

SAFETY OF MACHINERY

We offer services in the field of safety of machinery:

- stopping time measurement
- conducting risk assessment
- selection and design of safety systems
- design support, preparation of executive documentation



STOPPING TIME MEASUREMENTS

Stopping time measurement according to PN-EN ISO 13855 consists in determining the overall efficiency of the system stop, i.e. the time that passes from the moment a part of the human body enters the zone secured by the safety device to the moment the dangerous function of the machine is terminated. The obtained results allow for proper selection and placement of the safety device.

Measurements are performed on newly built machines as well as on machines in operation. Periodic measurements of the overall stopping performance of the system are required and necessary due to: damage, wear and aging of the system components that ensure the stopping of dangerous machine functions.



Protective devices for which we perform measurements:

- safety curtains
- two-hand control switches
- laser safety scanners
- pressure mats

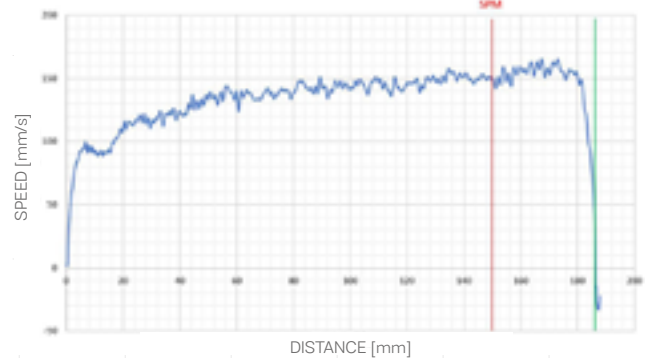
Measurements are carried out using measuring equipment Stop Time Meter Safetyman DT2 manufactured by "hnb ELECTRONIC".

RISK ASSESSMENT

Risk assessment is a process including risk analysis and evaluation, which is carried out on the basis of PN-EN-ISO 12100 standard. The purpose of risk analysis is to collect information about all possible threats that may occur in various phases of a machine life cycle. Identification of hazards already at the design stage is very important for proper risk assessment. Risk assessment is carried out for identified hazards, which is the determination of the severity of a probable damage and the probability of its occurrence. In the next step an evaluation is carried out, which is a risk assessment based on the results of the analysis. If the risk is not acceptable, it is necessary to reduce the risk and reassess whether the goal has been achieved. Risk reduction can be achieved through protective measures, and any risk remaining, despite undertaking protective measures, is a residual risk.

When conducting risk assessment, risk assessment documentation is created for you. This includes information such as a description of the machine, the assumptions made, the hazards identified, the objectives of risk reduction, the result of the risk assessment, a description of any residual risk and all relevant information used in the risk assessment.

PNEUMATIC ACTUATOR Y12 - ROLLING HEAD TRAVEL



RISK ANALYSIS - RISK ASSESSMENT AND EVALUATION														
No	IDENTIFIED DANGERS	LIFE PHASES / PLACE OF DANGER	C. KONISK. Z.	F. CZEST. I. C.F.N.	O. PRAWD. W.Z.Z.	A. WIZYAL. U.L. O.S.	RISK ACCEPTANCE	SOLUTION: PROTECTIVE MEASURES	E. KONISK. Z.	F. CZEST. I. C.F.N.	O. PRAWD. W.Z.Z.	A. WIZYAL. U.L. O.S.	RISK ACCEPTANCE	RESIDUAL RISK: DESCRIPTION OF RECOMMENDED ACTIONS (responsible person according to employee group assignment)
1) MECHANICAL HAZARDS														
	Hand/finger crush hazard from press unit, cushion pressure units, generator push unit	usage / position					NO	- fixed guards, - operating manual, - movable door with safety bar, - safety relay.					ANALYSIS	- danger to third persons, - The workstation may be operated by only one person, - operator training, - the instructions in the operating manual must be followed.
		assembly, disassembly, installation, service position					ANALYSIS	- maintenance work carried out only by qualified personnel, - use of protective clothing, - operating manual.					ANALYSIS	- reading the operating manual for maintenance procedures, - use of protective clothing.
	Hand/finger crush hazard from dispenser unit	usage / position					ANALYSIS	- fixed guards, - operating manual, - use of a rubber edge seal, - clamping force not exceeding 15 N, as safe for the technician.					YES	- The workstation may be operated by only one person, - operator training, - the instructions in the operating manual must be followed.
		assembly, disassembly, installation, service position					YES	- maintenance work carried out only by qualified personnel, - use of protective clothing, - operating manual, - clamping force not exceeding 15 N, as safe for the technician.					YES	- reading the operating manual for maintenance procedures, - use of protective clothing.
2) ELECTRICAL AND EMC HAZARDS														
	Human contact with electrically live parts (direct contact)	usage / position					NO	- The materials used meet the requirements of PN EN 60204-1:2016, - electrical devices and wires were installed in a manner protecting from electric shock, - the electrical cabinet is lockable - accessible only to qualified personnel.					YES	- health and safety training, - compliance with the warning signs posted on the machine.
		assembly, disassembly, installation, service position					ANALYSIS	- The materials used meet the requirements of PN EN 60204-1:2016, - electrical devices and wires were installed in a manner protecting from electric shock.					YES	- Following the instructions in the operating manual regarding maintenance work procedures, - use of protective clothing, - Switch off the main power supply during maintenance work, - Compliance with the warning signs posted on the machine.

DESIGN OF SAFETY SYSTEMS

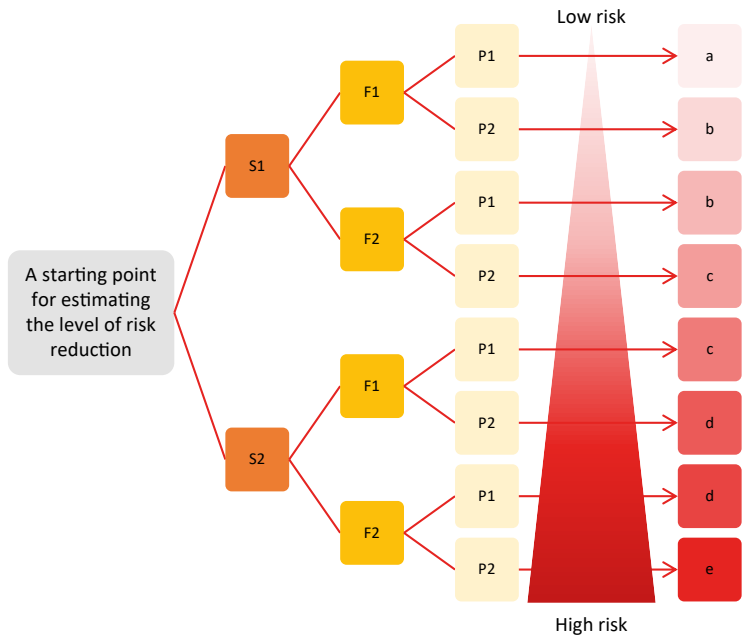
The design of a safety system is based on risk assessment performed beforehand. Our goal is to choose a solution that provides the right level of safety. Determination of Performance Level according to PN-EN ISO 13849-1 standard.

EN ISO 13849-1: Determination of the required PL (according to the risk graph)

Risk estimation based on the same risk parameters

Risk estimation
S - Severity of injury
S1 - Minor (usually reversible) injury
S2 - Serious (usually irreversible) injury, including death
F - Frequency and/or duration of exposure to risk
F1 - Rare to frequent and/or short exposure time
F2 - Frequent to constant and/or long exposure time
P - Possibility of avoiding danger or reducing injury
P1 - Possible under certain conditions
P2 - Almost impossible
a, b, c, d, e - Security levels

Required level of safety assurance PL



PROJECT SUPPORT, PREPARATION OF DOCUMENTATION

For your needs, we provide technical consultancy, consisting in support in the implementation of projects - this applies to both new investments and modernized machinery. We help with adapting machines and production lines to current regulations.

In the process of adjusting a machine to the safety requirements it is important to prepare technical documentation, information for the user and to define the necessary procedures for the use and maintenance of the machine.

We check completed assembly works, create technical and operation documentation and manuals, so that further use of the machine is safe and failure-free.

WE ARE LOOKING FORWARD TO DOING BUSINESS WITH YOU

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