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Checklist

Preventing the defeating of protective devices

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Checklist: Preventing the defeating of protective devices

Defeated protective devices are frequently a cause of accidents on machinery. Occupational safety and health experts estimate it to be the reason for a quarter of all occupational accidents involving stationary machines. Such accidents often result in particularly severe injury. The risk presented by the defeating of protective devices should not therefore be understated.

Inappropriate human behaviour is a major factor in the defeating of protective devices. Rarely however is there any benefit in assigning blame during investigation of the cause. A protective device will only be defeated if its presence, or the manner and frequency in which it is operated, presents an obstacle to operation of the machine.

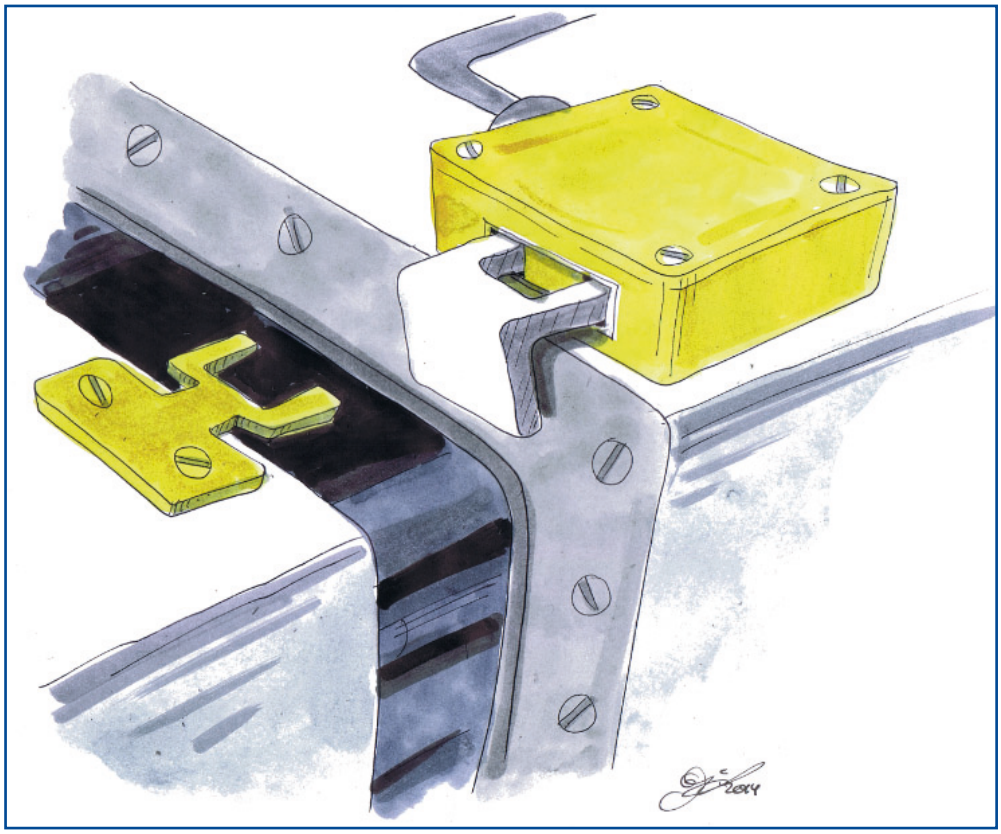
The causes may be numerous and complex. The company culture also has an influence. Where safety and health are given high priority within a company, the safety concept is considered from the outset during planning and use of machinery. This enables technical solutions to be produced that permit safe operation of the machine in each work step, without the protective devices obstructing the work on the machine.

Addressing the questions on the checklist provided here can assist you in identifying potential incentives and causes of defeating – when the answer to a question is negative – and in taking the right technical and organizational measures to eliminate them.

The checklist comprises the following elements:

- Procurement of the machine
- Suitability of the machine
- Suitability of the protective devices
- Leadership and training of the personnel

A table is provided at the end of the practical guide in which all measures to be taken can be recorded.



Procurement of the machine

The procurement process leading to a machine being put into service may have a major influence upon the machine‘s subsequent susceptibility to defeating. Despite this, the risks of its protective devices being defeated are rarely considered before the machine is put into service.

The company culture is a significant factor even at the procurement stage. If safety and health form an integral part of the company‘s day-to-day practices, the available expertise is exploited to the full from the procurement stage onwards in order to create solutions that permit efficient and safe work.

		Yes	No	N/A
1	**Has a complete requirements specification been produced for selection of the machine?** In the requirements specification, list all requirements to be met by the machine. • Normal operation: type of workpiece to be handled (e.g. materials, minimum/maximum dimensions), desired throughput, etc. • Special operating modes: setup, fault rectification, cleaning • Maintenance: inspection, servicing, repair It must be possible for each work step to be completed efficiently and safely, without protective devices having to be defeated.	☐	☐	☐
2	**Were the following persons involved in production of the requirements specification, review of the functional specification, and selection of the machine?**			
	• OSH professional	☐	☐	☐
	• Operating personnel	☐	☐	☐
	• Setup personnel	☐	☐	☐
	• Maintenance and servicing personnel	☐	☐	☐
3	**Does a manufacturer‘s functional specification exist describing how the requirements set out in the requirements specification are to be met?** The properties of the machine assured in the functional specification must be checked as far as possible at acceptance of the machine.	☐	☐	☐
4	**Does a manufacturer‘s declaration exist that all requirements set out in the requirements specification are met?**	☐	☐	☐
5	**Does a manufacturer‘s declaration of conformity exist?**	☐	☐	☐

Suitability of the machine

With respect to the issue of defeating, a machine is fit for purpose when it can be operated safely at each phase of its life. If this is not the case, it may be possible – in consultation with the manufacturer – for safe operation of the machine to be made possible by retrofitting of a further operating mode.

		Yes	No	N/A
6	**Does the machine feature all necessary operating modes?** It must be possible for all work processes required on the machine to be performed safely. Besides normal operation, these particularly include the processes of setup, fault rectification and cleaning of the machine. Refer also to questions 7 to 10.	☐	☐	☐
7	**Can the machine be set up safely?** If the machine is to be set up whilst running and with a guard open, the following measures must all be in place: • Disabling of automatic control • Reduction of speed/power (if possible) • Use of an enabling device with inch mode or electronic handwheel	☐	☐	☐
8	**Can the machine be adjusted safely whilst the process is running?** If the machine must be adjusted whilst the process is running, at least one of the following measures must be in place: • Facility for control of the required adjustments from outside the danger zone • Electronic fine adjustment • Probe for zero position	☐	☐	☐
9	**Can all foreseeable faults on the machine be cleared without protective devices being defeated?** If not, protective measures must be implemented (see explanations regarding Question 7).	☐	☐	☐
10	**Can cleaning work be performed whilst the machine is stationary?** If not, protective measures must be implemented (see explanations regarding Question 7).	☐	☐	☐
11	**Is the instruction manual clear, complete and well structured?** The tasks required for operation, troubleshooting and maintenance must be described comprehensibly and be easy to find in the manual.	☐	☐	☐

Suitability of the protective devices

The protective devices of a machine must protect the operator against the risks presented by the machine, without obstructing the operator more than is absolutely necessary in performing his or her tasks. Such obstruction creates an incentive to defeat the protective devices.

Where incentives to defeat exist, the suitability of the protective device must be scrutinized and – in consultation with the manufacturer – the design improved if necessary. If the protective device cannot be replaced by alternative protective measures, suitable measures must be taken to make defeating more difficult.

		Yes	No	N/A
12	**Are the protective devices designed and fitted such that intervention in the danger zone is not possible whilst the machine is running?** Complete shrouding of the danger zones, inlet/discharge tunnels at material transfer points, safety light barriers, etc. The safety distances to EN ISO 13857 apply.	☐	☐	☐
13	**Is it assured that protective devices cannot be defeated by simple means?** Defeating by simple means includes the use of a spare actuator for defeating. The use of spare actuators must be prohibited. Should spare actuators be circulating in your company, they must be collected and locked away or destroyed, as appropriate. The intended actuator of the protective device must be connected inseparably to the machine.	☐	☐	☐
14	**Is the machine supplied without spare actuators for interlocking guards?** Disabling of the protective effect of protective devices is not permitted even in exceptional cases, and must not be facilitated by the supply of a spare actuator.	☐	☐	☐
15	**Is – where required – the work process still visible when guards are closed?** Guards must not impair observation of the work process more than is unavoidable. If observation of the work process is necessary but not possible, the manufacturer must provide other means of permitting observation (such as a peephole, camera, mirror, etc.).	☐	☐	☐
16	**Is it ensured that the controls for operation of the machine cannot be reached from within the danger zone whilst the protective device is active (regarding accessible safety guards)?** Exceptions are special operating modes (for example employing an enabling device; refer to the explanations concerning Question 7), which enable work to be performed in the danger zone provided the risk is adequately reduced.	☐	☐	☐

Personnel leadership and training

It is not always possible for the defeating of protective devices on machinery to be completely prevented by design measures alone. Over the machine‘s mission time of 20 years or more, even the most minor obstruction to operation may at some point give rise to defeating.
It is therefore absolutely essential for the topic to be addressed during the provision of training and instruction, and underpinned by proactive leadership. Wherever possible, company management should treat personnel as equals in this context. Only then can any problems on machines be recognized in time, and measures taken proactively to prevent defeating.

		Yes	No	N/A
17	**Are the persons assigned to the task adequately qualified for operation of the machine?**	☐	☐	☐
18	**Are the workers trained and instructed in operation of the machine?**	☐	☐	☐
19	**Do the training and instruction provided cover all necessary tasks (setup, maintenance, repair, fault rectification and cleaning)?**	☐	☐	☐
20	**Does your plant have rules governing the safe use of machinery, and are consequences set out for their violation?**	☐	☐	☐
21	**Are workers instructed in this respect?**	☐	☐	☐
22	**Do superiors check regularly that the rules are being followed?**	☐	☐	☐
23	**Is company or plant management familiar with problems arising on the machines?** Are problems regularly identified, discussed, and resolved reasonably swiftly?	☐	☐	☐
24	**Are the protective devices in your plant checked regularly for proper operation, and ist maintenance performed as specified by the manufacturer?**	☐	☐	☐
25	**Is it clearly defined whom workers should contact when they are unable to perform a work?**	☐	☐	☐
26	**Are management personnel clearly instructed to give priority to addressing reported incentives for defeating?**	☐	☐	☐

Machine type:

Year of manufacture:

Manufacturer:

Checklist completed by:

Date:

Signature

No	Measure to be performed	Completed on	Initials

Machine type:

Year of manufacture:

Manufacturer:

Checklist completed by:

Date:

Signature

No	Measure to be performed	Completed on	Initials

Have you already experienced the defeating of protective devices in your plant, or are you looking for advice on the subject? We look forward to receiving your questions and suggestions.
Please send them to stefan.otto@dguv.de

More information on the subject can be found at:

www.stop-defeating.org