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EXECUTIVE SUMMARY

Challenges in Machine Safeguarding

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KEY TAKEAWAYS

- A lack of knowledge often creates challenges in machine safeguarding.
- A five-step process helps organizations overcome machine guarding challenges.
- Education, risk assessment, and planned solutions address concerns.

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Challenges in Machine Safeguarding

OVERVIEW

Companies understand that employee safety is critical. No business wants its workers to get injured. Despite this understanding, companies still seem to come up with numerous reasons why they can't implement the very machine safeguarding solutions that would keep their employees safe.

The challenges to machine safeguarding are significant, but these challenges can be overcome with proper education, good risk assessments, and solutions that are developed and implemented to meet the specific business need.

CONTEXT

Mike DeRosier discussed common challenges to machine safeguarding measures and the steps that organizations can take to overcome them.

KEY TAKEAWAYS

A lack of knowledge often creates challenges in machine safeguarding.

Machine safeguarding is a daunting subject. Companies don't always have a clear idea where to begin, how to show progress, or how to maintain productivity. A lack of knowledge is one of the biggest reasons behind the eight challenges that businesses typically give for not taking safeguarding measures.

> We need to protect people. This is easy to say, but it can be challenging to implement the appropriate solution.
>
> *Mike DeRosier*

Table 1: Eight common challenges to machine safeguarding

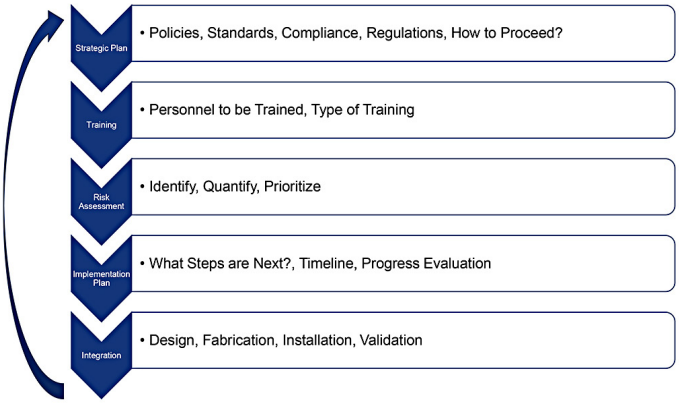
Challenge	Examples
1. Justification of not knowing machine safety	– The idea that ignorance is bliss. If they don't know they have to take safety precautions, they don't have to do anything about it. – Redirecting blame. Machine vendors say end users didn't ask for safety features. End users say it came from the machine builder without safeguarding, so they didn't think they needed anything else.
2. Machine was not designed for safety	– Older machines were not designed with newer safety regulations in mind. – Machines are designed for function, not safety. – The industry has always used the machines without safeguarding.
3. Lack of resources	– Companies don't have the internal resources to identify problems and design and implement safeguards. They need to find and contract external resources.
4. Lack of education	– Machine safety isn't taught; it is often learned on the job. – Engineers develop systems based on best practices; if they don't know about machine safety, they can't build it into the product.
5. Understanding of standards	– There are numerous standards from industry organizations for governments and companies. It is hard to know them all. – Standards can be open to interpretation.
6. Missing a process for machine guarding	– A lack of understanding of the processes necessary for proper machine safeguarding can lead to a gap. This includes design review, scope of work, and risk assessment processes.
7. Risk assessment not performed	– Without a thorough risk assessment, it is difficult to identify hazards and quantify safety risks for prioritization.
8. Culture	– If the management and employees don't believe in safeguarding, it is extremely difficult to get buy-in for safety changes.

Challenges in Machine Safeguarding

A five-step process helps organizations overcome machine guarding challenges.

Organizations can overcome the common challenges to machine safeguarding with a five-step process that incorporates a strategic plan, training, risk assessment, an implementation plan, and integration.

Figure: Overcoming challenges with a five-step process.



The five-step process to overcoming machine safeguarding challenges incorporates the following:

Step 1: Strategic Planning

In this step, the organization develops a core understanding and process before beginning any machine guarding. This includes reviewing and understanding local government regulations, voluntary industry consensus standards, corporate standards, and machine-specific standards. It also requires establishing a process for machine guarding.

Step 2: Training

Train all involved personnel on machine operation and machine safety. Appropriate personnel includes anyone who interacts with or manages people who interact with the equipment, such as environmental, health, and safety (EHS) personnel, engineers, maintenance, operators, and management.

Training must include machine operation, the need for safety, and how to approach and identify safety challenges and safeguarding needs.

Step 3: Risk Assessment

In this step, identifying and understanding risks helps the organization determine what needs to be done. This includes identifying all hazards, including less common or visible hazards and controls. Get on the floor to see what hazards lie underneath the machine so that if someone reaches under the machine to grab a dropped item, they are protected.

During this step, quantify the risks so that they can be prioritized. Higher risks need to be addressed first. Establish control measures or fixes to the hazards found so they can be tracked in a consistent process.

Step 4: Implementation Plan

Develop a plan and timeline to implement the proper solutions. Make sure timelines are realistic and take into account machine availability and the number of machines, as well as who needs to be involved in the safeguarding implementation. Create a plan to evaluate and measure progress.

Step 5: Integration

Design and integrate the right solution for the machine. Balance safety and productivity; don't sacrifice one for the other. Understand whether the work is being done by internal or external resources and set up design reviews and milestones. Create a plan to measure success and, at the end, validate that the safety system works per design.

The process doesn't end with integration; as a business evolves and learns and new technologies appear, organizations need to repeat the process and re-evaluate with the new information.

Challenges in Machine Safeguarding

Education, risk assessment, and planned solutions address concerns.

Solutions for countering the eight common challenges to machine safeguarding emphasize education, risk assessment, and development and implementation of solutions.

Table 2: Addressing challenges in machine safeguarding

Challenge	How to Address the Challenge
1. Justification of not knowing machine safety	– Do not accept this as a practice – Educate – Learn – Develop a safe culture.
2. Machine was not designed for safety	– Review the machine operation – Understand what guarding solution can provide protection and allow the business to remain productive; this may be a combination of designs and ideas – Consider a machine redesign or purchasing a new machine if necessary
3. Lack of resources	– Free up internal personnel through prioritization – Investigate external resources for competency in machine safeguarding – Understand the cost of safety versus the cost of a serious accident when discussing funding.
4. Lack of education	– Use internal knowledge and expand – Investigate external partners that have a specialty in machine safety – Understand how the machines work and are being used
5. Understanding of standards	– Understand the machines in the facility and applicable standards – Work with the team to provide clear interpretations and applications of standards – Use external resources that have a specialty in machine safety
6. Missing a process for machine guarding	– Put a process in place – Find out what is lacking within the organization to determine how to fill those gaps – Be strategic, but do not get stuck on the process; be sure to implement
7. Risk assessment not performed	– Perform a risk assessment – Understand the hazards – Prioritize – Define acceptable risk
8. Culture	– Acknowledge that culture is difficult to change and will take time – Have management lead cultural changes – Create a process to investigate incidents – Develop and enforce repercussions

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BIOGRAPHY

Mike DeRosier

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Mike DeRosier is a TUV certified Functional Safety Engineer for Machinery. His 20+ years of experience include controls engineering to design, build and integrate full machine control systems. His safety experience lead him to help corporations to develop Corporate Safety Standards, perform machine safeguarding risk assessments, machine safety training and design, as well as implementation of safety systems for all aspects of machinery (electrical, electronic, pneumatic, hydraulic, mechanical).