



World Class  
Machine Safety  
Solutions

#### GET IN TOUCH

To find out more about **TEG Risk**, contact:

**Hamish Baker**  
Director and Senior SH&E Manager

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

#### CAPABILITY STATEMENT 2020



TEG Risk is at the forefront of the machine safety industry

## TEG RISK

# TEG Risk & Sustainability (TEG Risk) is a world class machine safety consultancy

**We know how critical machine safety is to the success of manufacturing operations.**

**Our team is made up of industry leaders committed to making sure that when it comes to risk and sustainability you'll receive excellent advice and solutions that are both practical and pragmatic.**

We work collaboratively with our clients to assess their requirements and then tailor our processes and reporting to suit.

Our full range of compliance solutions are designed to meet the standards of today's increasingly complex regulatory environment and the needs of your organisation.

We're innovators in our field and have developed our own machine risk assessment app, enabling us to give you extensive information on your machinery, and what needs to be done to maintain it to comply with the highest international standards and regulations. The app improves our auditing efficiency through the utilisation of an ever-expanding library of industry templates.

We are a subsidiary of the **Technical Engineering Group** and support leading manufacturing companies in New Zealand, Australia, the Pacific and the Middle East from our offices in Wellington, Auckland, Brisbane and with engineers based in Rotorua and Palmerston North.

**TEG Risk** is a member of the Association of Consulting and Engineering of NZ which means we follow a code of ethics, have a quality system and will provide truly independent advice so that you can be assured that you receive cost effective and compliant solutions.



association of consulting and engineering





TEG Risk provides quality advice and practical solutions

#### OUR RELATIONSHIP WITH OUR CLIENTS

Our clients can expect world class service in terms of quality, in terms of trusted advice and in terms of practical solutions



Our clients can expect world class service in terms of quality, in terms of trusted advice and in terms of practical solutions.

That's because we spend time building relationships to ensure you get the best outcomes. We spend time on the factory floor talking to your operators and getting to know what's important for them; that's how we know we'll get the right solutions for your business.

We're not interested in calling in, writing a report and heading off again. That's not the TEG Risk way.

We're interested in lasting relationships that produce long-term results.

Our team members come from largely operational backgrounds. They understand the constraints and issues you face, and they know what works.

We're independent operators which means we're always working with your best interests in mind.

## ENGINEERING SOLUTIONS

**Knowledge and expertise gained through assessing more than 5,000 assets in the field**

**TEG Risk** specialises in providing machine safety services to manufacturing industries (food, primary industries, building products etc).

Our experience has been across large multi-site organisations with international clients. Our services include risk assessment, solutions design, implementation and verification/validation.

### Health and safety by design, design review and procurement support

We carry out design reviews to try and eliminate hazards where possible and then ensure that the machinery/line equipment and its layout conform to the local and relevant international standards, e.g. AS/NZS 4024, ISO 13849, ISO 13850 and ISO 14120.

Our procurement support and design review services also include evaluating vendor equipment and documentation to ensure your internal safety and project requirements will be met.

Between **TEG Projects** and **TEG Risk**, we are then able to coordinate the OEM activities as they relate to your internal safety requirements to ensure the project timeline and deliverables remain on target.

### Machine risk assessments

We carry out site-wide summary machine risk assessments on legacy/existing equipment. We use our own software application to make this process efficient and cost effective but also to produce narrative and data-based reports, such as risk registers and classified (mechanical, electrical, functional safety) remedial works registers. We have experience with completing these assessments across multiple sites and countries and have had single assignments involving thousands of assets.

Our detailed, team-based machine risk assessments are typically used prior to carrying out a safety upgrade to a legacy machine where stakeholder engagement and sign-off is key. We have a reputation for developing practical solutions to difficult, long-standing machine safety problems that have avoided the costly replacement of non-compliant equipment.

### Scoping and specification

We produce detailed specification/design and scope of works documents for both new equipment and for upgrading existing machinery to the latest international and client internal safety requirements to assist with tendering or project delivery. Our specialty is challenging equipment for which there is no OEM or market-available solution and designs have to be developed from scratch. In these instances, **TEG** can prepare the full detailed design pack of mechanical and functional safety works for the system integrators to build to. Our services in this area ensure a smooth implementation of legacy equipment safeguarding upgrades.

### Validation

We provide full and independent validation on upgraded and OEM equipment. This includes the validation of machine safety to client internal requirements, the validation of safety concepts to ISO 12100, the validation of mechanical aspects e.g. to ISO 13857 and the validation of functional safety elements, including safety controller software to ISO 13849.



## OUR SUCCESSES – PROJECTS

# Delivering international, best practice advice on machine safety



### Machine Risk Assessments



**5000**  
Assets risk assessed and scoped by TEG to date

**TEG Risk** has carried out summary machine risk assessments on more than 7500 assets.

We have completed assessments for large meat processors that have been done over multiple, large sites with thousands of assets reviewed.

We mobilised multiple safety engineers to ensure the programmes could be completed in a timely fashion.

Our app has been used on these assignments and validated as a productive and efficient tool for documenting in detail the risk assessments.

### New Line Design Review and Procurement Support

A large dairy company had an automatic, in-line, legacy waste compactor that had multiple high severity hazards.

**TEG Risk** was engaged at the feasibility study stage to prepare a CAPEX and business case to address these machine safety risks.

After preparing specification and cost estimates to complete the safeguarding upgrade, **TEG Risk** used 'health and safety by design' and whole-of-life cost (including maintenance costs) to justify and have approved a new compactor and plant layout. **TEG Risk** was also involved in supporting the implementation and ensuring the vendors could supply compliant plant with the supporting verification and validation documentation.

The project resulted in an improved workspace and eliminated many of the hazards that needed safeguarding.

**TEG Risk** was involved in pre-construction design reviews for a large dairy processing company that was installing two new cheese production lines.

**TEG Risk** provided specification advice to the OEMs to ensure the American-made equipment would conform to AS/NZS4024:2014 requirements with the relevant supporting documentation.

This work resulted in a much smoother commissioning programme following installation to ensure compliance to AS/NZS4024:2014.

### Scoping and Specification

In 2017, following a site-wide risk assessment on a pharmaceutical ingredient plant, we extracted data from our app to prepare a mechanical SRS and scope of works document to address numerous machine safety risks from mechanical guarding alone. This was issued for competitive tender and the tender process alone saved the client \$45,000 and set up a robust programme to address 127 notifiable machine guarding risks.

**TEG Risk** facilitated the machine safety upgrade of a large processed cheese extruder which required frequent operator interactions and for which the OEM had no solution for. Detailed machine risk assessments, design concepts, scope of works and detailed SRS were prepared.

This allowed for seamless implementation (noted by the automation and electrical contractors) despite the very small commissioning window. Plant safety has been significantly improved and reliability/up time was also improved at the same time.

### Lock-Out Tag-Out Audit: Goodman Fielder

To comply with a new Lock Out Tag Out (LOTO) policy, Goodman Fielder needed to carry out energy source and LOTO audits on all of its plants in 16 manufacturing sites.

LOTO registers and remedial works plans were required to ensure that all energy sources could be suitably isolated as defined by this policy.

**TEG Risk** prepared the programme/system, policy compliant templates and mobilised a large team of engineers to carry out these assessments and prepare the documentation for nearly 1000 assets.

### Machine Safety Validation

**TEG Risk** has carried out validation activities on numerous pieces of upgraded and new equipment to ensure that they conform to the requirements of AS/NZS4024:2014, the ISO variants and clients' specific internal standards.

We have multiple validation services and like to be involved from the beginning of the project validating all relevant factors including concepts, safety-related parts, safety controller software and vendor documentation.

Examples of validations include:

- Case packers that were being constructed for global supply to a multi-national food company
- Large multi-zone robotic palletisers for supply to Middle Eastern food companies
- Bin tipper designs for mass production and sale into Europe.



## OUR PEOPLE

**TEG Risk has a highly trained team of machine safety specialists**



**Hamish Baker**

PRINCIPAL SAFETY ENGINEER AND DIRECTOR

**Experience:**

Hamish has nearly 20 years' experience in the safety management and engineering practice area.

He has been the safety, health and environment manager for large multi-site food/chemical companies in the United Kingdom and is highly experienced in the field of risk assessment and risk management.

As co-founder of TEG Risk, he has been providing machine safety engineering services covering the whole life cycle including risk assessment, concept design, detailed specification, procurement support, project management and validation.

Hamish is highly skilled in programme design, implementation and delivery of numerous machine risk assessment programmes for significant food processing companies.

**Qualifications:**

- Bachelor of Technology (Hons) - Massey University
- NEBOSH Diploma (Occupational Health and Safety)
- TÜV SÜD Certified Functional Safety Professional - ID TA13010202 (United Kingdom course)
- Certification in Hazardous Area Classification (Australian Unit Standards)



**Ross Norgrove**

DIRECTOR

**Experience:**

Ross has more than 25 years of experience in broad international engineering management roles in the manufacturing sector.

Ross formed Technical Engineering Group (TEG) in 2005 after managing the Goodman Fielder group technical and engineering function which provided capital project management and machine safety services to 22 manufacturing sites for five years.

Machine safety has been a priority for Ross throughout his career and together with Hamish Baker, they formed TEG Risk and Sustainability in 2011 to provide professional, world class machine safety consulting to manufacturing industries.

**Qualifications:**

- Bachelor of Engineering (Hons) - University of Auckland
- Bachelor of Commerce - University of Auckland
- Chartered Professional Engineer CPEng, IntPE, CMIEngNZ
- Certified Project Management Professional PMP
- Pilz MachineSAFE Course

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**Barry Kleine**  
ENGINEERING TEAM LEADER



**Murray Larsen**  
SENIOR SAFETY ENGINEER



**Charles Webb**  
SAFETY ENGINEER



**Warren Wagener**  
SENIOR SAFETY ENGINEER

### Experience:

Barry is an equipment reliability professional with over 30 years' experience in equipment and safety performance, and over 15 years' experience in senior reliability roles in a multi-national corporation including time as the Global Reliability Manager for ABB. His sector background is the wood processing industry and recently he has been involved in extensive machine safety reviews in the New Zealand meat industry.

Success in international roles has come from having a hands-on background coupled with a very systematic and detailed approach to solutions. Barry has been very successful in the identification of site issues, prioritisation to get the fastest results and the application of world class processes in a practical, functional and cost-effective manner.

### Qualifications:

- BE (Mech)
- CMSE® – Certified Machine Safety Expert (TÜV Nord)
- NZCE (Mech)
- Advanced Trade Fitting Turning and Machining

### Experience:

Murray is a highly experienced mechanical engineer with a multi-disciplinary design background that includes mechanical design and electrical, pneumatic, hydraulic and safety PLC programming. This experience includes eight years designing cranes and lifting machinery and 13 years as the chief design engineer of materials handling equipment for the food industry while at Millers Mechanical. He has also provided contract technical design services to Heat and Control on the standardisation of fryers.

For the last 12 years he has been providing exceptional machine safety consultancy services to the FMCG sector. He has world class machine safety knowledge (including European requirements) and specialises in functional safety and validation programmes.

### Qualifications:

- Advanced Trade (Fitting, Turning and Machining, Engineering Draftsman)
- New Zealand Certificate in Engineering (Mechanical)
- TÜV SÜD Certified Functional Safety Professional – ID TA13010203 (United Kingdom course)
- TÜV SÜD University Certificate in Professional Development (UCPD): European Machinery Safety Requirement (United Kingdom course)

### Experience:

Charles undertakes machine safety risk assessments and design/specification with work on validation of safety control systems a specialty in the meat, dairy and packaging sectors. Prior to this he was a design engineer of bag filling machines where many of the required machine safety disciplines and competencies are applied. He has also had roles in maintenance and contract design engineering providing valuable practical experience.

### Qualifications:

- Bachelor of Engineering Technology – Manukau Institute of Technology
- CMSE® – Certified Machine Safety Expert (TÜV Nord)
- Registered Electrical Services Technician
- Certified Functional Safety Application Expert – SGS-TÜV Saar (CFSAE – SGS TÜV Saar)

### Experience:

Warren has over 30 years' experience designing, installing and validating electrical, electronic and control systems in the aviation, fuel supply and food industry. His most recent work has been related to the design and installation of over 30 safety systems for the food industry. As a Certified Functional Safety Application Expert (TÜV SAAR) and CMSE® – Certified Machine Safety Expert (TÜV Nord) – qualified engineer with a current practicing licence with the New Zealand Electrical Workers Registration Board, he is ideally placed to deliver end-to-end machine safety design and validation advice and activities.

### Qualifications:

- New Zealand Certificate in Engineering (Electronics)
- Certified Functional Safety Application Expert-SGS-TÜV Saar (CFSAE – SGS TÜV Saar)
- CMSE® – Certified Machine Safety Expert (TÜV Nord)
- Registered Electrical Services Technician
- ITC Thermography (thermal imaging)

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**Murray Irvine**  
PROJECT ENGINEER



**Rob Smith**  
PROJECT ENGINEER



**Patrick Ho**  
TEG PROJECT MANAGER  
(BRISBANE BASED)

### Experience:

Murray has more than 20 years' experience as an engineering manager in the food and beverage sector. Since joining TEG he has undertaken a large number of machine risk assessments across a wide range of different industries and machine types. As a certified machine safety expert, he has a sound knowledge of machine safety and how to ensure suppliers deliver and demonstrate compliant machinery.

### Qualifications:

- Master of Engineering Management – University of Auckland
- Graduate Diploma in Business – Engineering Management (University of Auckland)
- Advanced Trade Certificate (Fitting, Turning and Machining)
- CMSE® – Certified Machinery Safety Expert (TÜV Nord)

### Experience:

Rob is a highly experienced project engineer/manager who has worked extensively at food and beverage manufacturing sites ensuring projects are implemented to our clients' requirements. As a certified machine safety expert, he has a sound knowledge of machine safety and how to ensure suppliers deliver and demonstrate compliant machinery.

### Qualifications:

- New Zealand Certificate in Engineering (Mechanical)
- CMSE® – Certified Machine Safety Expert (TÜV Nord)

### Experience:

Patrick is a highly capable project manager with broad engineering experience in the food industry. He is a qualified chemical engineer (Master of Engineering from the University of Birmingham) with more than 10 years of engineering experience with a focus on the industrial manufacturing environment. Patrick worked in the edible oil refining sector for the initial part of his career and has been in project management roles for the last 9 years.

Patrick has expertise in:

- Project management of projects from concept planning through to procurement, design, construction and commissioning
- Process engineering & edible oil refining background
- Capital budget planning and management
- Contractor management
- Process & packing automation projects
- Machine safety compliance
- HAZOP risk assessments

### Qualifications:

- Master of Engineering Hons (Chemical Engineering) – University of Birmingham, UK
- CMSE – Certified Machinery Safety Expert (TUV Nord)



**When you work with us you know you're working with the best.**

Our team of internationally qualified professionals work with you to understand your business and the solutions that will work best for you.