger zone in accordance with requirements 1.4.1 and 1.4.3	See the related clauses.
	However, when certain moving parts directly involved in the process can't be completely or partially inaccessible during operation owing to operations requiring near-by operator intervention, where technically possible such parts must be fitted with :	-
	- 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	See the related clauses.
	- adjustable guards, complying with requirements 1.4.1 and 1.4.2.3 restricting access to those sections of the moving parts that are strictly for the work	See the related clauses.
1.4	Required characteristics of guards and protection devices	-

1.4.1	General requirement	-
	Guards and protection devices must:	-
	- be of robust construction	Pass. All the guards have enough strength.
	- not give rise to any additional risk	Pass. No additional risk is found.
	- not be easy to bypass or render non-operational	Pass. All the guards can't be by passed or rendered non-operational by design.
	- be located at an adequate distance from the danger zone	Pass. All the guards comply with the safety distances.
	- cause minimum obstruction to the view id the production process	Pass. Guards with gird are used to this machine.
	- 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	Pass. These requirements have been taken into account during design.
1.4.2	Special requirements for guards	-
1.4.2.1	Fixed guards	-
	Fixed guard must be securely held in place	Pass.
	They must be fixed by system that can be opened only with tools	Pass.
	Where possible, guards must be unable to remain in place without their fixings	Not applicable.
1.4.4.2	Movable guards	-
	A. Type A movable guards must:	-
	- as far as possible remain fixed to the machinery when open	Not applicable.
	- be associated with a locking device to prevent moving parts starting up as these parts can be accessed and to give a stop command whenever they are no longer closed	Not applicable.
	B. Type B movable guards must be designed and incorporated into the control system so that	Not applicable. No this kind of guard has been used.
	- moving parts can't start up while they are within the operator's reach	Not applicable.
	- the exposed person can't reach moving parts once they have started up	Not applicable.

	- they can be adjusted only by means of an intentional action, such as the use of a tool, etc.	Not applicable.
	- the absence or failure of one of their components prevents starting or stops the moving parts	Not applicable.
	- protection against any risk of ejection is provided by means of an appropriate barrier	Not applicable.
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. No this kind of guard has been used.
	- be readily adjustable without the use of tools	Not applicable. No this kind of guard has been used.
	- reduce as far as possible the risk of ejection	Not applicable. No this kind of guard has been used.
1.4.3	Special requirements for protection devices	-
	Protection devices must be designed and incorporated into the control system so that:	-
	- moving parts can't start up while they are within the operator's reach	Pass. These requirements have been taken into account during design.
	- the exposed person can't reach moving parts once they have started up	Pass. Appropriate guards have been provided.
	- they can be adjusted only by means of an intentional action, such as the use of a tool, etc.	Pass. These requirements have been taken into account during design.
	-the absence or failure of one of their components prevents starting or stops the moving parts	Pass. These requirements have been taken into account during design.
1.5	Protection against other hazards	-
	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	Pass. See the EN 60204-1 test report in detail.
	The specific rules in force relating to electrical equipment designed for use within certain voltage limits must apply to machinery which is subject to those limits	Pass. See the EN 60204-1 test report in detail.
1.5.2	Static electricity	-
	Machinery must be so designed and constructed as to	Pass.

	prevent or limit the build-up of potentially dangerous electrostatic charges and/or be fitted with a discharging system	See the EN 60204-1 test report in detail.
1.5.3	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 these types of energy	Pass. No any additional hazard has been found for energy supply.
1.5.4	Error 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 on moving parts and/or their housing where the direction of movement must be known to avoid a risk	Pass. These requirements have been taken into account during design.
	Any further information that may be necessary must be given in the instructions	Pass. The related information has been provided within the instruction manual.
	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	Pass. All related information has been provided within the instruction manual. Necessary labels and markings have been provided.
1.5.5	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	Not applicable. No this kind of risk exists.
	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	Not applicable. No this kind of risk exists.
1.5.6	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	Pass. The design and construction of this machine are in conformity with these requirements.
1.5.7	Explosion	-
	Machinery must be designed and constructed to avoid any risk of explosion posed by the machinery itself or by gases,	Not applicable. No such risk is exist

	liquids, dusts, vapors or other substances produced or used by the machinery	
	To that end the manufacturer must take steps to:	-
	-avoid a dangerous concentration of products	Not applicable.
	- prevent combustion of the potentially explosive atmosphere	Not applicable.
	-minimize any explosion which may occur so that it doesn't endanger the surroundings	Not applicable.
	The same precautions must be taken if the manufacturer foresees the use of the machinery in potentially explosive atmosphere	Not applicable. This machine is not intended to be used in potentially explosive atmosphere.
	Electrical equipment forming part of the machinery must conform, as far as the risk from explosion is concerned, to the provision of the specific Directive in force	Pass. See the 60204-4 test report in detail.
1.5.8	Noise	-
	Machinery must be so designed and constructed that risks resulting from the 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	Pass. The design and construction of this machine are in conformity with these requirements. Level noise of this machine is not more than 85db.
1.5.9	Vibration	-
	Machinery must be so designed and constructed that risks resulting from the 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	Pass. The design and construction of this machine are in conformity with these requirements. Vibrations of this machine will not create any risk.
1.5.10	Radiation	-
	Machinery must be so designed and constructed that any emission of radiation is limited to the extent necessary for its operation and that the effects on exposed persons non-existent or reduced to non-dangerous proportions	Not applicable.
1.5.11	External radiation	-
	Machinery must be so designed and constructed that external radiation doesn't interfere with its operation	Pass. The machine can withstand the external radiation by appropriate design and construction.
1.5.12	Laser equipment	-

	Where laser equipment is used, the following provisions should be taken into account;	Not applicable. No laser equipment has been used.
	- laser equipment on machinery must be designed and constructed so as to prevent any accidental radiation	Not applicable.
	- laser equipment on machinery must be protected so that effective radiation, radiation produced by reflection or diffusion and secondary radiation don't damage health	Not applicable.
	- 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	Not applicable.
1.5.13	Emission of dust, gases, etc	-
	Machinery must be so designed, constructed and/or equipped that risk due to gases, liquids, dust, vapors and other waste materials which it produces can be avoided	Not applicable.
	Where a hazard exists, the machinery must be so equipped that the said substances can be contained and/or evacuated	Not applicable.
	Where machinery is not enclosed during normal operation, the devices for containment and/or evacuation must be situated as close as possible to the source emission	Not applicable.
1.5.14	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 held	Not applicable. No this hazard.
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	Not applicable. No this hazard.
1.6	Maintenance	-
1.6.1	Machinery maintenance	-
	Adjustment, lubrication And maintenance points must be located outside danger zones	Pass. The design and construction of this machine are in conformity with these requirements.
	It must be possible to carry out adjustment, Maintenance, repair, cleaning and servicing Operations while machinery is at a standstill	Pass. Maintenance, repair, cleaning and servicing, operations can only be implemented while machinery is at a standstill

	If one or more of the above conditions can't be satisfied for technical reasons, operations must be possible without risk	Not applicable. No this kind of situation.
	In the case of automated machinery and, where necessary, other machinery, the manufacturer must take provision for a connecting device for mounting diagnostic fault-finding equipment	Pass. Some adequate provisions have been taken.
	Automated machine components which have to be changed frequently, in particular for a change in manufacture or where they are liable to wear or likely to deteriorate following an accident, must be capable of being removed and replaced easily and in safety	Pass. The related parts can be 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 an operating method specified by the manufacturer	Pass. All operation methods have been specified by the manufacturer.
1.6.2	Access to operating position and servicing points	-
	The manufacturer must provide means of access to allow access in safety to all areas used for production, adjustment and maintenance operations	Pass. Appropriate guards and safety control devices have been used.
1.6.3	Isolation of energy sources	-
	All machinery must be fitted with means to isolate it from all energy sources	Pass. The power switch has been used.
	Such isolators must be clearly identified	Pass. It has passed CE.
	They must be capable of being locked if reconnection could endanger exposed persons	Not applicable.
	In the case of machinery supplied with electricity through a plug capable of being plugged into a circuit, separation of the plug is sufficient	Not applicable.
	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	Pass. The isolator can be locked in the off position.
	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	Pass. All the parts will not be live after the energy is cut off.
	As an exception to the above requirement, certain circuits may remain connected to their energy source in order, for example, to hold parts, protect information, light interiors, etc.	Not applicable. No this kind of situation.

	In this case, special steps must be taken to ensure operator safety	
1.6.4	Operator intervention	-
	Machinery must be so designed, constructed and equipped that the need for operator intervention is limited	Pass. The design and construction of this machine are in conformity with these requirements.
	If operator intervention can't be avoided, it must be possible to carry it out easily and in safety	Not applicable. No this kind of situation.
1.6.5	Cleaning of internal parts	-
	The machinery must be designed and 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	Pass. The design of this machine is allowed to carry out this work.
	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	Not applicable. No this kind of situation.
1.7	Indicators	-
1.7.1	Information devices	-
	The information needed to control machinery must be unambiguous and easily understood	Pass. The information is identified clearly and can be easily under understood.
	It must not be excessive to the extent of overloading the operator	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	Pass. An alarm light with buzzer has been used.
1.7.2	Warning devices	-
	Where machinery is equipped with warning devices, these must be unambiguous and easily perceived	Pass. The warning devices comply with ergonomic principles.
	The operator must have facilities to check the operation of such warning devices at all times	Pass. Such facilities are provided.
	The requirements of the specific directives concerning colors and safety signals must be complied with	Pass. These requirements are complied with.
1.7.3	Warning of residual risks	-
	Where risks remain despite all the measures adopted or in	Pass.

	the case of potential risks which are not evident, the manufacturer must provide warnings	Appropriate warnings are provided.
	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	Pass. Appropriate warnings are provided.
1.7.4	Marking	-
	All machinery must be marked legibly and indelibly with the following minimum particular :	-
	- name and address of the manufacturer	Pass. Name and address of the manufacturer has been marked in the nameplate.
	- CE mark, which includes the year of construction	Pass.
	- designation of series or type	Pass. Designation of series or type has been marked in the nameplate.
	- serial number, if any	Pass. Serial number has been marked in the nameplate.
	Furthermore, where the manufacturer constructs machinery intended for use in a potentially explosive atmosphere, this must be indicated on the machinery	Not applicable. This machine is not intended to be used in a potentially explosive atmosphere.
	Machinery must also bear full information relevant to its type and essential to its safe use	Pass. Such information is
	Where a machine part must be handled during use with lifting equipment, its mass must be indicated legible, indelibly and unambiguously	Not applicable.
	The interchangeable equipment referred to in Article 1 ( 2 ) , third subparagraph, must bear the same information	Pass. All the related information is provided legible, indelibly and unambiguously.
1.7.5	Instruction	-
	a) All machinery must be accompanied by instructions including at least the following :	-
	- a repeat of the information with which the machinery is marked, except the serial number, together with any appropriate additional information to facilitate maintenance	Pass. All related information have been provided within the instruction manual.
	- foreseen use of the machinery within the meaning of	Pass. All related information have been

	1.1.2(c)	provided within the instruction manual
	- workstation(s) likely to be occupied by operators	Pass. All related information has been provided within the instruction manual.
	- instructions for safe	Pass. All related information has been provided within the instruction manual.
	- putting into service	Pass. All related information has been provided within the instruction manual.
	- use	-
	- handling, giving the mass of the machinery and its various parts where they are regularly to be transported separately	Pass. All related information has been provided within the instruction manual.
	- installation	Pass. All related information has been provided within the instruction manual.
	- assembling, dismantling	Pass.
	- adjustment	Pass.
	- maintenance (servicing and repair)	Pass.
	- where necessary, training instructions	Pass.
	- where necessary, the essential characteristics of tools which may be fitted to the machinery	Pass.
	Where necessary, the instructions should draw attention to ways in which the machinery should not be used	Pass. All related information has been provided within the instruction manual.
	b) The instructions , must be drawn up in one of the Community languages by the manufacturer or his authorized representative established in the Community	Pass. Chinese and English versions of the instruction manual are provided.
	On being put into service, all machinery must be accompanied by a translation of the instructions in the language or languages of the country in which the machinery is to be used and by the instructions in the original language	Pass. English versions of the instruction manual are provided.
	This translation must be done either by the manufacturer or his authorized representative established in the Community or by the person introducing the machinery into the language area in question	Pass. The translation is done by the manufacture.

	By way of derogation from this requirement, the maintenance instructions for use by the specialized personnel employed by the manufacturer or his authorized representative established in the Community may be drawn up in only one of the Community languages understood by that personnel	Pass.
	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 to safety	Pass. All related information has been provided within the instruction manual.
	d) Any literature describing the machinery must not contradict the instructions as regards safety aspects	Pass. No such situation exists.
	The technical documentation describing the machinery must give information regarding the airborne noise emission referred to in(f) and, in the case of hand-help and/or hand-guided machinery, information regarding vibration as referred to in 2.2	Pass. All related information has been provided within the technical documentation.
	e) Where necessary, the instructions must give the requirement relating to installation and assembly for reducing noise or vibration	Pass. All related information has been provided within the technical documentation
	f) The instructions must give the following information concerning airborne noise emission by the machinery, either the actual value or a value established on the basis of measurements made on identical machinery:	-
	- equivalent continuous A-weighted pressure level at workstations, where this exceeds 70 dB(A); where this level doesn't exceed 70dB(A),this fact must be indicated	Pass. The noise pressure level is more than 70 dB, but less than 85 dB.
	- peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa(130 dB in relation to 20 mPa)	Not applicable.
	- sound power level emitted by the machinery where the equivalent continuous A-weight sound pressure level at workstations exceeds 85 dB(A)	Not applicable.
	In the case of very large machinery, instead of the sound power level, the equivalent continuous sound pressure levels at specified positions around the machinery may be indicated	Not applicable. This machine is not very large machinery.
	Where the harmonized standards are not applied sound	Pass.

	levels must be measured using the most appropriate method for the machinery	Appropriate standards are applied to determine the sound level.
	The manufacturer must indicate the operating conditions of the machinery during measurement and what methods have been used for the measurement	Pass. All related information has been provided within the technical documentation.
	Where the workstation(s) are undefined or can't be defined, sound pressure levels must be measured at a distance of 1 meter from the surface of the machinery and at a height of 1.60 meters from the floor or access platform	Not applicable. The workstation has been defined.
	The position and value of the maximum sound pressure must be indicated	Pass. It has been indicated in the appropriate position of the machine.
	g) If the manufacturer foresees that the machinery will be used in a potentially explosive atmosphere, the instructions must give all the necessary information	Not applicable. This machine is not intended to be used in a potentially explosive atmosphere.
	h) In the case of machinery which may also be intended for use by non-professional operators, the wording and layout of the instructions for use, whilst respecting the other essential requirement mentioned above, must take into account the level of general education and acumen that can reasonably be expected from such operators	Pass. All these requirements have been taken into account.
2	Essential health and safety requirements for certain categories of machinery	-
2.1	Agri-foodstuffs machinery	-
	Where machinery is intended to prepare and process foodstuffs, it must be so designed and constructed as to avoid any risk of infection, sickness or contagion and the following hygiene rules must be observed:	Not applicable.
	a) materials in contact, or intended to come into contact, with the foodstuffs must satisfy the conditions set down in the relevant Directives	Not applicable.
	The machinery must be so designed and constructed that these materials can be clean before each use	Not applicable.
	b) all surfaces including their joinings must be so smooth, and must have neither ridges nor crevices which could harbor organic materials	Not applicable.
	c) assemblies must be designed in such a way as to reduce projections, edges and recesses to a minimum	Not applicable.
	They should preferably be made by welding or continuous	Not applicable.

	bonding	
	Screws, screw heads and rivets may not be used except where technically unavoidable	Not applicable.
	d) all surfaces in contact with the foodstuffs must be easily cleaned and disinfected, where possible after removing easily dismantled parts	Not applicable.
	The inside surfaces must have curves of a radius sufficient to allow through cleaning	Not applicable.
	e) liquid deriving from foodstuffs as well as cleaning disinfecting and rinsing fluids should be able to be discharged from the machine without impediment	Not applicable.
	f) machinery must be so designed and constructed as to prevent any liquids or living creatures, in particular insects, entering, or any organic matter accumulating in area that can't be cleaned	Not applicable.
	g) machinery must be so designed and constructed that no ancillary substances can come into contact with foodstuffs	Not applicable.
	Where necessary, machinery must be designed and constructed so that continuing compliance with this requirement can be checked	Not applicable.
	Instructions	Not applicable.
	In addition to the information required in Section1, the instructions must indicate recommended products and methods for cleaning, disinfecting and rinsing(not only for easily accessible areas but also where areas to which access is impossible or inadvisable, such as piping, have to be cleaned in it situ)	Not applicable.
2.2	Portable hand-help and/or hand-guided machinery	-
	Portable hand-help and/or hand-guided machinery must conform to the following essential health and safety requirements:	-
	- according to the type of machinery, it must have a supporting surface of sufficient size and have a sufficient number of handles and supports of an appropriate size and arranged to ensure the stability of the machinery under the operating conditions foreseen by the manufacturer	Not applicable.
	- except where technically impossible or where there is an independent control, in the case of handles which can't be released in complete safety, it must be fitted with start and	Not applicable.

	stop controls arranged in such a way that the operator can operate them without releasing the handles	
	- it must be designed, constructed or equipped to eliminate the risks of accidental starting and/or continued operation after the operator has released the handles	Not applicable.
	Equivalent steps must be taken if the requirement is not technically feasible	Not applicable.
	- portable hand-help machinery must be designed and constructed to allow, where necessary, a visual check of the contact of the tool with the material being processed	Not applicable.
	Instructions	-
	The instructions must give the following information concerning vibrations transmitted by hand-help and hand-guided machinery	-
	- the weight root mean square value to which the arms are subjected, if it exceeds 2.5 m/s <sup>2</sup> as determined by the appropriate test code	Not applicable.
	Where the acceleration doesn't exceed 2.5 m/s <sup>2</sup> , this must be mentioned	Not applicable.
	If there is no applicable test code, the manufacturer must indicate the measurement methods and conditions under which measurement were made	Not applicable.
2.3	Machinery for working wood and analogous materials	-
	Machinery for working wood and machinery for working materials with physical and technology characteristics similar to those of wood, such as cork, bone, hardened rubber, hardened plastic material and other similar stiff material must conform the following essential health and safety requirements	-
	a) the machinery must be designed, constructed or equipped so that the piece being machined can be placed and guided in safety; where the piece is hand-help on a work-bench the latter must be sufficiently stable during the work and must not impede the movement of the piece	Pass.
	b) where the machinery is likely to be used in conditions involving the risk of ejection of pieces of wood, it must be designed, constructed or equipped to eliminate this ejection, or, if this is not the case, so that the ejection doesn't engender risks for the operator and/or exposed persons	Not applicable. No this hazard.

	c) the machinery must be equipped with an automatic brake that stops the tool in a sufficiently short time if there is a risk of contact with the tool whilst it runs down	Not applicable. No this hazard
	d) where the tool is incorporated into a non-fully automated machine, the latter must be so designed and constructed as eliminate or reduce the risk of serious accidental injury	Not applicable.
3	Essential health and safety requirement to offset the particular hazards due to the mobility machinery	-
4	Essential health and safety requirement to offset the particular hazards due to a lifting operation	-
5	Essential health and safety requirement for machinery intended for underground work	-
6	Essential health and safety requirement to offset the particular hazards due to the lifting or moving of persons	-

## *Risk assessment*

## 1.Risk assessment Methodology

The risk assessment is based on a method recommended in EN ISO 12100:2010, in which the factors Se-CI(Fr, Pr, Av) and diagram are used to evaluate the level of risk. The meaning of those is described in the following:

(1) Se, severity of the possible harm:

- 1: Scratches, bruises that are cured by first aid or similar.
- 2: More severe scratches, bruises, stabbing which require medical attention from professionals.
- 3: Normally irreversible injury; it will be slightly difficult to continue work after healing.
- 4: Irreversible injury in such a way that it will very difficult to continue work after healing, if possible at all.

(2) Fr, average interval between frequency of the exposure and its duration:

- 1: Interval between exposures is more than a year.
- 2: Interval between exposures is more than two weeks but less than or equal to a year.
- 3: Interval between exposure is more than a day but less than or equal to two weeks.
- 4: Interval between exposure is more than an hour but less than or equal to a day. Where the duration is short than 10 min, the above values may be decreased to the next level.
- 5: Interval less than or equal to an hour. This value is not to be decreased at any time.

(3) Pr, possibility of occurrence of a hazardous event:

- 1: Negligible: for example, this kind of component never fails so that a hazardous event occurs. No possibility of human error.
- 2: Rarely: for example, it is unlikely that this kind of component will fail so that a hazardous event occurs. Human error is unlikely.
- 3: Possible: for example, this kind of component can fail so hazardous event occurs. Human error is possible.

4: Likely: for example, this kind of component will probably fail so a hazardous event occurs. Human error is likely.

5: Very High: for example, this kind of component is not made for this application. It will fail so that a hazardous event occurs. Human behavior is such that the likelihood of error is very high.

(4) Av, possibility of avoiding or limiting harm:

1: Likely: for example, it is likely that contact with moving parts behind and inter locked guard will be avoided in most cases should the interlocking fail and the movements continue.

2: Possible: for example, it is possible to avoid an entanglement hazard where the speed is slow.

3: Impossible: for example, it is impossible to avoid the sudden appearance of a powerful laser beam or a part of machine becoming live because of a fault in electrical insulation.

The risk is evaluated by using the matrix as below:

Severity	Class CI (Fr+Pr+Av)				
	3-4	5-7	8-10	11-13	14-15
4	Gray	Black	Black	Black	Black
3		Gray	Black	Black	Black
2			Gray	Black	Black
1				Gray	Black

Where the severity, Se, cross the class, CI:

In the black area, protective measures have to be implemented to reduce risk;

In the gray area, protective measures are recommended to be implemented to further reduce risk;

In the remaining area, the risk is already adequately reduced.

## 2. Risk assessment table

No.	EHSR	Sub clause of		Hazard/ Hazardous event	Life cycle/ Tasks	Hazardous situation	Risk estimation	Risk reduction and protective measures	Residual risk estimation	Additional requirements
		EN ISO12100-1	EN ISO12100-2							
1. Mechanical										
1.1		4.2.1	4.2.1	Being run over	-	N/A	-	-	-	-
1.2		4.2.2	4.2.2	Being thrown	-	N/A	-	-	-	-
1.3	1.3.7	4.10	4.3 a) 4.3 b) 4.6 4.10 5.1 to 5.3 5.5.2 to 5.5.6 6.1 to 6.5	Crushing						-
1.4	1.3.4			Cutting or severing	--	--	--	--	--	-
1.5	1.3.7			Drawing in or trapping	1. operation 2. maintenance	The car would be parked on the plant	SE 2, FR 2, PR 2, AV1, CL 5	Guard and stability was improved.	- SE 1, FR 1, PR 1, AV1, CL 3	-
1.6	1.3.7			Entanglement						-
1.7				Friction, abrasion	1. operation 2. maintenance	The moving parts.	SE 2, FR 2, PR 2, AV1, CL 5	Warning signs are used.	- SE 1, FR 1, PR 1, AV1, CL 3	-

1.8				Impact	-	N/A	-	-	-	-
1.9				Injection	-	N/A	-	-	-	-
1.10	1.3.7									
1.11	1.5.15			Slip, trip, and fall of person						-
1.12				Stabbing or puncture	-	N/A	-	-		
1.13				Suffocation	-	N/A	-	-		
2. Electrical										
2.1		4.3	4.9	Burn	-	See 17 below	-	-		
2.2			5.2	Chemical effects	-	See 17 below	-	-		
2.3			5.3.2	Effects on medical implants	-	See 17 below	-	-		
2.4			5.3.4							
2.5			6.4	Electrocution	-	See 17 below	-	-		
2.6			6.5	Falling, being thrown	-	See 17 below	-	-		
2.7				Fire	-	See 17 below	-	-		
2.8				Projection of molten particles	-	See 17 below	-	-		
			Shock	-	See 17 below	-	-			
3. Thermal										
3.1	1.5.5	4.4	4.4 b)	Burn	-	N/A.	-	-		
3.2			4.8.4	Dehydration	-	N/A.	-	-		
3.3			5.2.7	Discomfort						-
3.4			5.3.2.1	Frostbite	-	N/A	-	-	-	
3.5			5.4.5	Injuries by the	-	N/A.	-	-	-	-

				radiation of heat sources						
3.6	1.5.5			Scald	-	N/A	-	-	-	-
4. Noise										
4.1		4.5	4.2.2 4.3 c)	Discomfort	Operation	Longtime working beside the machine.	Se 2, Fr 1, Pr 2, Av 2, CI 5	The Noise would be less than 80db	Se 1, Fr 1, Pr 1, Av 1; CI 3	
4.2			4.4 c)	Loss of awareness	-	N/A.	-	-		
4.3			4.8.4	Loss of balance	-	N/A.	-	-		
4.4			5.1	Permanent hear loss	-	N/A.	-	-		
4.5			5.3.2.1	Stress	-	N/A.	-	-		
4.6			5.4.2	Tinnitus	-	N/A.	-	-		
4.7			6.3	Tiredness	-	N/A.	-	-		
4.8			6.5.1 c)	Any other (e.g. mechanical, electrical) as a consequence of an interference with speech communication or with acoustic signals	-	N/A.	-	-		
5. Vibration										
5.1		4.6	4.2.2	Discomfort	-	N/A	-	-	-	-
5.2			4.3 c)	Low-back morbidity	-	N/A.	-	-		
5.3			4.8.4	Neurological disorder	-	N/A.	-	-		
5.4			5.3.2.1	Osteo-articular disorder	-	N/A.	-	-		
			5.4.3							

5.5			6.5.1 c)	Trauma of the spine	-	N/A.	-	-			
5.6				Vascular disorder	-	N/A.	-	-			
6. Radiation											
6.1		4.7	4.2.2	Burn	-	N/A.	-	-			
6.2			4.3 c)	Damage to eyes and skin	-	N/A.	-	-			
			5.3.2.1								
6.3			5.4.5	6.5.1 c)	Effects on reproductive capability	-	N/A.	-	-		
6.4					Genetic mutation	-	N/A.	-	-		
6.5					Headache, insomnia, etc.	-	N/A.	-	-		
7. Material / substance											
7.1		4.8	4.2.2	Breathing difficulties, suffocation	-	N/A	-	-	-	-	
			4.3 b)								
7.2			4.3 c)	Cancer	-	N/A.	-	-			
7.3			4.4 a)	Corrosion	-	N/A.	-	-			
7.4			4.4 b)	Effects on reproductive capability	-	N/A.	-	-			
			5.1								
			5.3.2.1								
7.5			5.4.4	Explosion	-	N/A.	-	-			
7.6			6.5.1 c)	Fire	-	N/A	-	-			
7.7			6.5.1 g)	Infection	-	N/A.	-	-			
7.8			Mutation	-	N/A.	-	-				
7.9			Poisoning	-	N/A.	-	-				

7.10				Sensitization	-	N/A.	-	-			
8. Ergonomic											
8.1		4.9	4.2.1 4.7 4.8 8.24.11.8 5.2.1 5.3.2.1	Discomfort	1. Installation, commissioning  2. Setting  3. Maintenance	Person is working.	Se 4, Fr 1, Pr 3, Av 1, CI 4	Ergonomics principles are considered.  Operation position is secured on a proper level, and operator will not feel uncomfortable during working on the line.	Se 1, Fr 1, Pr 1, Av 1; CI 3	-	
8.2				Fatigue	1. Installation, commissioning  2. Setting  3. Maintenance	Person is working.	Se 4, Fr 1, Pr 3, Av 1, CI 4	Ergonomics principles are considered.  Operation position is secured on a proper level, and operator will not feel uncomfortable during working on the line.	Se 1, Fr 1, Pr 1, Av 1; CI 3	-	
8.3				Musculoskeletal disorder	-	-	-	-			
8.4				Stress	1. Installation, commissioning  2. Setting  3. Maintenance	Person is working.	Se 4, Fr 1, Pr 3, Av 1, CI 4	Ergonomics principles are considered.  Operation position is secured on a proper level, and operator will not feel uncomfortable during working on the line.	Se 1, Fr 1, Pr 1, Av 1; CI 3	-	
8.5				Any other (e.g. mechanical, electrical) as a consequence of human error	-	-	-	-			

9. Associated with environment in which the machine is used										
9.1		4.12	4.6	Burn	-	N/A.	-	-		
9.2				4.11.11	Slight disease	-	N/A.	-	-	
9.3			5.2.1	Slipping, falling	-	N/A.	-	-		
9.4			6.5.1 b)	Suffocation	-	N/A.	-	-		
9.5				Any other as a consequence of the effect caused by the sources of the hazards on the machine or parts of the machine	-	N/A.	-	-		
10. Hazard combination										
10.1		4.11		E.g. dehydration, loss of awareness het stroke	-	N/A.	-	-		
11. shape and/or superficial finishing of accessible parts of the machine										
11.1			4.2.1	Contact with rough surfaces	-	N/A.	-	-		
11.2				Contact with sharp edges and corners, protruding part	All the lifecycle	Injured by the sharp edges and corners of the platens.	Se 2, Fr 3, Pr 3, Av 1, CI 7	The sharp edges and corners are well trimmed.	Se 1, Fr 1, Pr 1, Av 1; CI 3	
12. Moving parts of machine										
12.1			4.2, 4.4, 4.5, 5.1 to 5.3, 5.5.2 to	Contact with moving parts	1. Operation 2. Maintenance	Access to the moving parts.	Se 2, Fr 3, Pr 3, Av 1, CI 7	Most of the moving parts are protected by the enclosure and interlocking device is used.	Se 1, Fr 1, Pr 1, Av 1; CI 3	

12.2			5.5.4, 6.3 to 6.5	contact with rotating open ends	Operation	Touching the rotating ends.	Se 2, Fr 3, Pr 3, Av 1, CI 7	Enough safety distance is given and people cannot get an easy access to this point.	Se 1, Fr 1, Pr 1, Av 1; CI 3	
13. Kinetic energy and/or potential energy (gravity) of the machine, tools and materials used, processed, handled										
13.1			4.3, 4.5, 4.10 to 4.12, 5.2.1, 5.2.2, 5.2.7, 5.3, 5.5.2, 5.5.4, 5.5.6, 6.4, 6.5	falling or ejection of objects	-	N/A.		-		
14. Stability of the machine and/or parts of the machine										
14.1	1.3.1		4.3 a), and b), 4.6, 5.2.6, 5.2.7, 6.3 to 6.5	Loss of stability	Operation	Tripping	Se 4, Fr 1, Pr 3, Av 1, CI 5	Good stability design and all the components are fastened securely. Periodic checking is required.	Se 1, Fr 1, Pr 1, Av 1, CI 3	-
15. Mechanical strength of parts of the machine, tools, etc.										
15.1	1.3.2		4.3 a) and b), 4.11, 4.13, 5.2, 5.2.7, 5.3.1 to 5.3.3, 5.5.2, 6.4, 6.5	Break-up during operation	-	N/A.	-	-		
16. Pneumatic, hydraulic equipment										
16.1			4.3 a) and b),	displacement of	-	N/A.	-	-		

			4.10, 4.13,	moving elements						
16.2	1.3.2		5.2.7, 5.3.1 to 5.3.3,	High pressure fluid injection or ejection		N/A				-
16.3			5.5.4 6.4, 6.5	Uncontrolled movements,	-	N/A.	-	-		
17. Electrical equipment										
17.1	1.5.1		4.4 a), 4.9,	Direct contact						-
17.2			4.12, 5.2.	Disruptive discharge	-	N/A	-	-		
17.3			5.3, 5.5.4,	Electric arc		N/A.	-	-		
17.4			6.4, 6.6	Fire	--	N/A.	-	-		
17.5	1.5.2			Indirect contact	Normal operation	When insulation failures	Se 4, Fr 6, Pr 2, Av 3; CI 11	1. Enhanced or double insulation with current breakers. 2. Approved under-voltage contactors are used.	Se 1, Fr 1, Pr 1, Av 1; CI 3	-
17.6				Short-circuit	Normal operation	High voltage impulse.	Se 4, Fr 3, Pr 3, Av 3, CI 9	Approved breakers with overcurrent protection functions are fitted.	Se 1, Fr 1, Pr 1, Av 1; CI 3	-
18. Control system										
18.1			4.5, 4.11 to 4.13, 5.5.2 to 5.5.4, 6.3 to 6.5	Dropping or ejection of a moving part of the machine or of a workpiece clamped by the machine	-	N/A.	-			
18.2				Failure to stop moving parts	-	N/A.	-	-		
18.3				Machine action	Normal operation	Wiring fault.	Se 4, Fr 3, Pr	Emergency stop is provided	Se 1, Fr 1, Pr	-

				resulting from inhibition (defeating of failure) of protective devices			3, Av 3; CI 9	which complies with category 0. 'Well-tried' safety device.	1, Av 1; CI 3	
18.4				Uncontrolled movements (including speed changes)	-	N/A.	-	-		
18.5				Unintended/ unexpected start-up	Operation/ Operating manual mode, automatic mode	If power source off and resume, the machine would start up automatically.	Se 4, Fr 3, Pr 3, Av 3; CI 9	2. Approved components are applied in the circuits.	Se 1, Fr 1, Pr 1, Av 1; CI 3	-
18.6	1.2.1, 1.2.7			Other hazardous events due to failure (s) or poor design of the control system	-	N/A.	-	-		
19. Materials and substances or with physical factors (temperature, noise, vibration, radiation and environment)										
19.1			4.2.2 4.3 c) 4.4	Contact with objects with high or low temperature						
19.2			5.1 5.3.2 5.4	Emission of a substance that can be hazardous	-	N/A.	-	-		
19.3			6.3 to 6.5	Emission of a level of noise that can be hazardous	Operation	Long time working at the work station.	Se 2, Fr 1, Pr 2, Av 2, CI 5	The sound pressure level is indicated in the user manual and earplug is recommended to wear.	Se 1, Fr 1, Pr 1, Av 1; CI 3	

19.4				Emission of a level of noise that can interfere with a speech communication or with acoustic signals	-	N/A.	-	-		
19.5				Emission of a level of vibration that can be hazardous	-	N/A.	-	-		
19.6				Emission of a level of radiation fields that can be hazardous	Operation	Unintended movement due to the environment EMI affection on the control system.	Se 4, Fr 6, Pr 2, Av 3; CI 11	EMC and EMI safety performance is verified based on the Declaration of EMC Conformity issued by the supplier.	Se 1, Fr 1, Pr 1, Av 1; CI 3	-
19.7				Harsh environmental conditions	-	N/A.	-	-		
20. Workstation and/or process design										
20.1	1.1.2d, 1.1.5 1.2.2		4.2.1 4.7 4.8	Excessive efforts	-	N/A.	-	-		
20.2			4.11.8 5.5.5 5.5.6 6.3 to 6.5	Human errors/misbehaviour (unintentional and/or deliberately induced by the design)	-	N/A.	-	-		
20.3				Loss of direct visibility	-	N/A.	-	-		

				of the working area						
20.4				Painful and tiring postures	-	N/A.	-	-		
20.5				Repetitive handling at high frequency	-	N/A.	-	-		

*EN 1010 Checklist*

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
1	Scope		-
2	Normative references		-
3	Terms and definitions		-
4	List of significant hazards		-
5	Safety requirements and/or protective measures		-
5.1	General		-
5.2	Requirements common to printing and paper converting machines		Pass
5.2.1	Safeguarding of danger points		Pass
5.2.2	Guards and interlocks		Pass
5.2.3	Devices for setting-up, cleaning, trouble-shooting during the work process and maintenance		Pass
5.2.3.1	Where accessible danger zones cannot be observed from positions from which hazardous movements can be started, one of the following requirements shall be satisfied: where accessible danger zones are safeguarded by a fence-type enclosure, it shall not be possible for the person(s) within the enclosure to close the interlocking access gate or an additional control device shall be provided outside the enclosure in such a position that it cannot be actuated from the inside. Any hazardous movement shall be permitted only after the access door has been closed and the control device been actuated; Where accessible danger zones are safeguarded by means of ESPDs, an additional control element shall be provided outside the danger zone that cannot be reached from any position in the danger zone. Provisions shall be made that the hazardous movement can only be started after the person has actuated the additional control element.	The interlock Safe guards are used ESPDs are used	Pass
5.2.3.2	When the interlocking guard is opened or removed or if a person has entered the danger zone and there are danger points unprotected, it shall only be possible to start a machine by means of a) Hold-to-run control devices b) Manual operation Devices which allow manual operation of the machine or parts of the machine shall be designed so that persons are not exposed to danger.	b) Hold-to-run control devices are used	Pass
5.2.3.3	From the place of operation of the hold-to-run control, it shall be possible to observe the danger points and danger zones.		Pass
5.2.3.4	Where hold-to-run controls are being used for safeguarding a danger point, starting the machine in the hold-to-run mode after opening the interlocking guard shall only be possible when other interlocking guards outside the area that can be observed by the operator are closed.		Not applicable
5.2.3.5	Where hold-to-run controls are being used for safeguarding a danger point, starting the machine in the hold-to-run mode after opening the interlocking guard shall only be possible when other interlocking		Not applicable

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	guards outside the area that can be observed by the operator are closed.		
5.2.4	Explosion prevention and protection		-
5.2.4.1	All electrical and non-electrical equipment and components intended for use in potentially explosive atmospheres shall be designed and constructed according to good engineering practice and conform to the required categories for group II equipment to ensure avoidance of any ignition source as specified in 5.3 of EN 1127-1:1997. To classify the category of the equipment, it shall be subjected to an ignition hazard assessment in accordance with 5.2 of EN 13463-1:2001.		Not applicable
5.2.4.2	Explosion prevention and protection is not required for machinery where there are no flammable liquids with a flash point below 55 °C being used and no flammable liquids are sprayed or heated to a temperature above flash point under operating conditions. All other machinery shall be designed to satisfy the requirements specified in EN 1127-1:1997 for the zones described in Annex A.		Not applicable
5.2.4.3	Electrical equipment		-
5.2.4.3.1	Any electrical equipment intended for use in a potentially explosive atmosphere caused by gas, vapour, mists or dust shall comply with the requirements of EN 50014. Where relevant, these requirements may be supplemented or modified by EN 50015:1998, EN 50016:1995, EN 50017:1998, EN 50018:2000, EN 50019:2000, EN 50020:1994 and EN 50039:1980 as appropriate.		Not applicable
5.2.4.3.2	Group II category 1G, 2G or 3G equipment for installation in a particular zone shall be selected according to clause 5 of EN 60079-14:1998.		Not applicable
5.2.4.3.3	Group II category ID, 2D or 3D equipment for installation in a particular zone shall be selected according to EN 50281-1-2:1999.		Not applicable
5.2.4.4	Non-electrical equipment		Not applicable
5.2.4.4.1	All non-electrical equipment, intended for use in a potentially explosive atmosphere caused by gas, vapour, mist or dust, shall comply with the requirements of EN 13463-1:2001 and EN 13463-5:2003 and, where relevant, the European Standards to be applied for the specific type of ignition protection.		Not applicable
5.2.4.4.2	Group II category 1G or ID equipment, for installation in zone 0 or 20 respectively, shall not contain any effective ignition source during expected malfunctions or rare malfunctions.		Not applicable
5.2.4.4.3	Group II category 2G or 2D equipment, for installation in zone 1 or 21 respectively, shall not contain any effective ignition source during normal operation or expected malfunction.		Not applicable
5.2.4.4.4	Group II category 3G or 3D equipment, for installation in zone 2 or 21 respectively, shall not contain any effective ignition source during normal operation.		Not applicable

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
5.2.4.5	The surface temperature of all parts of category 1 and 2 non-electrical equipment likely to come into contact with potentially explosive atmospheres and the temperature of the potentially explosive atmosphere shall not exceed 80 % of the ignition temperature in °C of the gases or vapours. The temperature of all surfaces which can come into contact with dust clouds shall not exceed 2/3 of the minimum ignition temperature in °C of the dust cloud.		Not applicable
5.2.4.6	On surfaces where the deposition of potentially glowing dust cannot be positively prevented, the surface temperature of all parts of non-electrical equipment shall not exceed the minimum ignition temperature of the dust layer reduced by 75 K.		Not applicable
5.2.4.7	Brakes and clutches shall be designed such that they cannot be a source of ignition in accordance with EN 13463-5:2003.		Not applicable
5.2.4.8	Undesirable electrostatic discharges shall be avoided by earthing and interconnecting all the metallic components.		Not applicable
5.2.4.9	Hoses and pipes used for exhausting flammable dusts and other flammable materials (paper, plastic etc.) shall be conductive and electrostatically grounded (resistance less than 10 <sup>6</sup> Ω). Respective reference shall be made in the instruction handbook.		Not applicable
5.2.4.10	Hoses and pipes for inks, coating substances and impregnating materials and glues as well as for exhausting solvent vapours shall be conductive and electrostatically grounded (resistance less than 10 <sup>6</sup> Ω).		Not applicable
5.2.4.11	The distance between the electric drive motor and the agitator for viscosity control and the outer flange of the agitating device shall be at least 50 mm (lantern-type fixing). It is also recommended that a disc should be mounted on the shaft to increase the preventive effect.		Not applicable
5.2.4.12	The electric drive motor on recirculating pumps on supply tank for inks, coating substances, impregnating material or glues shall be protected in accordance with EN 50018:2000 with regard to ignition protection. Where protective motor switches are mounted on the pump, EN 50019:2000 is sufficient.		Not applicable
5.2.5	Electrical equipment		-
5.2.5.1	All electrical equipment shall be designed such that electrical hazards (for example electric shock, burns) according to EN 60204-1:1997 are prevented. The requirements of EN 60204-1:1997 shall be fulfilled, taking into account the following additional requirements.	Complied with EN 60204-1	Pass
5.2.5.2	Machines shall be provided with a supply disconnecting device in accordance with 5.3.2 a) or c) of EN 60204-1:1997. The device shall be provided with a means to be locked in the OFF position. Where the operation of the emergency stop control devices causes galvanic disconnection from the power supply by undervoltage tripping, a circuit-breaker in accordance with 5.3.2 c) of EN 60204-1:1997 is required.	Complied with EN 60204-1	Pass

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	Where circuits as specified in 5.3.5 of EN 60204-1:1997 are not disconnected by the supply disconnecting device, such circuits shall be provided with their own disconnecting device.		
5.2.5.3	Emergency stop devices shall be designed in accordance with 9.2.5.4.2 of EN 60204-1:1997 either as a category 0 stop or as a category 1 stop. On machines where inrunning nips are safeguarded by trip bars according to 5.2.10, the emergency stop shall function as a category 1 stop.	accordance with 9.2.5.4.2 of EN 60204-1:2006/AC:2010 category 0 stop	Pass
5.2.5.4	On rectifier drives, the actuation of an emergency stop control device may, as a deviation from 9.2.5.4 of EN 60204-1:1997, cause stopping of the drive as a category 2 stop according to 9.2.2 of EN 60204-1:1997 if pulse blocking in the rectifier and disconnecting the voltage supply to encoder and associated control circuitry are separate functions in accordance with category 3 of EN 954-1:1996.	Complied with 9.2.5.4 of EN 60204-1:2006/AC:2010 category 2 stop	Pass
5.2.5.5	Electrical devices and conductors shall be installed in such a way that damage from mechanical stresses and environmental influences are prevented. Electrical devices should be to IP 54 according to EN 60529:1991.	IP54	Pass
5.2.5.6	For insulated single-core conductors laid between two terminals inside an enclosure (for example, a switch cabinet), one of the following methods shall be used for conductor identification: <ul style="list-style-type: none"> <li>identification by number or alphanumerically;</li> <li>identification by colour in accordance with 14.2.4 of EN 60204-1:1997;</li> <li>securing conductors in position, for example by using comb-type wire fixing in such a way that any confusion of conductors when changing electric components is safely prevented;</li> <li>or another adequate method.</li> </ul>	identification by colour in accordance with 14.2.4 of EN 60204-1: 2006/AC: 2010	Pass
5.2.5.7	All electrical equipment shall be designed such that it will withstand the testing specified in 19.2 to 19.6 of EN 60204-1:1997. Voltage tests as specified in 19.4 of EN 60204-1:1997 are not required for electronic control circuits provided by computer systems or electronic control components.		Pass
5.2.5.8	Measuring devices which are part of machines shall comply with EN 61010-1:2001.	Complied with EN 61010-1:2001.	Pass
5.2.6	Control systems		-
5.2.6.1	Control requirements for machines which do not require routine and regular access to danger points.		-
5.2.6.1.1	In the hydraulic/pneumatic control system, the safety-related parts shall satisfy at least category 1 (6.2.2) of EN 954-1:1996. In the electric/electronic control system, the safety-related parts shall satisfy at least category 3 (6.2.4) of EN 954-1:1996. Only single main contactors may be provided. The minimum requirement is that faults in the auxiliary relays and auxiliary contactors in the control circuit	category 1 of EN ISO 13849-1	Pass

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	shall be detected and hazardous movements stopped. When using computers or PLC (Programmable Logic Control) for monitoring, safety-related malfunctions shall be detected and lead to disconnection.		
5.2.6.1.2	<p>On rectifier and inverter drives, the control system shall be designed such that, in the event of any guard or safety device causing the machine to stop, the main contactor will also be switched off, for example by using an electric/electronic timer for switching it off after a preset time or any other adequate measure such as the application of a mechanical brake with a braking torque greater than the drive torque of the motor. Safety devices are, for example, emergency stop devices, ESPDs, interlocked guards, trip devices.</p> <p>On rectifier and inverter drives which feed energy back into the electric circuit during stopping, appropriate control-related measures shall be taken, in addition to pulse blocking, to ensure that the main contactor is switched off no later than after elapse of the normal stopping time, or any other adequate measure to that effect. During hold-to-run control operations, there is no need to disconnect the main contactor during the release time of the prestart warning device (see Annex B).</p>	Emergency stop, ESPDs, interlocked guards, trip devices are used	Pass
5.2.6.1.3	When an emergency stop device is fitted with a main contactor which detects a low voltage condition, it shall disconnect the main power supply at least of category 1 of EN 954-1:1996.	category 1 of EN ISO 13849-1	Pass
5.2.6.1.4	Mutual interlocking of safety devices safeguarding individual areas each of which can be observed by the operator shall satisfy the requirements of at least category 1 of EN 954-1:1996. Interlocking may be computer controlled.	category 1 of EN ISO 13849-1	Pass
5.2.6.1.5	Residual pile monitoring systems shall comply with category B of EN 954-1:1996.	category B	Pass
5.2.6.2	Increased control requirements for machines which require routine and regular access to danger points, for example guillotines, hand-fed platen machines, hand-fed screen printing presses and hand-fed label punching machines.		Pass
5.2.6.2.1	<p>In the hydraulic/pneumatic control system, the safety-related parts shall satisfy at least category 3 (6.2.4) of EN 954-1:1996.</p> <p>In the electric/electronic control system, the safety-related parts shall satisfy category 4 (6.2.5) of EN 954-1:1996. Main contactors shall be provided in duplicate. Faults in the main contactors shall be detected and lead to lockout.</p> <p>For requirements of position switches, see 5.2.11.</p>	category 3	Pass
5.2.6.2.2	Electronic braking systems on their own shall not be admissible on machines with routine and regular access. Such braking systems require the provision of additional mechanical brakes for back-up. The mechanical brake torque shall be greater than the maximum electric drive torque of the		Pass

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	rectifier and inverter drive.		
5.2.7	Indicators, marking, actuators, prestart warning devices		-
5.2.7.1	The requirements relating to indicating, marking and actuators as defined in EN 61310-1:1995 and EN 61310-2:1995 shall be satisfied.		Pass
5.2.7.2	On machines where overall vision is restricted and communication between operating personnel is difficult, prestart warning devices shall be provided which positively give a clearly distinguishable audible signal before the machine starts. The requirements defined in Annex B shall be satisfied. In addition to an audible warning device, one or more visual warning devices may be required.		Pass
5.2.7.3	Machines shall be provided with at least one operating element for starting and stopping. This function can also be achieved by a power supply disconnecter mounted on the machine. Control switches for starting and stopping and their related operating elements shall satisfy the requirements of EN 60204-1:1997 and 3.7.8 of EN ISO 12100-2:2003.	Complied with EN ISO 12100: 2010 and EN 60204-1: 2006/AC:2010	Pass
5.2.7.4	Operating elements of control switches for starting hazardous movements shall be safeguarded against unintended actuation.		Pass
5.2.7.5	Machines shall be provided with separate main control switches for each type of energy used. The requirements of EN 1037:1995 shall be satisfied.	Complied with EN 1037:1995	Pass
5.2.7.6	For emergency stopping devices, the requirements of EN 418:1992 and EN 60204-1:1997 shall be satisfied.		Pass
5.2.8	Two-hand controls		Pass
5.2.8.1	Two-hand controls as safety devices are acceptable only if any hazardous movement stops when only one of the two actuators is released. The hazardous movement shall come to a stop in a time that, taking into consideration the hand approach speed, ensures there is no danger for the operator. The hand approach speeds specified in EN 999:1998 shall be taken as a basis. The requirements of type III of EN 60204-1 shall be satisfied.	type III of EN 60204-1	Pass
5.2.8.2	For hydraulic/pneumatic two-hand controls, the requirements specified for type III A and for electric/electronic two-hand controls, the requirements specified for type III B of EN 574:1996 shall be satisfied.		Not applicable
5.2.8.3	As a deviation from 5.2.8.2, hydraulic/pneumatic two-hand controls safeguarding danger points requiring routine and regular access shall satisfy the requirements specified for type III B and electric/electronic two-hand controls the requirements specified for type III C of EN 574:1996.		Not applicable
5.2.8.4	Two-hand controls on trailing cables used for make-ready and trouble-shooting are permissible in accordance with 5.2.3.4. In these circumstances, EN 999:1998 is not applied. Trailing cables shall have sufficient strength to withstand any mechanical stresses to be anticipated and be provided with measures to prevent the lead being pulled out of its	Complied with EN 999:1998	Pass

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	connection point.		
5.2.9	Electrosensitive protective devices (ESPDs)		-
5.2.9.1	ESPDs shall satisfy the requirements of type 2 of EN 61496-1:1997 and IEC 61496-2:1997.		Pass
5.2.9.2	As a deviation from 5.2.9.1, ESPDs which safeguard routine and regular access to the danger zone shall satisfy the requirements of type 4 of EN 61496-1:1997 and IEC 61496-2:1997.	type 4 of EN 61496-1:1997	Pass
5.2.9.3	The hand approach speed specified in EN 999:1998 shall be used as a basis for determining the correct positioning of the ESPD. For ESPDs fitted as start-up inhibiting devices, EN 999:1998 does not apply. Additional safety devices shall be installed.		Not applicable
5.2.9.4	Where ESPDs are used for preventing whole-body access to safeguarded danger zones, at least two ESPD beams shall be provided at a height of 400 mm and 900 mm respectively.		Pass
5.2.10	Pressure sensitive mats, trip devices		-
5.2.10.1	Pressure sensitive mats shall satisfy the requirements of EN 1760-1:1997, trip bars shall satisfy the requirements of EN 1760-2:2001. The requirements of category 3 of EN 954-1:1996 shall be satisfied (see 4.15 of EN 1760-1:1997 or 4.18 of EN 1760-2:2001). Trip devices and pressure-sensitive mats which safeguard routine and regular access to a danger point shall comply with category 4 of EN 954-1:1996.		Not applicable
5.2.10.2	After tripping the stop function, the length of the movement of the trip device shall be longer than the stopping path of the hazardous movements.		Pass
5.2.11	Safety position switches		-
5.2.11.1	The requirements of clauses 5 and 6 of EN 1088:1995 shall be satisfied.		Pass
5.2.11.2	For safety position switches built in accordance with EN 60947-5-1:1997 and installed in accordance with EN 60204-1:1997, it may be assumed that malfunctions are not likely to occur. For machines where routine and regular access is not required, it is therefore sufficient to provide only one position switch for each interlocking guard.	accordance with EN 60204-1: 2006/AC: 2010	Pass
5.2.11.3	Short circuits between two electric wires outside the switch cabinet due to physical impacts can be prevented by mechanical protection of the cable (for example locating within ducts, in the machine frame).		Pass
5.12	Work platforms, access stairs, passageways and raised workplaces		
5.12.1	General requirements		-
5.12.1.1	For operation, make-ready and regular maintenance, safe workplaces including their means of access and passageways shall be provided according to EN ISO 14122-1:2001, EN ISO 14122-2:2001, EN ISO 14122-3:2001 and EN ISO 14122-4:2004.		Pass
5.12.1.2	Floor coverings shall be slip resistant. This may be achieved, for example, by using profiled steel plate or material satisfying the requirements of	slip resistant material is used	Pass

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	classification group R 10 of EN ISO 14122-2:2001.		
5.12.1.3	The minimum clear height for passage shall comply with the stipulations of EN ISO 14122-2:2001. Where this clearance cannot be complied with for constructional reasons, the protruding parts shall be padded and provided with danger marking.		Pass
5.12.1.4	Raised permanent workplaces should have a clear working area of at least 1,5 m <sup>2</sup> per person and the smallest width should be 1,0 m unless this inhibits ergonomic requirements (for example, handling of objects).		Pass
5.12.1.5	The maximum pitch angle on access stairs shall be 45 °. Depending on the results of risk assessment, other means of access may be appropriate. For infrequently used workplaces which cannot be accessed by stairs, secured ladders may be used if the access height does not exceed 2 m.		
5.12.1.2	Additional means for infrequently used access platforms		Not applicable
5.12.1.2.1	Good ergonomics and safe body postures should be achieved, for example, by the following measures: sufficient number of handholds some of which can be reached from the reference level; mobile platforms; permanently fixed and hinged platforms.		Not applicable
5.12.1.2.2	Requirements for steps (fixed or hinged)		Not applicable
5.12.1.2.3	Where handles are required, the following dimensions apply: minimum handle depth 40 mm minimum handle length 110 mm minimum handle diameter 20 mm		Not applicable
5.12.1.2.4	Hinged platforms up to a height of 0,5 m to 1,6 m shall be provided with at least one handrail. Hinged platforms shall be secured against unintended movement and shall be easy to handle.		Not applicable
5.2.13	Stability		-
5.2.13.1	Machines shall be so designed and equipped that no unforeseeable changes of position can occur. The requirements of EN ISO 12100-2:2003 shall be satisfied. Unforeseeable changes of position are prevented, for example, by adequate dimensioning of base; low centre of gravity; means for anchoring; adequate design of wheels on track-mounted assemblies.		Pass
5.2.13.2	Movable machines (machines on wheels) shall be safeguarded against unintended travel. Unintended travel of wheels and castors with no brakes may, for example, occur on the following machines: small UV dryers, damping water devices, jogging tables, sheet folding,	UV dryers are used and the safe guards are provided to against unintended travel	Pass

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	<p>riveting, stitching and eyeleting machines, strapping and tying machines, bundling presses, printer slotters, rotary die-cutters and combined machines (in-line).</p> <p>Unintended travel is prevented, for example, if</p> <ul style="list-style-type: none"> <li>out of four wheels, at least one,</li> <li>out of two wheels and two castors, at least one castor,</li> <li>out of four castors, at least two can be locked.</li> </ul> <p>Where possible, automatic locking devices should be fitted, such as self-locking gears, for example.</p>		
5.2.14	High contact temperatures		-
	<p>The contact temperatures of accessible hot parts on machines shall not be higher than the limit values specified in EN 563:1994.</p> <p>Safeguarding against contact with heated parts is possible by insulation or distance guarding, for example.</p> <p>For information in the instruction handbook, see 7.2.4.</p>	The safe guard is used to against this risk	Pass
5.2.15	Noise		-
	<p>The machines shall be so designed and constructed that risks from airborne noise emission are reduced to the lowest level particularly by applying measures at source to control noise (see, for example, EN ISO 11688-1:1998). The success of these applied noise reduction measures is assessed on the basis of the actual noise emission values (see clauses 6 and 7) in relation to other machines of the same family.</p> <p>Sound measurements to determine the noise emission shall be carried out in compliance with the requirements specified in EN 13023:2003.</p> <p>For information about noise in the instruction handbook, see 7.2.3.</p>	<p>The nosie level is 85db</p> <p>The Noise shield is used to control the noise</p>	Pass
5.2.16	Radiation hazards		Not applicable
5.2.16.1	<p>Laser devices incorporated in machinery shall comply with the requirements of EN 12626:1997 and EN 60825-1:1994. The equipment shall be provided with fixed or interlocking guards in order to prevent access to positions where laser radiation emission is above the category 1 limit values according to EN 60825-1:1994 during the intended use of the machine. For reasons of repair, it may be necessary for trained personnel to operate the machine for short periods of time without fixed or interlocking guards. If this requires access to positions where laser radiation emission is above the category 1 limit values, additional safety measures need to be taken in accordance with EN 60825-1:1994.</p>		Not applicable
5.2.16.2	<p>The level of ultraviolet radiation emitted by machinery shall not exceed category 1 limit values of Table D.1 of EN 12198-1:2000 for permanent workplaces as well as for occasionally occupied positions.</p> <p>Actual radiation values shall be determined according to Annex D.1 and Table D.2 of EN 12198-1:2000.</p>		Not applicable
5.2.17	Immunity to electromagnetic disturbances		-

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	Printing and paper converting machines shall have sufficient immunity to electromagnetic disturbances to enable them to operate safely as intended and shall not fail to danger when exposed to levels and types of disturbances as specified in EN 61000-6-2:2001. The manufacturer of the printing and paper converting machines shall design, install and wire the equipment taking into account the recommendations of the supplier(s) of the parts or subassemblies to ensure that any effects of electromagnetic disturbances shall not lead to unsafe operation and/or failure to danger.		Not applicable
5.3	Common devices		-
5.3.1	Stationary knives		Pass
5.3.2	Rotary tools		Pass
5.3.3	Dangerous tools		-
	For the transport and storage of dangerous tools of machines such as knives, devices, for example knife boxes, shall be provided to prevent injuries from being caused by the tools. This requirement also applies to individual tools forming part of assemblies.		Pass
5.3.4	Feeding units, delivery units (pile lifting and lowering devices)		-
5.3.4.1	The pile lifting and lowering device shall be designed such that it can withstand a static load test with a load of 1,25 times the maximum load capacity without showing permanent deformations or apparent defects. It shall withstand a dynamic load test with a load of 1,1 times the maximum load capacity under normal operating conditions.	Load test at 1,25 times the maximum load	Pass
5.3.4.2	On pile lifting and lowering devices with production format sizes over 2,5 m <sup>2</sup> , the breaking strength of the steel link chains shall be at least 6 times the permissible static load; on pile lifting and lowering devices with production format sizes below 2,5 m <sup>2</sup> , it shall be at least three times the permissible static load. Calculations shall be based on a specific density of at least 1 400 kg/m <sup>3</sup> for paper and at least 200 kg/m <sup>3</sup> for corrugated board.		Pass
5.3.4.3	On pile lifting and lowering devices with production format sizes over 2,5 m <sup>2</sup> and a lifting height over 1,5 m, provisions shall be made to prevent the pile carrier from moving more than 100 mm in the event of failure of a rope, chain, supporting nut or gear drive or leaking hoses or pipes.		Pass
5.3.4.4	On pile lifting and lowering devices with production format sizes over 2,5 m <sup>2</sup> , the area below the pile carrier plate shall be safeguarded by guards or by ESPDs. EN 999:1998 need not be considered. For ESPDs, the requirements of 5.2.9.4 shall be taken into consideration.	The ESPDs are used	Pass
5.3.4.5	On pile carrier plates, the danger points between the edges of the pile carrier plate and the place where the operator may stand shall be safeguarded as follows:		-
	a) on feeders with production format sizes of up to 1,0 m <sup>2</sup> and on delivery	The hold-to-run button and e-stop	Pass

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	<p>units with production format sizes of up to 0,175 m<sup>2</sup>, the pile carrier plate shall be allowed to lower automatically only down to a height of 120 mm above the base of operation and further down to the base only in the hold-to-run control mode.</p> <p>Danger points may alternatively be safeguarded by one of the measures listed under b).</p> <p>b) on feeders with production format sizes of over 1,0 m<sup>2</sup> and on delivery units with format production sizes of over 0,175 m<sup>2</sup>, one of the following protective measures shall be provided in order to safeguard the exposed edges of the pile carrier plates:</p> <ul style="list-style-type: none"> <li>resilient, non-switching, overhanging shields mounted on the pile carrier plate with their forward edges protruding over the hazardous edges by at least 250 mm (see Figure 6),</li> </ul> <p>c) on feeders and delivery units with production format sizes over 2,5 m<sup>2</sup>, the danger point on the pile carrier plate edges shall be safeguarded by one or more of the following safety devices:</p> <ul style="list-style-type: none"> <li>guard,</li> <li>ESPDs in front of the edge of the pile carrier plate, on board feeder and delivery units by an ESPD fitted at a distance of 300 mm minimum from the edge of the pile carrier plate.</li> </ul>	<p>button are used</p>	
5.3.4.6	<p>Where platforms or catwalks are fitted to the feeding or delivery unit, the danger point between platform or catwalk and the edge of the pile carrier plate shall be safeguarded. This can be achieved, for example, by one of the following measures:</p> <ul style="list-style-type: none"> <li>minimum distance of 120 mm between pile carrier edge and edge of platform,</li> <li>ESPDs in front of the pile carrier edge, EN 999:1998 need not be followed,</li> <li>horizontal distance of 300 mm between the vertical projection of outer edge of the machine frame and pile carrier edge with deflecting parts of the machine frame arranged at a distance of no greater than 1,5 m above platform or catwalk, trip devices.</li> </ul>	<p>minimum distance is 120 mm ESPDs in front of the pile carrier edge</p>	Pass
5.3.4.7	<p>On sheet feeding and delivery units, the crushing and shearing points caused by the upward movement of the pile or pile carrier plate shall be safeguarded. Safeguarding may, for example, be done by one of the following measures:</p> <ul style="list-style-type: none"> <li>safety distances in accordance with EN 349:1993,</li> <li>trip devices,</li> <li>guards,</li> <li>hold-to-run operation.</li> </ul>	<p>Safe guard I used and the safe distances in accordance with EN ISO 13857: 2010 The hold-to-run button is used</p>	Pass
5.3.4.8	<p>Separating elements on feeders shall be so designed that their movement does not create danger points. Where blanks are fed from the bottom of the</p>		Not applicable

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	<p>pile, safeguarding is achieved, for example, by residual pile monitoring on feeders.</p> <p>The danger points on separating elements outside the side lays on feeders shall be safeguarded for every format size used. This may be achieved, for example, by using concertina-type bellows or additional guards.</p> <p>Where blanks are fed from the top of the pile, the requirement is satisfied if safety distances between suction heads are used or if suction heads touch down only under spring force.</p>		
5.3.4.9	<p>Danger points on suction head drives (see Figure 8) that can be accessed during the production process shall be safeguarded by guards completely enclosing the head, only leaving the bottom open.</p>	<p>The safeguard meet with this requirement</p>	<p>Pass</p>
5.3.4.10	<p>Inrunning nips on the feedboard rollers on the sheet feeding system and on forwarding rollers shall be safeguarded (see Figure 9). This can be achieved, for example, by</p> <ul style="list-style-type: none"> <li>using a deflection of 25 mm,</li> <li>using a deflection of 15 mm with roller widths limited to 25 mm or</li> <li>providing guards in accordance with 5.2.1.1 b).</li> </ul>	<p>using a deflection of 25 mm,</p>	<p>Pass</p>
5.3.4.11	<p>On pile lifting and lowering devices (feeding and delivery devices), the following additional information shall be clearly marked:</p> <ul style="list-style-type: none"> <li>a) permissible operating pressure on pneumatically-driven pile lifting and lowering devices;</li> <li>b) permissible operating pressure on hydraulically-driven pile lifting and lowering devices, as long as the pressure generator is not a component part of the pile lifting and lowering device;</li> <li>c) maximum carrying capacity;</li> <li>d) for format sizes above 2,5 m<sup>2</sup>, a sign indicating that travelling on the device is forbidden.</li> </ul>	<p>a).b),c)and d) are marked</p>	<p>Pass</p>
5.3.5	<p>Reel unwinding and rewinding devices for webs</p>		<p>-</p>
5.3.5.1	<p>On unwinding and rewinding devices where the reel is driven by a belt on the reel circumference (see Figure 10), the danger point between the reel and the belt shall be safeguarded by interlocking guards or fence-type enclosures if the pressure between belt and reel is more than 300 N. Safeguarding may also be required for pressures less than or equal to 300 N if a hazard is created by the speed of the machine.</p>		<p>Pass</p>
5.3.5.2	<p>On unwinding and rewinding devices, the inrunning nips at reels and pressure rollers and reels and support rollers shall be safeguarded by means of guards or safety devices with approach reaction (trip devices, pressure-sensitive mats, ESPDs). The safety device selected shall be effective for all reel diameters.</p> <p>Access to the inrunning nip from the side shall not be possible. Included in this requirement is the safeguarding of the inrunning nip facing the machine, if a drawing-in hazard exists when the diameter of the reel is small (at the</p>		<p>Not applicable</p>

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	beginning of the rewinding process) or the diameter of the pressure roller is small.		
5.3.5.3	Where shaftless unwinding or rewinding is used, the chucking cones shall be designed so that they can only be inserted in the hold-to-run control mode. Control switches shall be arranged such that danger points between the chucking cones and the reel can be observed from the position of the hold-to-run control allocated to the unwinding and rewinding unit. The hold-to-run speed shall not exceed 5 m/min (see 5.2.3.3 a2).		Pass
5.3.5.4	Provision shall be made to prevent unintentional separation of the chucking cones after the reel has been lifted. This is prevented, for example, where separation is only possible in the hold-to-run control mode with a maximum speed of 2 m/min or by two-hand-control or separation of the chucking cones after leaving the reel loading position is prevented by interlocking devices such as pressure sensing devices.		Pass
5.3.5.5	On shaftless unwinding and rewinding units, it shall be ensured that the unit can only be started after the chucking cones are fully inserted. This is ensured, for example, by monitoring the position of the chucking cones by means of pressure sensing devices.		Pass
5.3.5.6	On shaftless unwinding and rewinding devices, hazards caused by small diameter reels being ejected shall be prevented.		Pass
5.3.5.7	If danger points between lifting arms and machine frame cannot be avoided by built-in design or be safeguarded, the lifting arms shall only be movable in the hold-to-run control mode. Control switches shall be arranged such that danger points can be observed from the actuation position. The hold-to-run speed shall not exceed 5 m/min (see 5.2.3.2 a2).		Not applicable
5.3.5.8	On reel unwinding and rewinding devices, the risk of drawing in between the end surface of a rotating paper reel and fixed parts or lifting arms shall be safeguarded if the distance is less than 25 mm.	the distance<20mm	Pass
5.3.5.9	On reel stands, reel splicers and turrets with movable parts, all danger zones where the risk of crushing exists shall be safeguarded according to EN 349:1993 or provided with guards according to EN 294:1992.	Safeguarded according to EN 349:1993 and provided with guards according to EN 294:1992.	Pass
5.3.5.10	On semi-automatic reel transport systems, transport of the material reel to the reel stand shall be done in the hold-to-run control mode with a maximum speed of 20 m/min. The stopping path shall not exceed 200 mm. It shall be possible to overlook the total transport way from the respective hold-to-run control position.	The stopping path not exceed 200 mm	Pass
5.3.5.11	On automatic reel loading systems, the danger zone existing on the unwinding unit shall be completely safeguarded, for example by ESPD. Danger zones exist, for example, between material reel and fixed machine parts, between material reel and lifting arm and floor, between material reel and chucking cones.		Pass
6	Verification of the safety requirements and/or protective measures		-

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
7	Information for use		-
7.1	Minimum requirements for machine markings		-
7.1.1	Machinery shall be provided with the markings, signs and warnings listed and described in 5.4 of EN ISO 12100:2010 name and address of manufacturer; year of manufacture; designation of series or type, if any; serial number, if any; rating information (voltage, frequency, power etc.).	In accordance with 5.4 of EN ISO 12100:2010	Pass
7.1.2	On machinery fitted with laser equipment, the classification of the equipment shall be indicated together with any warnings according to EN 60825-1:1994, where required.		Pass
7.1.3	On machinery where UV radiation of at least category 1 according to EN 12198-1:2000 is expected, the category number according to EN 12198-1:2000 and the type of radiation shall be indicated.	Category 1 according to EN 12198-1:2000	Pass
7.1.4	Extra warnings need to be provided on machines with hot machine parts if the surface temperature is above 65 °C and if they are not protected against contact by insulation or additional guards.	The safe guard is used	Pass
7.2	Instruction handbook		-
7.2.1	Instruction handbooks shall be devised in accordance with 5.5 of EN ISO 12100-2:2003.		Pass
7.2.2	Each machine shall be accompanied by an instruction handbook containing the minimum according to 7.1 and basic specifications according to 5.5.1 of EN ISO 12100-2:2003		Pass
7.2.3	Requirements for noise shall comply with 1.7.4 f) of Annex A of EN ISO 12100-2:2003. The instruction handbook shall give the declared noise emission values of the machine and the reference to the noise test code EN 13023:2004 and to the basic noise emission standards on which the determination of these values is based.	See the noise test report	Pass
7.2.4	In addition to the above requirements, the instruction handbook shall - where required:		-
	a) describe the protective measures to prevent accidental contact with hot machine parts with a surface temperature of more than 65 °C; b) specify those areas on the machine suitable for fitting suction devices in order to avoid the emission of hazardous gases, vapours and dusts, also specifying the required suction capacity; c) Describe any residual risks which cannot be excluded despite the safety measures provided. It shall also identify where special training is required and which personal protective measures (for example, protective gloves, clothing, hearing protectors) are to be taken; d) give all information and instructions required where use in potentially explosive atmospheres can be foreseen;	a) is not applicable	Pass

clause	requirements	Result-remark	Verdict (pass/fail/not applicable)
	e) the instruction handbook for machines using flammable liquids with a flash point below 55 °c shall contain the instruction that the flooring in an area extending 1,0 m beyond the zone 1 hazardous area shall be conductive (according to CLC R 044-001:1999); f) give instructions for the proper handling and adjusting of adjustable guards; g) for machines working with web material, give instructions for safe threading of the web; h) Describe the safe handling of hazardous dusts, substances used and cleaning agents.		
7.2.5	The instruction handbook for pile lifting and lowering devices shall contain the following information:		-
	a) permissible operating pressure on pneumatically-driven pile lifting and lowering devices; b) permissible operating pressure on hydraulically-driven pile lifting and lowering devices as long as the pressure generator is not a component part of the pile lifting and lowering device; c) maximum carrying capacity; d) for format sizes above 2,5 m <sup>2</sup> , a sign indicating that travelling on the device is forbidden.		Pass

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**END OF REPORT**