



APPLICATION STORY

Swedish Jönköping Energi relies on FLIR thermal imaging cameras to detect fires in an early stage

For waste management companies like the Swedish Jönköping Energi in Torsvik, spontaneous fire outbreaks are a fact of life. The critical issue then is to detect such fires as efficiently as possible, control them and prevent them from spreading. Since 2016, thermal imaging cameras from FLIR play an essential part in this effort.



The high resolution of the FLIR A615 allows the entire waste bunker to be monitored in high detail.

The combined heat and power plant, Torsvik, is the power company Jönköping Energi's main production unit for district heating. It turns up to 160,000 tons of waste per year, or 20 tons an hour, into heat and electricity – enough to cover the yearly need of 25,000 households. The plant has two boilers: one is fueled with waste; the second, with biomass. The waste-fired plant, which was completed in 2006, operates around the clock, year-round, except for a few weeks of maintenance. The Torsvik plant provides for about 90% of the district heating demand and 20% of the electricity used in the surrounding network area.

EARLY FIRE DETECTION

For Magnus Olsson, plant manager at Jönköping Energi Torsvik, preventing and controlling fires in the waste bunker is not only a matter of safety, but also of economics: "We have trucks coming in, bringing in waste from the surrounding area, but also from different places in Europe. This waste is then dumped in a waste bunker and is mixed by means of automatic cranes, waiting to be transported into the boiler."

"These waste piles can be a dangerous mix," Magnus Olsson continues. "Spontaneous combustion from biological products or other heat sources is a continuous threat and something that we need to keep an eye on 24/7. Apart from the environmental consequences and the obvious safety risks for people at the plant, a fire outbreak in a

waste bunker can be a very costly affair. If a fire should break out, we need to shut down the plant immediately. These shutdowns cost us quite a lot of money, up to half a million Swedish Crowns a day. That's why it is important to have a reliable early warning system that detects fires as soon as they are originating."

THERMAL IMAGING SYSTEM

In order to guarantee fire safety in the plant and prevent severe environmental damage for the region, Jönköping Energi published a tender for the implementation of an early warning fire detection system. The tender was eventually awarded to the Linköping-based company Termisk Systemteknik, a distributor of FLIR thermal imaging cameras and provider of fire detection systems with FLIR cameras since 2010.



Magnus Olsson: "Plant shutdowns are very expensive: they cost us up to half a million Swedish Crowns a day. That's why it is important to have a reliable early warning system that detects fires as soon as they are originating."

Claes Nelsson, product manager at Termisk Systemteknik AB: "The Torsvik plant was already working with an aspiration-based smoke detection system. Such a system pulls in air from the environment, which is then analyzed for the presence of smoke. The problem with this system was that it was not fast enough. In fact, for this system to generate an alarm, smoke actually has to make physical contact with the smoke sensor, which is usually installed high up in the ceiling of the waste bunker. By then, a fire will already have developed into something uncontrollable."



Magnus Olsson: "Spontaneous combustion from biological products or other heat sources is a continuous threat and something that we need to keep an eye on 24/7."



A critical factor for putting out a fire is to have an early response. This can be achieved with the FLIR cameras. Jönköping Energi can even put out a fire before it starts.

"We therefore offered Jönköping Energi an early warning system based on thermal imaging cameras from FLIR. For fire detection, thermal imaging is superior, because you sense the temperature of the material and you are not depending on smoke spreading in the room or temperature spreading in the room. You're measuring the temperature of the material, the waste in this case."

FIRE DETECTION AND EXTINGUISHMENT

The fire detection system at Torsvik consists of two FLIR A615 cameras in protective housings mounted on pan tilt systems, one at each end of the bunker. They are controlled via the dedicated TST Fire software from Termisk.

When a hot spot is detected by one of the two cameras, the other camera is directed at the hot spot as well. The TST Fire software then calculates the accurate coordinates of the hot spot, based on the combined thermal images, and an alarm is generated. Upon activation in the waste bunker control room, the water canon is directed at the detected hot spot and the fire is extinguished.

Termisk's TST Fire provides a highly accurate fire protection solution for use in solid fuel storage facilities, waste recycling facilities, incineration plants or for any other area or asset that need to be monitored closely for fire safety. The software makes use of thermal imaging cameras from FLIR to monitor and analyze assets for hot spots.

TST Fire makes an accurate, real-time analysis of the thermal video image. If unusually high temperatures are detected, an alarm is triggered. The alarm is clearly presented in the TST Fire user interface, and the software also enables sound and visual alerts.

"The system proposed by Termisk Systemteknik proved to be very accurate as it is able to measure temperatures to fractions of a degree," says Claes Nelsson. "Thanks to the

high resolution of the two FLIR A615 cameras – 640 by 480 pixels – the entire bunker can be monitored in high detail, which enables the control room operators to detect really small hot spots."

"The FLIR A615 is one of our preferred FLIR cameras for this type of application," says Claes Nelsson. "The A615 is a high-resolution bolometer camera which operates with Gigabit Ethernet interface and interfaces very well with our TST Fire software."

DETECTION SPEED IS CRITICAL

Speed is crucial in fire detection. This is something that Robert Berger from the fire protection solution company Incendium knows all too well. Incendium is supplying the fire extinguishing system for the Torsvik waste bunker, including the water canon which receives spatial coordinates from the thermal camera system. "A critical factor for putting out a fire is to have an early response. And that we can achieve with the FLIR cameras. We can even put out a fire before it starts."



Claes Nelsson, Termisk Systemteknik: "TST Fire makes an accurate, real-time analysis of the FLIR thermal video image. If unusually high temperatures are detected, an alarm is triggered."



For more information about thermal imaging cameras or about this application, please visit:

www.flir.com/automation

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