

Distance Visibility Takes a Technological Leap Forward

We have become accustomed to seeing a wide range of people including police, road maintenance workers, rescue personnel, security staff, traffic marshals, event volunteers and cyclists wearing traditional reflective vests for their own safety, and of those around them. Codes of Practice such as the Australian Standard for Safe Work on Roads even specify their wearing as an essential part of a road safety risk management policy.

Yet the ubiquitous visibility vest as we know it, using retro-reflective technology developed more than 50 years ago, is being seriously challenged by a new series of products based on battery-powered electro-luminescent technology. Where previously workers only became visible from a distance of 200 metres using standard reflective vests, and less so in fog, smoke and rain, electro-luminescence triples this to 600 metres, and requires no initial light source off which to reflect.

In 2006, this equipment, developed and manufactured by a New Zealand company, Exelite Industries, was unveiled at the famous Le Mans 24 Hour Race in France. According to Monsieur Guyomard, Director Circuit Bugatti, Le Mans, *"Track Marshals who traditionally face one of the most dangerous roles at Le Mans wore these Exelite Personal Self Illumination Safety Harnesses and Belts whenever they entered the race circuit. Le Mans tested the personal safety system on all of its 48 Track Marshals during the 24-Hour Endurance Race, and found that they had an increased sense of security on the track".* Monsieur Guyomard added *"Le Mans has been a proven test ground for new technology for the past 83 years so we are very pleased to be integral in proving this revolutionary safety system".*

According to Exelite's CEO, Mike Barnett, *"Followers of technological advancements in motor sport will readily recognise just how big a leap forward in performance this is. The new Exelite Personal Safety System has three times the performance of traditional reflective material in the most critical area, distance visibility".*

The illumination created by these vests is radio frequency generated rather than by conventional incandescent light so that the general spectrum beam is visible in its original form through any weather condition because the beam of light does not scatter. Translated into normal road conditions, the additional 400 metres of visibility emanating from the new electro-luminescent vest could make a critical difference in averting potential accident situations. In an emergency or tunnel rescue this extended visibility could be invaluable.

Very often, vehicle accidents involve the spill of petrol or other flammable liquids and gases which are liable to ignite in case of spark or hot surfaces, and only properly designed vests that are intrinsically safe should be used by emergency services personnel and others who need to attend to such situations.



A Le Mans Track Marshal wearing an Exelite Self Illumination Safety Harness



Cyclists wearing Exelite electro-luminescent belts at dusk

These visibility vests also have particular application in hazardous locations such as underground coal mines, petro-chemical plants and grain terminals, where the requirement that they be energy limited and intrinsically safe is paramount. The development of these products for use in potentially explosive atmospheres such as those encountered by miners was greatly assisted by TestSafe Australia's Intrinsic Safety engineers. Exelite submitted an initial design proposal for evaluation and after obtaining an assessment it made the necessary design changes to fully comply with International Intrinsic Safety Standards.

To achieve certification under the IEC Ex Scheme, Exelite also had to submit its Chinese-based manufacturing process to regular auditing. Fortuitously, TestSafe's very experienced engineer, James Zhao, who was closely associated with testing of the product, is formerly from Shanghai, was able to smooth the path of the audit by using his Mandarin speaking skills to converse with local production staff. The Audit confirmed that the production process is in accordance with ISO 9001:2000 and IEC Ex OD005 requirements.

Distance visibility vests and harnesses capable of producing an intrinsically safe, highly visible light, even in total darkness, in compliance with the most rigorous of safety standards will soon become a commonplace feature of many workplaces.



Ajay Maira (2nd left) and James Zhao (2nd right) with local Chinese production staff from Fulcom (Marshal) Co. Limited during audit in Pinghu.