



Source: BWB archive

Thermal imaging helps the Berlin Water Company to provide a continuous service

'We simply cannot afford down-time'

Most of the European citizens take it for granted, but anyone who has ever been in countries where drinking water is scarce can confirm that having access to clean water is of crucial importance. The Berlin Water Company provides 3.7 million people in Berlin and Brandenburg with clean drinking water. As the continuity of this service is extremely important, the Berlin Water Company uses FLIR thermal imaging cameras to quickly find technical problems and maximize the effectiveness of the maintenance crew.

The first waterworks facility in Berlin went into operation in 1856, but a lot has changed since then. The company nowadays operates a network with a total length of 18,600 km. Around 700 pumps retrieve ground water, which is then treated to become drinking water in nine water works. Alongside the supply of water, the Berlin Water Company is also responsible for the ecological disposal



Source: BWB archive

Some of the Berlin Water Company's facilities seen from the air

and treatment of wastewater. About 150 pumping stations pump the waste water into six sewage treatment plants.

The maintenance department makes sure that the Berlin Water Company runs smoothly and makes sure that the clients can easily dispose of their sewage water and receive clean drinking water in return. To do that they must monitor 7,889 kilometers of clean water pipelines that have the capacity to daily transport 1,100 million liters of drinking water. For the sewage system they monitor 9,541 kilometers of pipelines that transport 227 billion liters of sewage water each day.

Automatic water and sewage systems

The sewage system is fully automated ever since the highly-developed water



Maintenance engineer Thorsten Krämer uses the FLIR P620 to inspect a fuse cabinet.



The fuses that show up in the thermal image are overloaded and need to be replaced.

company completed an eight year long automation process in December 2009. Using the latest technology the water and sewage systems are monitored and controlled from two separate control centers. That means that the maintenance crew has a busy schedule, however, for that complex infrastructure has to be carefully monitored. In order to be more efficient, the maintenance department acquired a FLIR thermal imaging camera from FLIR products distributor TOPA. "They offer a wide range of mechanical, electrical and electronic measuring instruments, but above all a very good service", explains maintenance engineer Thorsten Krämer.



"We bought the FLIR P620 thermal imaging camera from them because we simply cannot afford down-time", continues Krämer. "Too many people are depending on our services. So we have to find technical defects before a problem occurs. And if a problem does occur we need to find the cause swiftly so that it can be repaired as quickly as possible. The FLIR P620 thermal imaging camera helps us to do that."

FLIR P-Series: an obvious choice

The choice for the FLIR P620 thermal imaging camera was an obvious one, explains Krämer. "We've compared several thermal imaging cameras and this one was the best option. It's a very good camera and it delivers a very good image quality." With its resolution of 640x480 pixels and sensitivity of less than 30 mK, the FLIR P620 provides the best thermal imaging quality that modern technology has to offer. "You really need good specifications like that to effectively and accurately measure large areas, like an entire distribution board for instance, in one thermal image."

'A great tool for maintenance'

According to Krämer the FLIR P620 thermal imaging camera is a great tool for maintenance. "The P620 instantly makes hot spots visible on a clear thermal image. You can use it to scan distribution boards, fuse boxes and to survey multiple wires and connections. It provides an instant picture of the thermal differences that indicate an overload or uneven workload distribution. With the P620 we can quickly detect where the problem lies so we can repair it before

it gets worse. This helps reduce repair costs and minimizing down-time."

Krämer and his colleagues use the FLIR P620 thermal imaging camera mainly to monitor the electronic equipment like switchgears, connectors, transformers, electrical cables, fuse panels and electrical cabinets. "You can immediately spot where the problem is, because faulty electronic equipment shows up very clearly as a hot spot in the thermal image."

More than electrical inspection alone

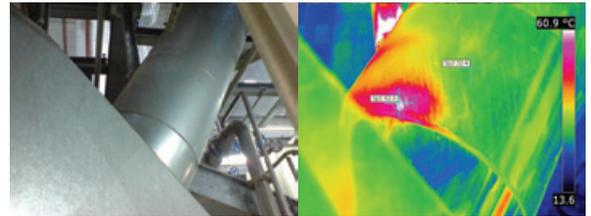
But the thermal imaging camera can do much more than electrical inspection alone. It can also be used to monitor pumps; check valves for leakage; monitor sludge levels in storage tanks; and scan pipelines for anomalies. "And recently we've also started using it to monitor bearings. They become very hot before they actually break down, so you can predict a bearing failure before it actually occurs."

The importance of training

But according to Krämer you have to be careful not to jump to false conclusions. "It's easy to miss some crucial pieces of information when you're analyzing thermal images; you really need to know what you're doing." That's one of the reasons why the Berlin Water Company chose FLIR. "To be able to accurately use thermal imaging cameras in a professional way you need good training."

FLIR provides training in co-operation with the Infrared Training Center (ITC), the world's leading educational and training resource for thermal imaging professionals. The ITC offers high-quality interactive thermography training from the most qualified international thermography instructors. They give training courses in nearly 50 countries and in over 20 languages. Their internationally recognized certification program indicates the level of training as a Level 1, Level 2 or Level 3 thermographer.

The operators in the Berlin Water Company are all at least level 1 certified. They have to be, according to Krämer. "There's so much to take into account, when it comes to the analysis of thermal images. You have to minimize reflection, account for emissivity and then you have to be able to accurately diagnose the problem."



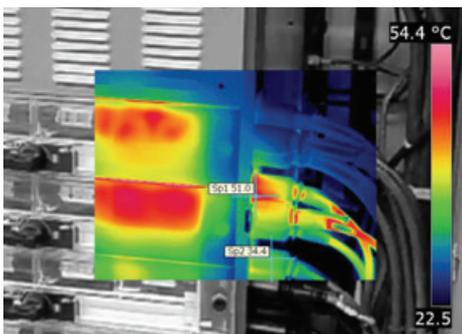
The hotspot in the thermal image shows that this hot steam pipe has either a small leak or faulty isolation.



Although these output terminals are definitely hot, the measured temperatures are normal for this kind of load.



This thermal image shows that the work load during operation is not distributed evenly among the fuse boxes.



Krämer: "Especially the Picture-in-picture feature is useful to show in your report exactly where the object you're measuring is located."

'FLIR Reporter: effective and easy to use'

To compile their reports they use FLIR Reporter Professional. "The FLIR Reporter software is very easy to use and it does the job very effectively." With FLIR Reporter you can easily create compelling and professional reports. With the new TripleFusion and Picture-in-Picture features and the latest Microsoft operating system and Word compatibility, FLIR Reporter is the most advanced thermal image reporting software currently available. "Especially the Picture-in-picture feature is useful to show in your report exactly where the object you're measuring is located."

Every day the Berlin Water Company maintenance crew ensures the continuity of the company's services to their 3.7 million clients, with the aid of their FLIR P620 thermal imaging camera that helps them spot technical problems that are invisible to the human eye. "This thermal imaging camera really is a great tool", concludes Krämer. "I really don't want go without one now that I have the FLIR P620 thermal imaging camera."

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

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