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Fire protection as a complete package for the paper industry

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A fire on company premises is one of the most serious risks to business operations. Not only to equipment and products, but also personnel. The Niederauer Mühle paper mill has therefore been using the intelligent PYROsmart early fire detection system for many years. This system not only detects fires indoors and outdoors, but also uses fire monitor systems to extinguish them with pinpoint accuracy.

Prioritizing fire protection is only natural at the Niederauer Mühle paper mill in Kreuzau, North Rhine-Westphalia in Germany. The risk of fire and major damage cannot be underestimated in the paper production business. If you have ever set fire to a sheet of paper, you know how quickly the flames spread. Preventing fires is therefore a particular concern within the paper industry. However, when prevention fails, a fire needs to be



“Orglmeister provides the most innovative fire protection in a complete package”

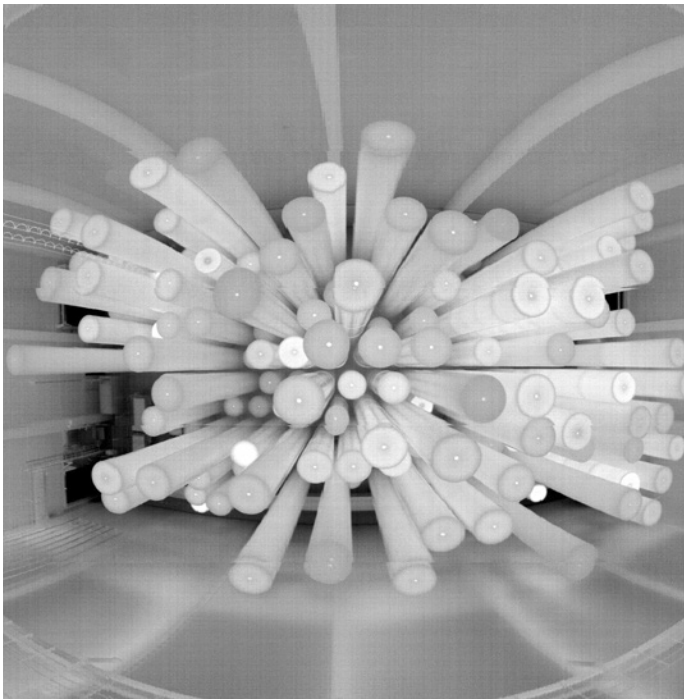
Fire protection officer Heinz Bleißem about PYROsmart.

extinguished quickly and with precision. The company, founded in 1831 as a textile mill, produces white-covered corrugated base paper with weights ranging from 120 to 200 g/m². In addition to paper machines, the mill also uses fully automated reel warehousing and automated reel transport. A warehouse crane equipped with two vacuum lifters stacks paper rolls upright in towers of up to 14 meters high. The crane is operated by a logistics system, which then automatically routes the paper rolls via transport systems to distribution points, where trucks are loaded to transport the paper rolls to customers. Niederauer Mühle also has a large outdoor area where raw materials are stored.



Pictures: Orglmeister

The intelligent PYROsmart early fire detection system from Orglmeister Infrarot-Systeme GmbH is now also protecting the paper mill's outdoor areas.



Inside the mill, paper rolls are stacked into towers of up to 14 meters height. PYROsmart's infrared panoramic image monitors the entire warehouse.

Over the years, the company has acquired a great deal of expertise in all areas of fire protection. This has included performing fire simulations and developing fires. The high level of plant fire protection is important and, as a result, any developing fires that have occurred have not resulted in major fire events. Part of the reason for this success is the long-standing partnership between Niederauer Mühle and the specialists in early fire detection, Orglmeister Infrarot-Systeme from Walluf near Wiesbaden, who installed PYROsmart, an intelligent system for early fire detection and fire extinguishing.

Infrared thermography reveals fires

Niederauer Mühle has been using PYROsmart in various areas of its premises since 2011. A decision was made back then to upgrade the existing fire protection infrastructure with PYROsmart when a new paper machine and automated reel storage was constructed. Orglmeister's system uses a high-resolution infrared thermal imaging camera to continuously scan areas at risk of fire. Infrared thermography is based on the principle that all objects emit infrared waves according to their temperature. This is a phenomenon that has been known since the early 20th century, and Orglmeister uses it in its in-house abiroVision software, which generates a panoramic thermal image identifying



The VdS-approved PYROsmart system is equipped with a pan/tilt system that enables the monitoring of even large areas.

any heat sources. The camera therefore detects any hotspots before the temperature rises above a dangerous threshold. A pan/tilt system makes it possible to monitor very large areas without having to resort to distorted wide-angle perspectives. The thermal imaging camera also has an integrated video camera, enabling the actual situation on site to be continuously displayed. Unlike conventional smoke aspiration systems, PYROsmart also has no problem operating in smoky or dusty environments. A built-in compressed air cleaning system keeps the sensors clear at all times, ensuring production areas get continuous and safe monitoring.

All this is being used in Niederauer Mühle's fire monitoring system. "360-degree panning makes the camera suitable even for large yards," says Heinz Bleißem, the company's fire protection officer. He also likes the capability of superimposing video and thermal images: while thermal images precisely indicate where sources of fire are, the unusual display often makes localization difficult. PYROsmart superimposes video and thermal images at an infinitely variable ratio. Hotspots can therefore also be seen in a normal video image. If a fire actually breaks out, PYROsmart can also be used to smartly operate fire monitors and automatically extinguish fire sources or at least keep them in check until the fire department arrives.

Reliable, pinpoint accurate detection of hotspots in the 3D space is possible from a height.

PYROsmart protects huge outdoor areas

After the good experience gained indoors with PYROsmart, Niederauer Mühle decided to use the VdS-certified system in its outdoor areas as well. Two cameras and two fire monitors keep watch over the 10,000 square-meter raw materials area, while another camera monitors a regeneration area and an area around the forklift trucks. "PYROsmart can differentiate be-

tween heat from a fire and heat from forklifts, trucks or other equipment, and can therefore prevent false alarms," explains Heinz Bleißem. PYROsmart is therefore reducing the likelihood of false alarms. Automatic system monitoring including test runs of the extinguishing systems keep the mill continuously up to date. Status messages and alarms undergo checking and evaluation.

Rapid reaction in the event of fire

If a fire does occur, PYROsmart automatically ensures extinguishing is smooth and secure. Extinguishing systems installed in Niederauer Mühle have a 70 meter range and can discharge up to 3,500 liters of water per minute onto the site of the fire. PYROsmart software controls the extinguishing process intelligently and with precision. PYROsmart's extinguishing algorithm, which is adapted to putting out paper fires outdoors, automatically prevents fires or hotspots from spreading to surrounding areas. If a fire breaks out, Heinz Bleißem gets instant notification on his cell phone and can immediately assess the extent of the fire via the video camera integrated in PYROsmart. Other employees get access via PCs and laptops. "If there is a fire alarm, we can instantly view the actual situation," says Bleißem. Then there is the company's good working relationship with the local fire department. The video and thermal images run at Niederauer Mühle on a mobile, robust industrial tablet, which the fire department management can use to access the entire system. Although the fire department usually has its own thermal imaging cameras, the view from above provided by the



PYROsmart camera is an important tool for the fire department's follow-up inspection of any extinguishing work. If automatic extinguishing of the fire by the PYROsmart system has not been 100% successful, the fire department can use the PYROsmart extinguishing system's infrastructure to manually extinguish the fire.

High-level fire protection expertise at the mill

Niederauer Mühle is confident that with the acquisition of the PYROsmart solutions, they have taken another step towards reliable early fire detection and prevention, also in its outdoor areas. "Orglmeister has been highly innovative from the outset. Continuous development as well as meeting specific customer requirements have resulted in a fantastic complete package," says Heinz Bleißem confidently. He is not the only one in his company who relies on the PYROsmart functions: of the 190 employees, 110 are trained as fire safety assistants. If an emergency happens, they are well prepared for the situation with PYROsmart. "The system's initial actions succeed even before the fire department arrives," says Heinz Bleißem.

ORGLMEISTER Infrarot-Systeme GmbH & Co. KG from Walluf near Wiesbaden specializes in developing, producing and implementing smart **early fire detection systems** using infrared cameras and smart extinguishing operation.

The company benefits from the expertise and ingenuity gained from **30 years of experience** in a wide range of infrared applications. Orglmeister combines high-quality and innovative solutions with state-of-the-art technology and has implemented these into a large number of patented hardware and software products.

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