

Engineers at the Forefront of Safety

David Fraser & Ajay Maira - Electrical Engineers,
& Joshua Kent - Mechanical Engineer

When a fuel storage tank containing 7 million litres of ethanol exploded at Port Kembla in 2004, engineers from TestSafe Australia were called in to help inspectors identify what had gone wrong.

When a young worker received an electric shock at a Sydney manufacturing site, it was TestSafe's electrical engineers who accurately pinpointed the source of the problem.

However, for these engineers, being commissioned to undertake complex investigations of workplace accidents is not just about discovering what went wrong. It's about finding ways to ensure it doesn't happen again.

Whether investigating workplace accidents, conducting fire, explosion, and mechanical or electrical testing, electrical and mechanical engineers play an important role in improving workplace safety.

Employing internationally recognised testing, research and accreditation procedures, TestSafe's engineers have played an integral part in the push by the NSW Government to reduce workplace fatalities and injuries (currently at an 18-year low). Yet many people are surprised to learn of the major role engineers play in solving workplace safety issues.

Investigating workplace accidents

Experienced electrical engineer David Fraser had only been at TestSafe for 2 years when Illawarra residents were rocked by the Port Kembla ethanol explosion, the largest industrial accident ever seen in the region.

With over 35 years experience as an electrical engineer he has been part of a team of experts that investigated the cause of the explosion.

"I've been responsible for investigation work that has any possible electro or electrostatic implications. So WorkCover inspectors rely on us to help them understand an incident from a technical and scientific viewpoint" Fraser said.

Major incident investigations are a regular part of TestSafe's work and require highly developed research, technical, and expert witness skills that only come with lengthy experience. In 2003 Fraser was called in following the death of a worker in a shipping tank explosion at Auburn. "The employee had been cleaning the tank with a highly volatile cleaning agent, methylethylketone (MEK) when the explosion occurred" he said.

"One of our fire and explosion experts at TestSafe actually called and told me that it looked like there could be electrical implications". "I visited the site the day after the explosion to do some initial testing, which is always crucial in any investigation. I always look forward to the challenge of investigations and I am told that my keen eye for detail, and years of experience are ideal for this type of work".

David Fraser spent six months sifting through photographs and witness statements, observing interviews and conducting experiments to identify what had happened.

"The witness statements were the key to finding possible scenarios for the explosion." From his investigation Fraser was able to present WorkCover Inspectors with a detailed report on the possible sources of ignition, and his recommendations have been used to improve workplace safety in this industry.

According to Fraser, his investigations into electrocutions, explosions, electric shock incidents and high-speed collisions are about finding out "how and why the incident occurred, checking compliance with relevant Australian standards



David Fraser
Electrical Engineer

and initiating changes within industry”

“I get a lot of satisfaction knowing that my testing and research leads to recommendations that save lives in the workplace”.

Workplace Equipment Testing

In the year 2006-2007 TestSafe tested equipment for more than 1,000 organisations and issued 475 internationally recognised certificates. Joshua Kent, a recent engineering graduate has wasted no time in adding to the tally since joining WorkCover 15 months ago. He has been involved in conducting mechanical testing on a range of equipment from conveyor belting diesel engines, from fire extinguishers to trolley jacks, from safety mesh to formwork equipment.



Joshua Kent preparing to test a new roof edge protection system

“That’s the best part, there is always something new coming in” he said.

“TestSafe is the only site that allows us to carry out such extensive and rigorous testing of conveyor belts, and clearly overheating and fires associated with such belting is a problem in many workplaces”.

Kent says that while a great deal of testing is done on site, engineers often have to travel to workplaces around NSW.

“In a short space of time, I have been to Teralba mine, near Newcastle, Tahmoor Mine near Wollongong to conduct non-destructive testing of wire ropes, and also to the RAAF base at Richmond to inspect scaffolding used in aircraft maintenance”. he said.

Kent said His engineering role with TestSafe was a natural progression for him after graduating in 2004. *“It has allowed me to get a great deal of engineering experience in quick time which some of the people that graduated with me have not be able to get. My work is valued both by the people around me and by the clients”.*

Keeping Pace With International Standards

The Manager of the TestSafe Electrical Low Current Branch, Ajay Maira, recently returned from convening a committee meeting of the International Electrotechnical Commission (IEC) in Brazil. *“I spent 4 days in Rio De Janeiro looking at new product designs, new safety testing requirements, and new international safety standards to keep pace with constantly changing technology”.* said Maira. En route Maira also conducted an audit of new explosion-protected equipment in New Zealand. *“We look at the management of the organisation, its quality systems, documentation, training, production, testing and customer feedback”.*

All of TestSafe’s technical work is concerned with testing and certifying of equipment to national and international standards, so the involvement of its engineers at international standards meetings is extremely important and a huge benefit to workplace safety. *“We impart our knowledge about these standards to our clients, installation experts, safety regulators, and to plant operators who use the equipment we test”.* Maira said.



*Ajay Maira
Electrical Engineer*

Australia is in the forefront of intrinsic safety standard setting. *“Every member of our engineering team is eagerly sought after by our clients, and they have earned a reputation as technically expert, friendly and professional engineers”.*