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APPLICATION STORY



The Ignalina Nuclear Power Plant

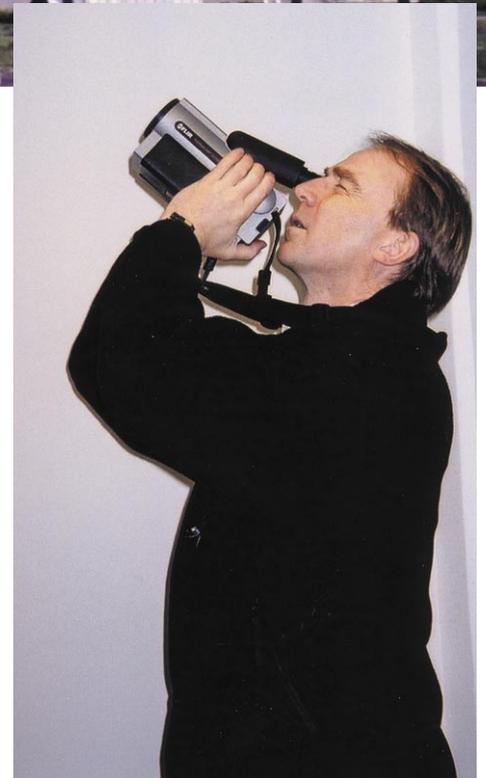
Infrared Thermography helps to increase safety at nuclear power plants

The Ignalina Nuclear Power Plant is located in the north-eastern part of Lithuania, near the borders of Latvia and Belarus. The plant is of the same type as the one in Chernobyl but is even more powerful. It has an output of 1,500 MW. The site of the power plant covers an area of more than 0,75 square kilometers and employs about 5,000 people. It stands for about 80% of Lithuania's electricity production.

After the dramatic events in Chernobyl, a project was initiated to improve the safety of the nuclear power industry in Eastern Europe with Western European support. One of the organizations involved in this project was "the Swedish International Project Nuclear Safety (SIP)". One of their concerns was to prevent radioactive par-

ticles entering the environment through cooling water or air.

An important task at the Ignalina Nuclear Power Plant was therefore to verify that the encapsulation of the reactor building, the so-called "containment building", was air- and gastight. This part of a



Arne Schlemann-Jensen at work with the FLIR Systems ThermoCAM™.

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nuclear power plant houses the reactor, pressurizer, reactor coolant pumps, steam generator, and other equipment or piping containing reactor coolant. It is an airtight structure, which typically is made of steel-reinforced concrete, three feet thick. It needs to be airtight, to prevent radiation from leaking into the atmosphere.

The Swedish International Project Nuclear Safety contacted Arne Jensen AB. A company with international experience in various leak tracing methods. "Infrared was the perfect technology to use in this case.", says Arne Schleimann-Jensen of Arne Jensen AB. "Since the contaminated air is at a negative pressure and a raised temperature, it is possible to see the leaks, in the form of cooling, by using an infrared camera. To locate leaks in the enormous buildings with ceiling heights of more than 60 meters, I used a FLIR Systems ThermoCAM. This camera makes it possible to see temperature differences as small as 0.08 °C and has a perfect image quality."

"Infrared thermography was an unknown technology at the Ignalina plant when I first arrived, but when I discovered the first leak, a hole of only a few square millimeters and an air flow rate of just 0.3 meters per second, everyone was convinced that infrared is a great tool for this type of work."

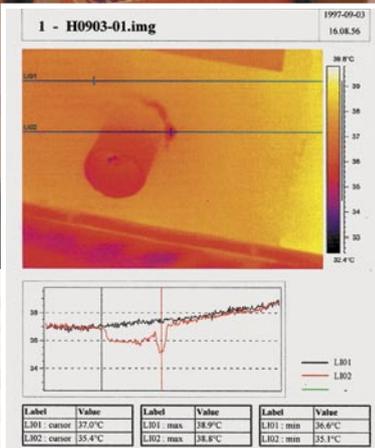
"There are of course other techniques to find air leaks in buildings", says Arne Jensen. "but infrared technology has numerous advantages. It can be used when the powerplant is running. There is no need for a costly shutdown. Furthermore, thermography is unbeatable when it comes to having a rapid overall picture. It gives you a quick and total overview of the situation and the problem can be clearly located on the infrared image. And as we all know, a picture is worth a thousands words."

Arne Jensen has made numerous trips to Lithuania. "At first mainly to train the power plant's maintenance personnel how to use an infrared camera for leak tracing. But

during this training sessions, and when walking around with the FLIR Systems ThermoCAM in the power plant, it became very clear to them that the infrared camera can be used for more than leak tracing only. Now that there is a camera on site it is also used extensively to check their electrical installations. If left unchecked, heat can rise to a point that connections and overloaded cables melt and break the circuit. This can result in fire.

The people at Ignalina have been so impressed with the results of thermography that word spread rapidly to the neighboring nuclear power plant in Kola, Russia. This plant now uses infrared cameras for leak tracing and checking electrical equipment, such as transformers and circuit breakers, as well.

If you would like more information about thermography and its numerous applications, please contact FLIR Systems, the world leader for infrared thermography.



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