

APPLICATION STORY



FOUNDRY SPECIALIST SLR IMPLEMENTS THERMOGRAPHY: MAINTENANCE FROM A SINGLE MOLD

A FLIR T440 thermal imaging camera assures uninterrupted production at the SLR Group.

The German SLR Foundry St. Leon-Rot GmbH was founded in 1981 as a medium-sized company and acquired by Rudi Seiz within the framework of a management buyout in 1986. The company now has a total of 650 employees and produces over 120,000 tons of raw, processed and assembled nodular iron. The SLR group operates foundries and processing sites throughout Europe for this purpose and can thus offer high quality at attractive global market prices. 230 employees contribute to achieving this goal at the headquarters in St. Leon-Rot. In order to ensure that production never falters at this site, SLR purchased a FLIR T440 thermal imaging camera in the spring of 2013.

AVOIDING UNPLANNED DOWNTIME

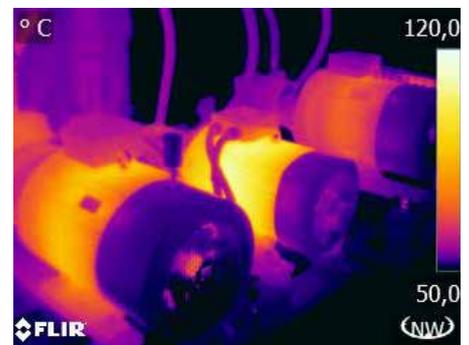
This was initiated by Alexander Czuberny, who is responsible for the company's electrical systems at the main SLR plant in St. Leon-Rot. He was keen on avoiding to the greatest extent possible unplanned downtime due to sudden electrical failures. "When one of our machines fails, the entire plant stands still," explained Czuberny. "A whole shift of about 70 employees in our production department then have to bide their time while the time required to complete customer orders keeps ticking. This is not only annoying and nerve-wracking, but can be really expensive."

THE SOLUTION: A HIGH-PERFORMANCE THERMAL IMAGING CAMERA

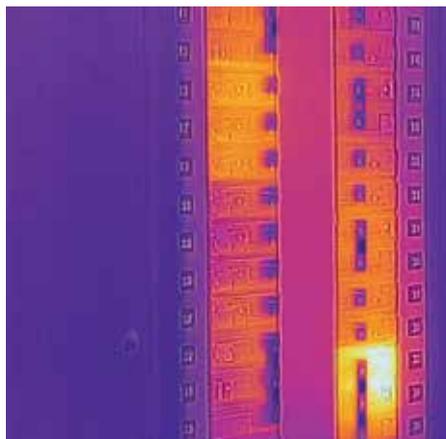
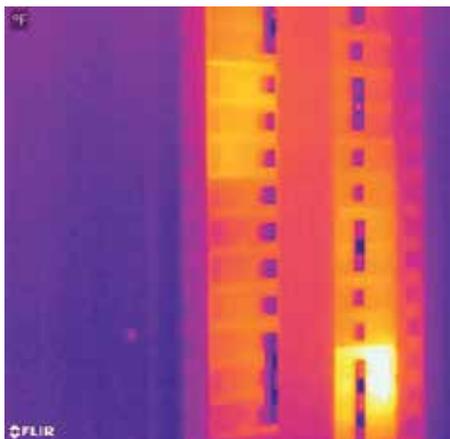
With many years of experience as an electrical engineer in maintenance, Alexander Czuberny knew the right way to go about it. A high-performance thermal imaging camera can be used to check electrical installations, fuses and control cabinets on a regular basis to ensure detection of thermal anomalies (which indicate a problem or imminent component failure) and replace the corresponding parts in time. Alexander Czuberny thus researched the thermal imaging camera market and quickly included the global leader in thermal imaging FLIR in his shortlist. "I wanted a



The FLIR T440 features an 8 x digital zoom and is equipped with the innovative Multi Spectral Dynamic Imaging (MSX) function.



An overheated drive motor



Compared to the standard thermal image, MSX technology (right) also shows essential details such as labels.



Even deposits in a pipe system can be seen in a thermal image.

truly sophisticated thermal imaging camera with a certain resolution and useful features." Alexander Czuberny then contacted Andreas Blug from the ROLF WEBER GROUP, which distributes thermal imaging cameras made by market leader FLIR Systems as a system partner for the industrial and craft sectors. As a level-2 certified thermographer, Andreas Blug proved to be just the right partner when it comes to maintenance solutions using thermal imaging cameras. "Even though prices have developed in a very customer-friendly way in the past few years, purchasing a high-performance thermal imaging camera is of course still an investment, of which company management has to be convinced," explains thermographer Blug.

CAMERA SELECTION

Therefore, the two agreed to meet at SLR, where Andreas Blug presented

various thermal imaging cameras. "I think it's very important to truly compare the different products," explains Andreas Blug. "This is the only way to find the right camera for specific requirements. When entering this type of partnership, it's important that users get hands-on experience with the right device and learn how to work with it properly," Blug continues. "There are thermal imaging cameras on the market for under 1,000 euros. However it is important to know the difference between entry-level and professional devices and test them together with a trained thermographer." Together with Alexander Czuberny, Blug took thermographic images of machinery and equipment, some of which showed a need for immediate maintenance. Company management was therefore also impressed by the possibilities of thermography for

inspecting the electrical installations. Based on Blug's advice, the SLR Group chose a FLIR T440 with a thermal resolution of 320 x 240 pixels and for an additional 45° interchangeable lens. The FLIR T440 has MSX technology, a patented FLIR technology which provides clear pictures and unmatched detail. MSX combines the thermal image with visible spectrum detail from the built-in 3.1 megapixel digital camera to provide a razor-sharp picture in which even individual labels on components can be read. The results can then be processed using the current version of FLIR Tools software. Alexander Czuberny was also impressed by the ergonomic and easy operation of the FLIR T440.



Sharing experience on site: Andreas Blug (left) and Alexander Czuberny monitoring the state of a control unit.



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ELECTRO-THERMAL INSPECTION

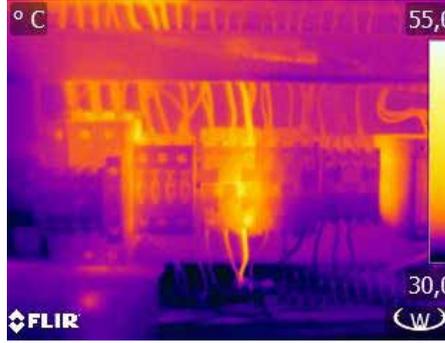
"Regular inspection not only helps avoid machine failures, but is also extremely useful for fire protection," Alexander Czuberny explains. "Old wiring can become brittle. External factors including UV radiation and subsequent chemical processes in the material change the consistency of the softening agents over the course of time and thus the wiring's plastic coating hardens, becomes brittle and falls off." In addition, contact points oxidize and fuses become overloaded. The thermal imaging camera detects this immediately due to temperature differences. Defective electrical and mechanical devices such as overload protectors, fuses, screw contacts or terminals and wiring are then earmarked for replacement during the next scheduled maintenance downtime. One of the typical applications at SLR is the inspection of electrical control units for heat spots.

THERMOGRAPHY CAN ALSO DETECT MECHANICAL PROBLEMS.

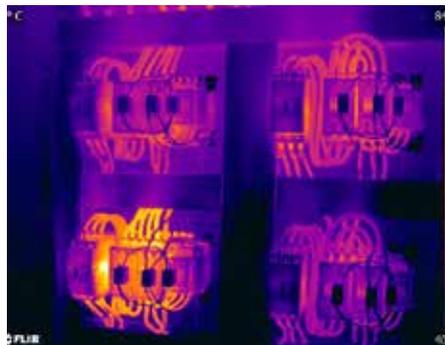
Thermography can not only detect problems in electrical systems, but is very effective when it comes to mechanical parts as well. At the SLR Group, the company's conveyor belts were also subjected to thermographic inspection. This revealed that some of the spindle bearings were defective. There are various possible reasons for this (e.g. lacking or insufficient lubrication), but the results were obvious. Two of the bearings were overheating, as was plain to see in the thermal image. They were just about to break and had to be replaced. "We were able to schedule the necessary repair in one of our breaks. If the bearing had broken during operation, an hour of downtime would have cost us as much as the thermal imaging camera did – it thus really quickly paid for itself," explained Czuberny. Another use for the FLIR T440 was discovered by coincidence during a tour of the production facility.



The temperature deltas of the components conducting electrical current are clearly visible in the infrared image. The thermographer's training and experience truly pay off when it comes assessing this thermal abnormality and recommending a course of action for the electrician.



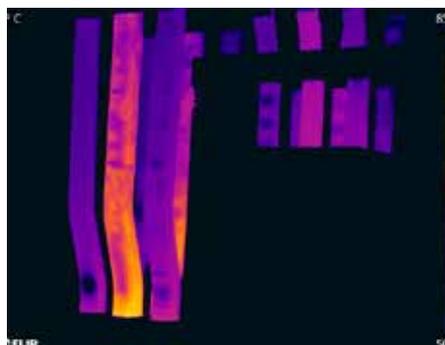
It is clear that the unit on the lower left needs to be checked by the electrician.



Of the 6 measuring points on this image, spot L2 is noticeably hotter than L1 and L3.



The middle rail requires inspection, because it is heating up to almost 80 degrees at some points.



Sometimes unusual problems also occur. For example, Czuberny had wondered why the temperature on the machine side of a pump, which is



The image of the pump on the right was abnormal. Diagnosis revealed that it had been installed incorrectly.

used next to another one to pump hot material into a tank, was much too high on the intake side. The puzzle was solved: one pump had been connected backwards.

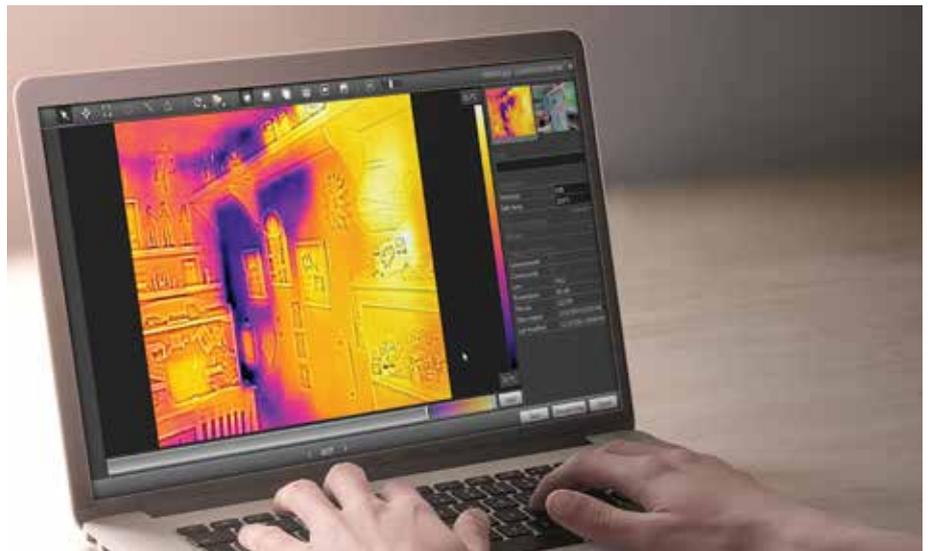
PRACTICE SEMINAR AND SOFTWARE

Alexander Czuberny had originally planned to take a course on practical

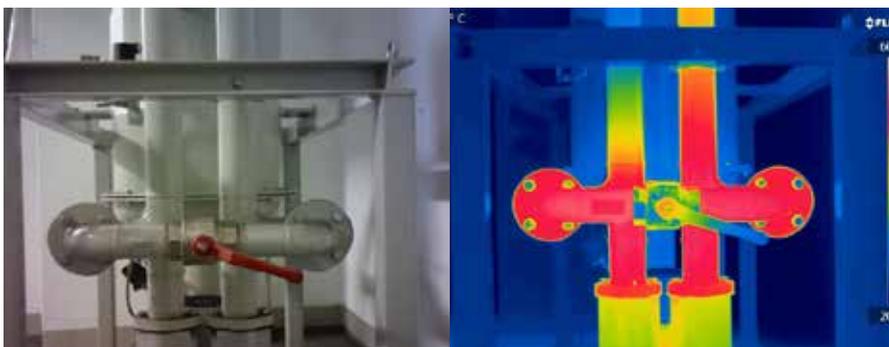
use and basic principles at the Infrared Training Center to gain the required qualifications and familiarize himself with the features of the FLIR thermal imaging camera as well as the FLIR Tools processing software that is included with the camera. "But then I received an introduction in the form of a practical seminar by Mr. Blug on site at our company, which provided me with an overview of the camera's main features as well as what can go wrong." This of course includes setting the right degree of emission in the camera depending on the material that is to be thermographically inspected. Alexander Czuberny also learned about the image processing features of the FLIR Tools software. "A joystick can be used to quickly adapt the temperature range of the fully radiometric FLIR thermal images in order to improve the visibility of

special characteristics and thermal anomalies in the image."

Alexander Czuberny was very impressed: "The FLIRT440 is a perfect fit for our purposes. Conducting inspections on a regular basis helps us avoid unscheduled downtimes and the costly consequences."



FLIR Tools (for PC and Mac) can be used to manipulate radiometric images to thermally adjust the level and span, to switch the range, or to alter parameter settings such as emission level, reflected temperature, etc.



The thermal image clearly indicates which pipe has hot liquid passing through it.

Further information

www.flir.com

The images shown here may not reflect actual camera resolution. All images are for illustrative purposes only.

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