

Know-how from a land of timber

CHASING SPARKS

The system identifies hot particles or sparks that represent a hazard.

On February 1, 2018, IEP Technologies, a member of the HOERBIGER Safety Division, acquired Atexon Oy. The Finnish firm has made a name for itself with spark detection and extinguishing systems. The latest addition to the HOERBIGER family ideally complements the portfolio and strengthens IEP Technologies' position in the market as a leading international, full-service explosion protection and prevention provider.

Text: Stephan Fabrizious Images: Atexon, Skaala



- 1 and 2 Spark detection is a complex method for avoiding fires and explosions, which often occur in pipes downstream of high-speed machines or mills and filters.
- 3 The system identifies hot particles or sparks that represent a hazard.

1

2

Customer benefits

- Particularly large detection range
- Early suppression of sparks – before an explosion can emerge



Atexon's roots date back to the year 2000 when a development team in Oulunsalo, Finland, started to work on the first generation of spark detection technologies and extinguishing systems. They had a clear locational advantage: the town is situated near Oulu, where the electronics industry has traditionally had a strong presence and the manufacturing industry boasts outstanding networks. Right from the start, the owner-operated firm focused on offering its customers best-in-class safety and quality standards.

No explosion without ignition

It does not take much for a potentially devastating outcome: a single spark suffices to trigger a fierce, catastrophic fire or explosion in an industrial setting. Spark

detection is a complex method for avoiding fires and explosions, which often occur in pipes downstream of high-speed machines or mills and filters. In contrast to explosion suppression, the concept directly addresses the ignition sources – before a fire or an explosion has developed. Such a system identifies hot particles or sparks that represent a hazard, and extinguishes them while they are still in the pipe, before they reach the next container. Damage can be entirely avoided.

The quality of the detection process is dependent on the interaction between the individual components: dangerous sparks must be detected and extinguished in a matter of a few milliseconds. The quality of the detectors used determines how reliably and effectively the spark detection system extinguishes and avoids an explosion.

IEP Atexon spark detection and fire extinguishing system

Operating principle

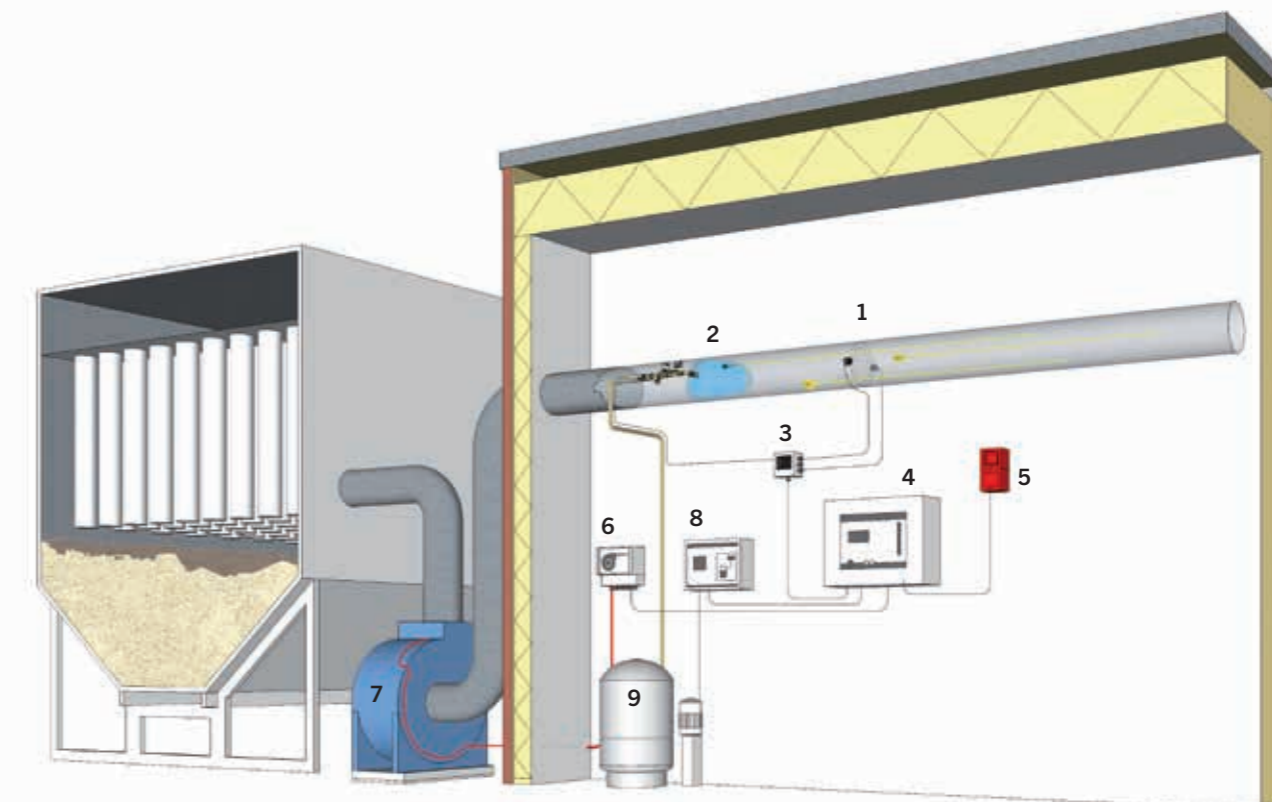
IEP Atexon spark detection and fire extinguishing systems prevent dust explosions and fires by detecting sparks and extinguishing them automatically. A small amount of extinguishing water, approximately five liters, does not damage the filters of other production machines. Extinguishing is stopped by the automatic system a few seconds after the danger has been eliminated; the system is then ready to prevent another fire.

Extinguishing units can also be mounted in cold outdoor areas by means of the IEP Atexon heat-tracing system.

Operation

1. The spark detectors detect the ignition sources within a millisecond.
2. The extinguishing unit extinguishes sparks and embers with a small amount of water.
3. The signal router guides and monitors the extinguishing event.
4. The control panel monitors the whole system.
5. The signal device issues alarms using a siren and a strobe light.
6. The blower controller stops the blowers in case of overheating or a spark shower.
7. The overheat sensing cable monitors the blower bearings and the blower perimeter.
8. The pressure booster controller guides the water pump and the heat-tracing cables.
9. The pressure booster ensures airless extinguishing water with the correct pressure.

Typical installation





ATEX-compliant processes for the wood-working industry

Skaala Oy, Finland's largest door and window manufacturer, is one of IEP Atexon's satisfied customers. The company needed to install spark detection systems for its production lines in all six plants to meet insurance requirements. Low installation costs and a responsive technical-support team were especially important factors in the company's review of solutions. Skaala Oy required an integrated solution covering spark detection, extinguishing water lines, and an extended warranty for control cabinets, which are particularly at risk.

As an added bonus, the safety experts from IEP Atexon also supplied systems for detecting blower overheating, a valu-

able safety tool that no other firm in the market was able to offer. Only three months after installation, the system proved its worth: first, when the spark detection unit triggered an alarm during a fire on CNC machines and the fire extinguishing system was activated in Skaala Oy's largest plant, and then again, 15 minutes later, when pockets of embers triggered an even larger fire in production, among others on the piping system. This fire was also detected and extinguished in time – affirmation that the customer's decision to select IEP Atexon had been right. Presently, all remaining plant parts are being completely equipped with the respective manufacturer's solutions.

Spark detection

Every spark emits a certain amount of electromagnetic energy, which is captured and measured by the detector. The spark detector reacts to electromagnetic emissions in the infrared and near-infrared ranges. As a result, the solutions offered by IEP Atexon cover a particularly large range.

As soon as a hazard is identified, the detector sends a signal, which activates the extinguishing unit and immediately disperses the extinguishing agent. Only after multiple events have been detected in short succession is a serious malfunction assumed and the equipment shut down. In most instances, water is the best extinguishing agent. Depending on the type of material, other extinguishants may also be used.

Safety and cost efficiency

A key advantage of IEP Atexon's spark detection technology is that there is generally no need to disrupt the production process, even if a spark has been detected and extinguishing activated. More importantly, damage to the affected machines and systems is avoided because only a small amount of water is used – in general, no more than five liters. Additionally, the process helps to considerably minimize the danger to people in hazardous areas. Spark detection and extinguishing systems made by IEP Atexon can be found in the woodworking industry, the food and bioenergy industries, and in many other sectors.

Thanks to a more efficient system design, IEP Atexon helps its customers achieve approximately 30 percent lower installation costs. Low-maintenance components and high reliability additionally cut service costs by up to 40 percent. Starting at a particle temperature of around 300° C, it is even possible to identify non-glowing particles. Our technology leading, patented sensor with a 180-degree field of view provides maximum protection. The flexible design allows the detectors to be adapted to the individual conditions at the installation site, for example by using a daylight filter, a high-temperature model or a double-sided ATEX model.



“Atexon offers probably the most innovative system solution on the market.”

Dr. Thorsten Kahlert,
Head of Safety Division, HOERBIGER

Focus on integral protection

Complex production processes usually involve a combination of various equipment parts, such as a mill, pipe, and filter. This is also something that must be considered in the safety strategy. The mill and the filter are generally protected by pressure relief or explosion suppression devices, while the spark detection unit is installed just upstream of the filter. This clearly demonstrates that explosion protection and prevention together form an overall safety strategy for production plants. With the Atexon spark detection and extinguishing systems, IEP Technologies is able to offer its customers unique, complete systems from a single source, worldwide.