

APPLICATION STORY



"THE INFRARED RESOLUTION IS SIMPLY TREMENDOUS."

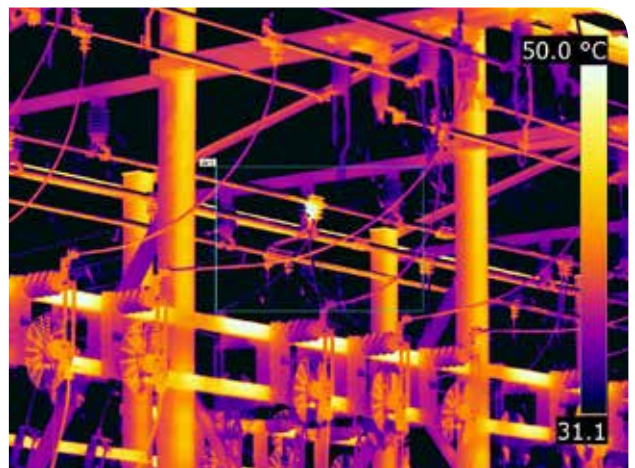
The engineering firm Adler in Herten in the German Ruhr area is using the top-of-the-range FLIR T1020 handheld thermal imaging cameras for maintenance applications.

The engineering firm Adler has been providing highly qualified industrial thermal imaging services since 1996. The focus here is on thermographic inspections of electrical switching and distribution systems in all voltage ranges. However, Martin Adler's engineering services also include thermography of mechanical equipment and components as well as measurements in industrial settings for process analysis, diagnosis, process optimization, product development and research, and the inspection of machines, equipment and insulation. In addition, he advises clients in the planning of installed, user-specific infrared measurements and offers problem analysis and troubleshooting for already installed IR-measuring systems.

20 years of thermography experience

Of course Martin Adler's many years of practical experience are the most important factor here. There is hardly an industrial thermographer in Germany, who has this much experience. Even during his studies at the University of Applied Sciences in Gelsenkirchen at the beginning of the nineties, Martin Adler programmed his own evaluation software for infrared measurements at the laboratory for energy technology. "There were no standardized solutions at the time and therefore individual initiative was required," Adler recalls.

From the passion he developed as a student, he then established his own company in 1996, which celebrated its 20th anniversary in April 2016 (www.ingenieurbuero-adler.de). Even back then, the focus was on electrothermography. "It became clear to me: there was a great interest in



Thermography of high-voltage components always requires a relatively large safety distance. The UltraMax feature can be particularly helpful in this regard by providing good resolution and accuracy even from a distance.



Contactor with pronounced abnormality of the right phase on the lower terminal connection. The possible cause could be increased resistance at the terminal connection, an internal connection or the contactor. The labels are also easily recognizable here thanks to the MSX feature.



The middle phase of this motor protection switch looks abnormal. This could indicate increased resistance at the terminal connection.

thermographic inspection in the industrial sector, but there was a fairly meager selection of qualified services. In 1996, there was still no recognized qualification for thermographers in Germany and only two years later the first certifications were introduced here according to the American standard."

Measurements conducted by inexperienced service providers were often not reproducible and some of his competitors offered

little more than colorful pictures with their infrared cameras. Martin Adler recalls a particularly horrific scenario involving an energy provider. An inexperienced thermographer had inspected insulators on high voltage lines on an extremely sunny day and thus found a high number of overheated units. "However, most of the insulators were perfectly in order, and the man simply did not have the necessary experience. Outdoor recordings often simply do not provide useful results in strong sunlight. Such faulty inspections at that time brought the whole industry into disrepute"

Based on his studies, Martin Adler took a very different and much more systematic approach, which he has remained faithful to. Regularly repeated inspection of critical components under reproducible conditions plays the decisive role here. "Back then, I first had to gain the confidence of my customers," Adler recalls. "Often a whole year passed between the first phone call, the first appointment, a demonstration of the technical measurement possibilities, internal coordination between the customer's technicians and the purchasing department, and the actual order." And the initial investment of 120,000 Deutsche marks for a thermal imaging camera from FLIR's predecessor company Agema didn't make the start any

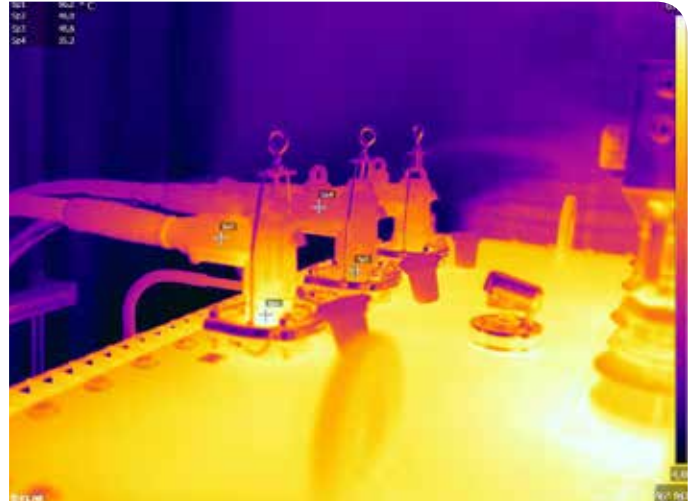
easier for Martin Adler. It took several years to fully amortize this investment and Martin Adler used the time to develop his excellent reputation. To this day, this reputation obliges him to use the best available thermal imaging camera model.

The FLIR T1020

With the T1020, Martin Adler is using the absolute top of the range of industrial thermography from FLIR. "The detector's IR resolution is huge," explains Adler enthusiastically "which of course increases efficiency: On a significantly sharper and more detailed thermal image, you can discover problems much more easily and with much more certainty. You can even discover small anomalies, which may not have been recognizable with the other camera or a lower resolution." And camera operation has also become increasingly easy over the years according to Martin Adler: "This reduces the error rate, not only during camera usage, but also in the evaluation phase." Adler used to always have a notepad and pen ready to write down the errors found. "It's a familiar problem: the notes can not always be clearly assigned later on. Today, descriptions are stored in the camera in advance. Therefore my T1020 "knows" exactly where it is, e.g. in property No. 1, building No. 10, switch room on the first floor. If, for example, I discover a problem in



Martin Adler taking thermal images of a low-voltage main distribution



Alternator with abnormality on the primary front plug connector. A bent pin on the angle plug connector is found to be the cause.

the 39th object, then its position is automatically linked with the thermal image, thus avoiding confusion."

Martin Adler also praises the camera's sophisticated concept: "With over 50 years of experience, FLIR is not only the technology and global market leader when it comes to thermal imaging, but to my knowledge it is the only thermal imaging camera manufacturer that does everything itself, including designing the camera, the detector, the electronics and even the software. You can really see this in the final product."

Electrothermography

Electrothermography is the most important area of use for Martin Adler. Detecting malfunctions before they bring a chemical plant to a halt, for example, not only makes sense for fire protection and security reasons, but also with regard to economic aspects. "In chemical plants, a half-hour standstill can incur 6-digit costs, and this is not only due to interrupted production. The plant must be commissioned again as stipulated and certain components inside the system may need to be removed in order not to cause negative effects. Fast procurement of spare parts for older components can also require great effort and thus be expensive." To make sure that none of this happens, Martin

Adler conducts regular inspections according to a clearly defined schedule.

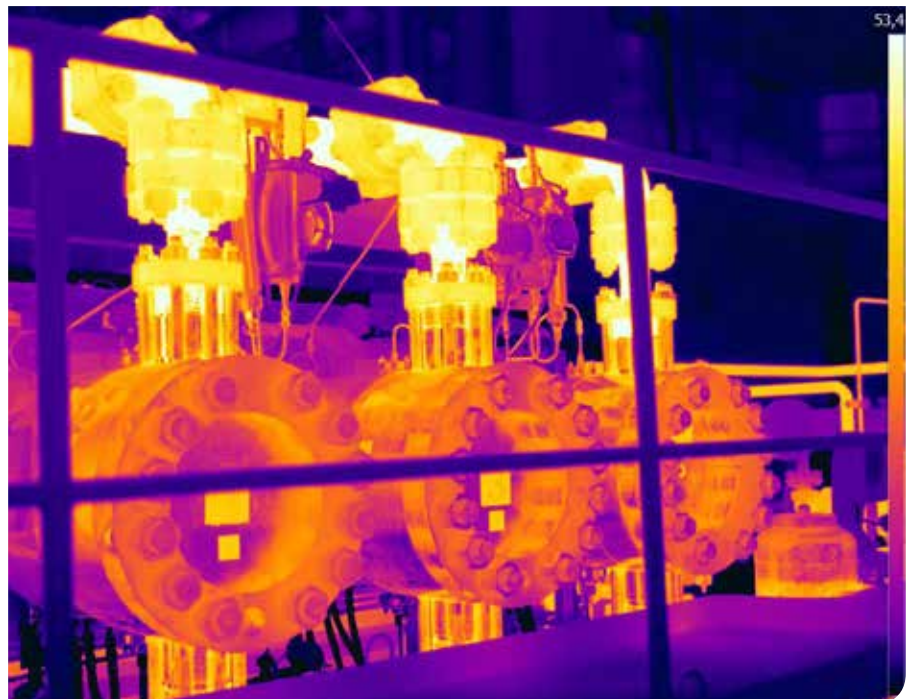
Thermal imaging in areas at risk of explosion

Inspections in areas at risk of explosion are also part of Martin Adler's everyday work, even though he finds far fewer errors in this setting. "Areas at risk of explosion are from the outset so critical that a high value is placed on safety. Of course this applies to the electrical

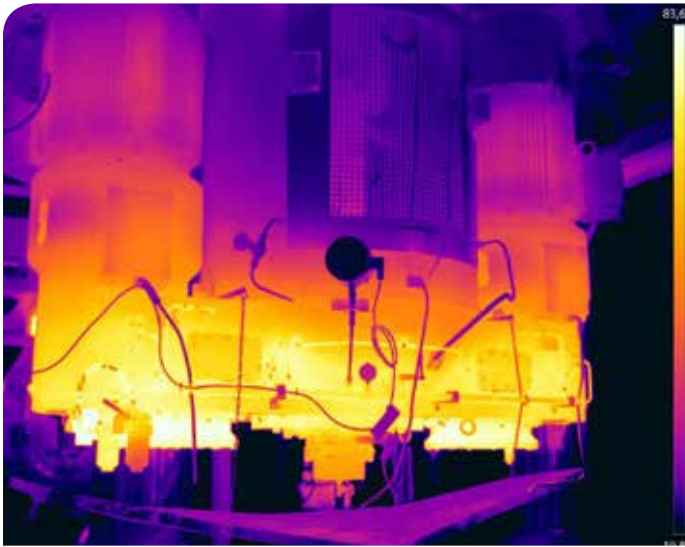
and mechanical installations, so here we find errors significantly less often." Nevertheless, the inspections here are anything but superfluous, because any abnormalities in such areas could pose very significant risks.

Lining of furnaces

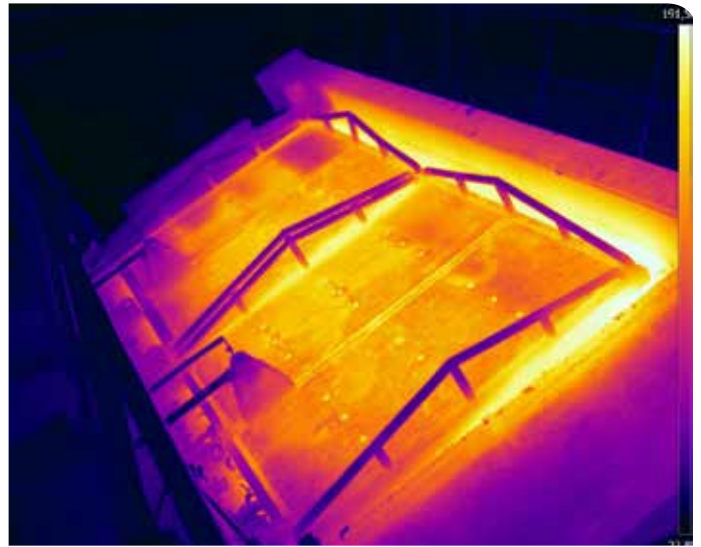
Industrial furnaces consist of a furnace shell which is protected by a fire-resistant inner lining against the extreme temperatures of the molten metal. Of course this lining



High pressure compressor heads in a chemical plant (within the area at risk of explosion).



Agitator drives below a mixing tank in an area at risk of explosion in a chemical operation.



Regular thermal images of a melting furnace allow for determining the condition of the lining.

is exposed to normal aging processes: It is exposed to wear in operation and is eventually damaged to the extent that it requires replacing. The time between two linings is called the "travel time", and the longer the journey, the more economic the operation can be. However, a furnace with a defective lining could also have disastrous consequences. The molten metal would destroy the shell and, in addition to high costs, this could even cause injury in the worst case. Using a thermal imaging camera, it is possible to determine the condition of the lining from outside the furnace even during operation. Regular thermography

inspections ensure safety and prevent economic losses.

Qualification and certification

Today, Martin Adler is one of the most sought after thermography specialists with certifications according to the European DIN EN ISO 9712 Level III, the ASNT, the CFP and the VDS in addition to his many years of experience. This can be seen in his continually growing order volumes. Adler doesn't worry about competition from inexpensive thermal imaging cameras: "Cheap devices hardly play a role in the area of professional industrial thermography. Plant operators may

sometimes purchase them for the occasional inspection, but they can't meet the insurance requirements with regard to systematics and accuracy with these devices." Therefore Martin Adler continues to have good prospects for his company. After all, he has 20 years of experience in industrial thermography and, in his opinion, the best thermal imaging camera hardware on the market.

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THE FLIR T1020 HD THERMAL IMAGING CAMERA FOR ABSOLUTE EXCELLENCE

With its uncooled 1,024 x 768 pixel detector, the premium thermal imaging camera FLIR T1020 sets the new standard for industrial and construction thermography. It combines outstanding performance with superior image quality and a high level of user friendliness. Its thermal sensitivity exceeds the industry standard for uncooled sensors twice over. By combining the FLIR UltraMax image enhancement technology and the patented FLIR MSX feature, the T1020 provides the best image quality of all compact systems available on the market.



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

www.flir.com/instruments

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