# Live fire demonstrations showcase technology

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To emphasise the importance of adopting effective fire-suppression solutions designed for specific, special fire risks, environmental solutions company I-Cat showcased several fire-suppression technologies, which the company recently introduced to the industry, through live demonstrations last month.

These technologies include the Firetrace self-activating fire-detection and suppression system that can suppress fires in seconds, and the T-Rotor Technology water and foam misting technology, which includes T-Rotor Technology systems for localised protection, hand-held extinguishers, fast response backpacks and vehicle protection systems.

The company hosted the event at the Council for Scientific and Industrial Research's (CSIR's) Kloppersbos facility, 40 km north of Pretoria. I-Cat fire division manager **Andro Gibhard**, who led the demonstrations, noted that the event was aimed at the South African mining industry in particular, as it included a live coal and methane explosion in a 200 m tunnel.

Demonstrations in the red, or danger, zone in a cordoned-off area featured a localised protection system for conveyor belt systems, an underground mining fire and fire-curtain demonstration, the demonstration of localised protection systems for transformers and switchgear in-cabinet protection systems.

Demonstrations in the safe zone included displaying the capabilities of mobile and mining vehicles' fire-suppression systems, the fast response time of the Roto-Fire-Pac for underground and surface mining, as well as the use of water mist, and foam mist fire extinguishers in, for example, diesel and petrol fires and tyre/rubber fires.

**FIRE ATTRACTION**

The more than 140 attendees, including representatives from the platinum, gold, coal, chrome and iron-ore mining sectors, at the I-Cat fire-suppression demonstration, was officially the highest attendance ever recorded at the Council for Scientific and Industrial Research's Kloppersbos fire and explosion test, training, research and development facility.

At the event, fire forensic risk investigator **Alexis Basson** reiterated the risks associated with fire and the significant, unaffordable losses that could be incurred by the mining industry when suffering fire incidents and explosions.

He, therefore, suggested implementing several preventative and reactive measures to reduce fire risks or mitigate fire damage such as manual and automatic fire-suppression systems, and water mist or foam mist to effectively eliminate the heat aspect from fires.

## Firetrace and T-Rotor Technology

The I-Cat Firetrace system is a low-maintenance, cost-effective solution for microenvironment fire protection, where the hazard is contained within a specific piece of equipment, such as machines, vehicles and storage compartments, Gibhard explained.

**ADDED BENEFIT**
The mist is 100% environment friendly, while using water and nitrogen is safer, more effective and saves on maintenance and service costs

He noted that these systems can be installed in most enclosed spaces where high-value assets are located and can also be designed for areas where there is no water available.

"These low-pressure systems cause no thermal shock, have a long operational life, allow for on-site refilling of the systems, are electrically nonconductive and use sustainable, clean technology, and can even be used with any other external fire-detection systems," Gibhard said.

Further, the Firetrace tubes comprise a specially formulated polymer, with a detection and delivery mechanism, which can also be used to provide an immediate overview of where the fire started and occurred.

Meanwhile, I-Cat's T-Rotor Technology solutions, the Roto-Fire-Pac fire extinguisher pack, and the T-Rotor Technology vehicle-protection systems and localised protection systems, comprise extinguishers that use a combination of water and foam mist.

These systems use water and/or foam in a mist form, as opposed to traditional fire extinguishers that use either foam or dry chemical powders.

The misting technology of the T-Rotor Technology uses a small rotor unit that atomises water and charges it with kinetic energy, creating a fine atomised mist, with a size of between 50 µm and 60 µm at water pressure of 3 bar, in a mobile unit.

Pointing out the dangers and disadvantages of discharging conventional dry chemical powder fire extinguishers and carbon dioxide extinguishers in confined spaces, and particularly in underground mining applications, Gibhard highlighted the capability of I-Cat's new range of water mist and foam mist hand-held fire extinguishers.

This range uses water as the main agent and nitrogen as a propellant and can extinguish all types of fire, including rubber and plastic fires, kitchen cooking oil fires, diesel and petrol fires, and electrical fires rated up to 245 kV.

The Water Mist extinguisher range received South African Bureau of Standards approval at the end of 2014. "Using water and nitrogen is safer, more effective and saves on maintenance and service costs – all of which are major benefits in modern-day mining," he said, adding that he is confident that the technology will be well received by the local market.

"Each litre of water amounts to 120 $m^2$ of coverage capability, making it extremely safe and efficient. The small quantity of water used also results in little to no redundancy, damage or environmental contamination," he added.

Further, the localised vehicle protection systems can be applied to face shovels, rope shovels, loaders and continuous miners, including any mobile machine or equipment, while the localised protection systems can be used on conveyor belts, transformers, generator sets and hydraulic power packs.

Moreover, the systems can be designed to create cooling zones on the conveyor belts, to detect hot material or do lump material cooling in an application that does not add to the moisture content of the product, but reduces any fire risks in the application, Gibhard concluded.

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