



TECHNICAL ENGINEERING GROUP

RISK &  
SUSTAINABILITY  
SERVICES

# The TEG Risk guide to machine safety risk assessments

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# Does your company need a risk assessment?

If you're a director of a company in the manufacturing, forestry, or engineering industries, you are obliged – both legally and morally – to manage your company's risk profile.

However, not all directors realise the full extent of their responsibility.

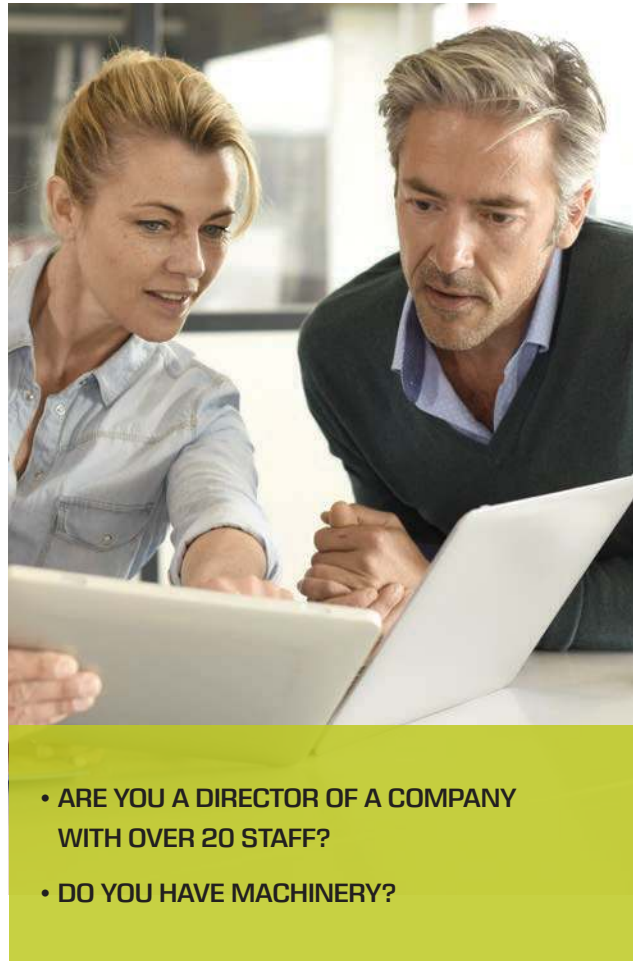
Of course, you know to ensure employees are safe and productive. You provide the appropriate training, reinforce basic safety concepts, and issue protective equipment. But that's often where it ends.

Assessing machine safety risk is a technical and highly specialised area of safety management. Despite training and experience, even Health and Safety personnel may lack the knowledge base to understand machine safety fully.

**Responsibility lies with those 'at the top':**  
the company directors.

The wellbeing of a company's workers is intrinsically linked to the wellbeing of the company itself. As a director, your workers rely on you to understand how best practice protocols mitigate operational risk factors.

This guide will cover the factors involved in managing risk within the workplace, and the ongoing need to conduct undergoing a machine risk assessment.



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# Why is machine safety overlooked?

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**Hundreds of accidents and injuries occur in workplaces each year – and many of them are machine guarding-related. However, the machine guarding guidelines from WorkSafe New Zealand is surprisingly limited in scope.**

In fact, the machine guarding clause in WorkSafe New Zealand's guidelines gives only a broad overview of risk assessment rather than specifically addressing the complexities of machines in the average New Zealand workplace. They state:

*A significant hazard should be eliminated, if it can't then be isolated, and if that isn't practicable, controls should be put in place to minimise the hazard.*

Given this lack of detail from WorkSafe New Zealand, how realistic is it to expect the average Health and Safety officer to have a comprehensive understanding of the complexities of machine safety guarding – much less the specifics of risks associated with machine types and scenarios?

The challenge is: how do you find the right solution for your machine safety needs when machine safeguarding is not a core competency of your staff?

Why is this crucial area of workplace safety so difficult to master? And how do you ensure machinery is guarded in compliance with current standards, while still allowing workers to work productively?

**The key is expertise.**

The wellbeing of a company's workers is intrinsically linked to the wellbeing of the company itself



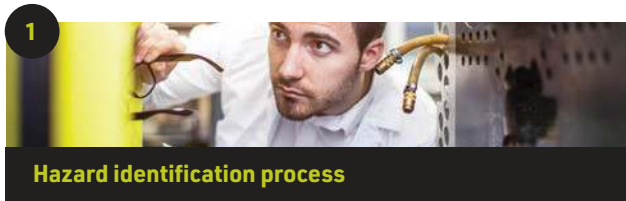
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# What does a machine safety risk assessment involve?

There are two major parts to a machine safety risk assessment.



**This requires the expertise of a qualified machine safety risk consultant:** a consultant who has undergone university-level training in machine safety engineering. One of the highest qualifications in this field is the internationally recognised TUV certification.



Possibly the most important part, this is where the **identified risks are ranked according to their level of priority**. It also covers **how** each risk will be mitigated and the methods of guarding most appropriate for your machine.

Again, the level of expertise required for this process is well beyond that of the average Health and Safety officer.

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## The on-site evaluation involves:

- Documenting the machines through photos, videos, sketches, and descriptions of the machines and functions
- Gathering copies of electrical and layout drawings
- Observation of normal machine operation, noting set-up and shut down procedures, e-stops, and any resets
- Interviewing operators and maintenance personnel
- Identifying and testing existing safety circuits.

## Performing a risk assessment involves:

- Generating a list of tasks and hazards
- Estimating risk level
- Providing recommendations to reduce risk level
- Generating a report that includes assessment results and recommended risk reduction methods, along with photos and videos taken.



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## THE “REACTIVE” VERSUS THE “PROACTIVE” APPROACH

### Many small-to-medium New Zealand businesses take a reactive rather than a proactive approach to risk management.

This means they are more likely to adopt a “she’ll be right” attitude in the hope that good luck will remain on their side. It may seem more practical – and cost-effective – to wait for something to go wrong before taking action, rather than implementing precautionary measures.

A business owner may struggle to understand why they should suddenly change the way they have been operating for 10 or 20 years.

Cost may also be a barrier, particularly if an owner or director suspects they will have to spend several thousands of dollars implementing new strategies and purchasing or fixing equipment.



### Why should you get a risk assessment?

To prevent employee accidents

To comply with WorkSafe New Zealand regulations

To avoid unexpected downtime

To avoid fines for non-compliance or negligence

To identify hazards for a piece of machinery and the solutions to reduce risk

It’s an opportunity to be proactive in the safety of employees rather than reacting to agency inspections, accidents, or, worse, a tragic event

It provides a procedural approach that involves people with multiple skill sets and perspectives to increase awareness of potential hazards

It creates a documented record of safety system configuration and operations

It can identify employee ergonomic hazards and result in a change of design or process at the machine, leading to happier and healthier employees.

# Who needs to undergo a risk assessment?

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## Simply put: everyone.

If your business has machinery that presents a significant hazard, you are obligated to have a risk assessment done. Any workplace with machines that have the potential to break bones – including fingers – should have a risk assessment.

This includes, at the very minimum:

- Any machine that can exert 15 kg or more of pneumatic force
- Any machine with a three-phase motor
- Workshop equipment such as bench grinders, lathes, and drill presses
- Conveyors
- Packing and wrapping machines
- Mixers.

## What should trigger a risk assessment?

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A risk assessment should be undertaken when:

- The business procures new equipment
- Changes or modifications are made to existing equipment
- Changes are made to the way existing equipment is used
- Changes are made to processes within the workplace.

In each case, a risk assessment will review the equipment and processes and determine whether any new risks are present.

## Who should do my risk assessment?

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When seeking the right consultant to carry out your risk assessment, the first thing to look at is their experience and qualifications. These are key measures of their competency and understanding of the machinery.

A consultant should be knowledgeable about the equipment and its operations. They should be able to ask the right questions, as well as provide the right answers. They should also be experienced in the type of equipment associated with your particular industry, its design, and its application to the industry.

For example, TEG Risk provides machine safety services to industries including the food and beverage processing sector and manufacturing.

Qualifications are also critical. A consultant should be able to show they have completed training in engineering-related fields and gained relevant qualifications. These credentials should be over and above that of average Health and Safety personnel.

### What qualifications are recommended to undertake a risk assessment?

- University qualification in engineering
- Vocational training from TÜV Rheinland in Germany (all staff at TEG Risk have this)
- An internationally recognised qualification in international standards and related issues in functional safety management



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## WHAT DOES A ROBUST PROGRAMME FOR MACHINE SAFETY MANAGEMENT CONSIST OF?



1

Undergoing a thorough risk assessment with a qualified consultant



2

Taking the information and the insights from the assessment and creating a plan that recognises or makes best use an organisation's constrained resources



3

Prioritising and planning the required solutions in a timely manner according to the level of risk



4

Creating a design management strategy



5

Engaging with stakeholders and end users on what needs to be addressed



6

Creating a clear action plan of how to resolve each issue



7

Creating specification work packs for contractors to implement improvements



8

Improvements are made according to code



9

Undergoing a validation process to confirm that the safeguarding objectives have been met

## What software and tools are required?

Health and Safety officers often express frustration about the lack of adequate software to document the results of a machine safety assessment. To date, the range of software suited to capturing comprehensive machine safety solutions is limited.

Excel or other spreadsheets can suffice for granular data and management reports. However, spreadsheets can't provide any narrative or context about your machines.

Word documents are useful for creating a narrative complete with photos and descriptions.

This provides a good contextual report about the machinery. However, a narrative report is less useful when a site has more than 20 machines onsite. Each machine will require management information.




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# Better reporting = better insights: introducing The MinRisk App



At TEG Risk we have developed our own app that combines management reporting and the contextual narrative. It allows us to provide one point of reference from machine assessment to recording machine maintenance.

The MinRisk App enables you or your consultant to enter the required information very quickly on an iPad while carrying out comprehensive site-wide machine risk assessments.

The MinRisk App has the ability to add images and descriptions to clearly explain potential risks, and describe any blind spots. We point out and describe the blind spots throughout the process.

Using The MinRisk App to conduct a workplace risk assessment typically results in a 20% improvement in productivity. It also allows your team to produce a greater range of information, higher quality reports, and more detailed and real-time data.

## How The MinRisk App works

Key information from international safety standards is loaded into The MinRisk App so we can evaluate machines against industry standards. This enhances the verification and validation of our machine safety risk assessment.

The MinRisk App then estimates risk scores using the Hazard Risk Number (HRN) promoted by TUV and Pilz. The Functional Safety Performance Level (PL) requirements for each hazard can also be determined according to ISO 13849-1:2015.



## Management reporting with The MinRisk App

The MinRisk App generates a report that contains highly valuable information, including referenced photos of hazards and isolation points. This means our machine-by-machine risk assessments can be left in plant locations for users to access, reference, and review.

The MinRisk App also allows the data to be exported into CSV format for custom manipulation and importing into Excel spreadsheets. This simple Excel management report can be used to answer questions such as:

- What are the highest risks across our site?
- What are the lowest-cost fixes?
- What are our quick wins?

These registers can also be used to track remedial works to completion.





# What does a MinRisk App report look like?

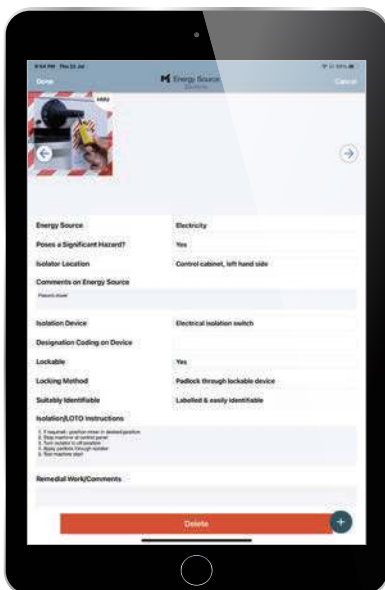
## We produce two types of reporting:

- 1 A narrative PDF report with photos and descriptions for each machine at a site. These reports can be printed and left onsite at the machine.
- 2 A second Excel spreadsheet that is a summary of all of the machine reports from a site organised into one set. This set of management reports provides the company with an overall picture of the situation in a format that can be manipulated: for example, it can be filtered, sorted, graphed, counted, and so on. This allows the company to create a highly specific and trackable improvement plan.

## Why is The MinRisk App reporting better?

Other safety engineering companies (or clients who do their own assessments) will usually produce only a narrative-style report, which is difficult to turn into a plan or use as an overview of management information. In other cases, they produce a simplistic Excel report with data compiled in a table. While this can be good for management information, it lacks narrative cohesion, so it can be difficult to read and understand.

The MinRisk App data outputs are flexible enough to feed into other reporting tools such as Power BI, or board reporting requirements. Access our visual PDF reporting, or export the data you need via CSV files. What's more, The MinRisk App delivers real-time reporting that is easy to assess risk priorities.



# How often should your machinery be reassessed?

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*"In many cases, a reassessment may only take five minutes. The consultant will find that nothing needs changing and you can move on. In other cases, you may have to modify the plant."*

**TEG Risk Director, Hamish Baker**

A good rule of thumb is that the more hazardous or risky a piece of equipment is, the more frequently it should be assessed. Once a year is standard for most equipment. Assessments for equipment that has been deemed lower-risk may be undertaken every two or three years.

However, risk assessments should not be longer than five years apart. After five years, the risk assessment will have to start from scratch.

**Is it time to change the way you assess your workplace safety?**

## GET IN TOUCH

Contact us to find out more about **TEG Risk**

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Or visit [www.tegrisk.co.nz](http://www.tegrisk.co.nz)