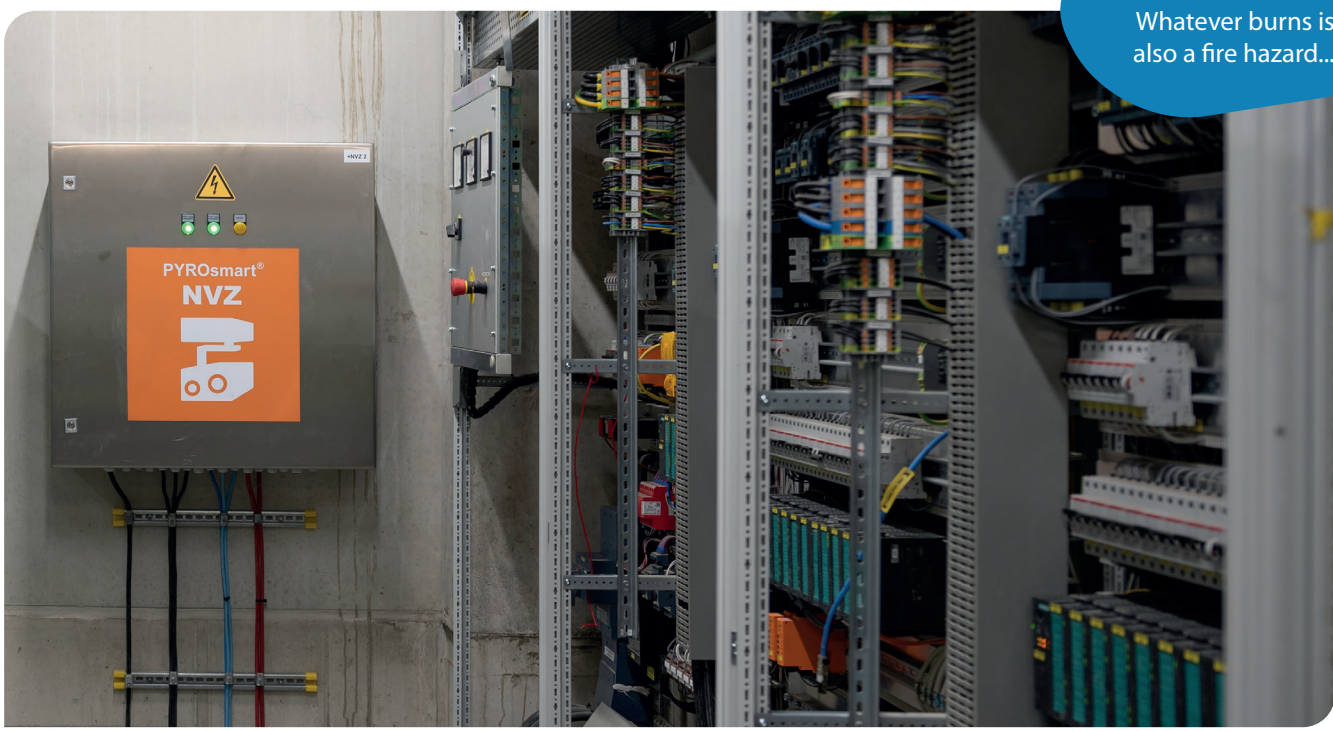
Orglmeister Infrarot-Systeme

SMART INFRA-RED FIRE MONITORING



Whatever burns is also a fire hazard...

Like many others, the Heidelberg Materials cement plant in Schelklingen, Baden-Württemberg, Germany, uses a range of alternative fuels, including waste wood, municipal waste fractions and biomass.

However, this brings the problem of biomass from food scraps in packaging waste creating bacteria when left for extended periods. Heat can then build and, if undetected, spontaneous combustion may occur. Fires can then spread, putting personnel at risk, and seriously damaging, or even destroying entire facilities. It is therefore vital that fires are prevented from the outset with targeted and rapid detection and extinguishing systems.

Panoramic thermal imaging using

The Schelklingen plant uses a PYROsmart series infrared-based early fire detection system from Orglmeister Infrarot-Systeme GmbH & Co. KG based in Walluf near Wiesbaden, Germany. Orglmeister's patented process in its PYROsmart products combines infrared thermal imaging and video technology to enable full monitoring of large factory areas with adverse environments.

High-resolution IR cameras use in-house abiroVision software to generate a panoramic thermal image that shows heat sources, through the high levels of dust that are often found in cement production facilities. The system is able to recognise spatial geometries and thereby precisely locate areas at risk. Pan/tilt technology also makes it possible to monitor very large areas, which is essential in the plant's expansive fuel buildings. Panoramic thermal imaging continuously delivers information to users in the cement plant's control centre.

The system at the Schelklingen plant has two threshold metrics. Above 80°C a pre-warning is given. Above 90°C a fire alarm is triggered and fuel supplies to the kiln are cut off. Working together with Austrian partner company Rosenbauer, a fire-monitor extinguisher has been installed, which the PYROsmart system automatically operates to perform targeted extinguishing when hotspots are identified.

Reading the room

However, not all 'hotspots' are a risk. For example, exhausts on wheeled loaders and trucks may also be detected, despite these not being safety critical. Heidelberg Materials therefore got the PYROsmart software to teach itself in an automatic learning phase. The new system ran in parallel with the existing fire alarm system and used smart interference detection to monitor the environment. It was able to learn whether a vehicle with a hot exhaust or engine was stationary or moving. These are now automatically classified as non-hazardous. False alarms that would otherwise result in considerable financial cost and human effort are prevented.

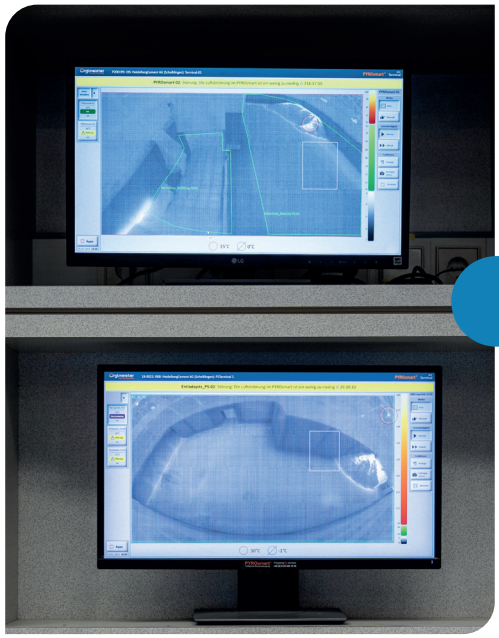
Long-term partnership

Heidelberg Materials has worked with Orglmeister and the PYROsmart system for many years. The first parts of the system entered operation in 2010 when the plant still used waste tyres as a fuel. A switch to other substitute fuels in 2018 required new plant construction and installation of a PYROsmart FS. The FS series is aimed at applications monitoring large areas, while its sister system PYROsmart NS is primarily used for smaller spaces and conveyor belt monitoring.

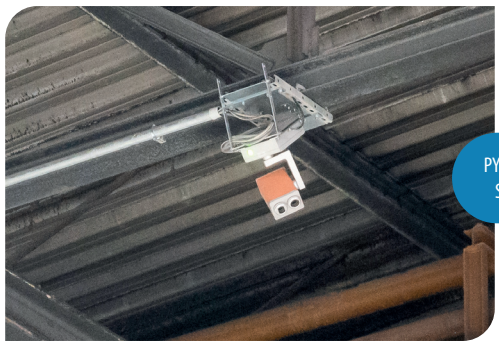
"Orglmeister won us over with the operability and technology of its products," explains Christian Haupt, head of electrical and automation engineering at the plant. "Stability, plus pan and tilt technology, you get it all in one system."

Waiting in the wings

While there have been elevated temperatures detected, the extinguishing system has not been called into action so far. If a fire does break out, the control centre can then decide how to proceed. This is vital because firefighters need to be directed across the large plant complex. For this reason, regular firefighting drills are held. Staff can also monitor situations within buildings from a distance. When an alarm is triggered, the system informs those responsible in the control centre to enable action to be taken quickly.



The system has been trained to only take action in the event of genuine hot-spots.



PYROsmart FS installed on the ceiling of the Schelklingen plant's alternative fuel store.

The PYROsmart FS is used for large areas.