

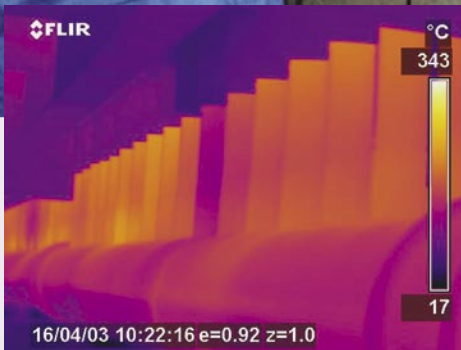


FLIR

APPLICATION STORY



Infrared thermography: An essential technology at BASF Antwerp for over 10 years already



Friedrich Engelhorn founded the 'Badische Anilin- & Soda-Fabrik AG' in 1865. Today, BASF has production facilities in 38 countries and employs almost 90,000 people worldwide. BASF is one of the largest international chemical groups in the world. The 'Preventive Maintenance' department at BASF has been using FLIR Systems infrared cameras for more than 10 years.



BASF markets approximately 8,000 products globally in the most varied economic sectors. Major customers include the automotive, chemicals, textiles, construction and packaging industries; agriculture, healthcare, the energy sector and the paper industry also purchase many products.

BASF's plant in Antwerp is the second largest in the world. The facility employs a staff of 3,800 who are mainly involved in producing basic products and half-

finished goods that find their way to numerous applications for consumers and industry.

To meet demand and to ensure an optimum yield from the production resources, the factory in Antwerp produces 24 hours a day. Production interruptions must be avoided as much as possible. The 'Preventive Maintenance' department has a major responsibility in this. The department has to ensure that the company can operate in top gear, continuously.

"BASF Antwerp is divided internally into 54 different production units. All of these units are profit centres. We are a service-providing department with an advisory role", says Franky Oste, head of the Preventive Maintenance department. "Our group consists of 10 people. To fulfill our assignment we have to master all the techniques required for preventive maintenance such as vibration, oil, ultrasound and damage analysis. And naturally also infrared technology. The FLIR Systems infrared camera has had an important place in our department for more than 10 years."

A LONG INFRARED HISTORY

"Infrared thermography was introduced into BASF ten years ago", Franky Oste, one of the BASF infrared pioneers, continues. "We had our installations inspected periodically by an external service provider. However, when we saw what infrared can do for a preventive maintenance programme, we realised that we had to perform infrared inspections on a continual basis and decided to buy our own camera. This investment has already repaid itself tenfold."

"Today, we cannot imagine doing without an infrared camera in our department. It is used daily and continually. A member of staff works fulltime with the camera. In certain units, periodic fixed routes are followed and inspections are carried out at previously defined points. In addition, there are also measurements taken following a specific request if a given production unit in BASF suspects it has a technical problem."

"Independently of whether hot-spot detection, insulation checks, level measurements, switchbox inspection, process optimisation, etc. are involved, the FLIR infrared camera is a perfect tool. We can quickly obtain a full picture of the thermal situation in a non-contact mode and detect faults before they lead to real problems. As a result, we save BASF Antwerp a lot of time and money."



Franky Oste demonstrates the ThermoCAM™ P60

ELECTRICAL PROBLEMS, MECHANICAL FAULTS, INSULATION DAMAGES:

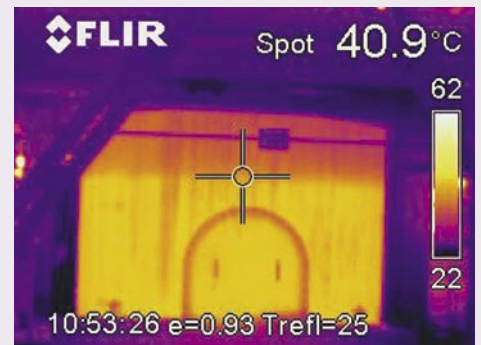
THE INFRARED CAMERA SEES IT ALL AT BASF

"The possibilities of detecting potential problems with an infrared camera are as good as endless", says Jan Heyselbergs, who usually operates the infrared camera. "The camera enables us to detect faults before they actually lead to serious production or safety problems. We have sufficient examples of how the FLIR ThermoCAM™ helps us to save money and time."

"Our electrical installations are, of course, inspected regularly with the infrared camera. At BASF there are more than 6,000 electrical cabinets which are examined at least once a year. In addition to the production problems which can be caused by electrical faults, electrical problems can lead to fire. Last year, thanks to the

camera, we discovered four problems which could have led to a fire. This is yet another proof of the usefulness of periodic infrared inspections on electrical installations. There is no need to describe the possible consequences of a fire, both at material and human level, within a chemical company such as BASF."

"The ammonia production installation is checked regularly. Here we primarily look at the temperature of the cracking pipes. It is very important for the insulation on these pipes to be in perfect condition: otherwise there is heat loss. Moreover, if the temperature rises too much, the insulation loses its mechanical characteristics, which can lead to leaks. This is a dangerous situation which can cause halts in production and even explosions. In the past these temperature checks were carried out with measuring probes. The advantage of infrared is that we can now measure much more rapidly and furthermore without any contact. We obtain a total image of the situation with the help of the ThermoCAM™."



Electrical inspections and level detection of tanks are just a few infrared applications at BASF



"Mechanical inspections are not outside our field of activity either. We have a large number of vertically positioned engines within BASF. Dust can settle on ventilator hoods, which leads to temperature increases, and therefore more rapid wearing out of the engines. With the help of the infrared camera we can see perfectly which engine we have to clear of dust and when. We have another example of mechanical infrared inspections with the production of fertilisers. Granulation occurs in large turning drums. We regularly examine the gearwheels on these giant drums with the camera to find alignment faults and other defects."

FIRST DETECT, THEN REPORT

"After carrying out the inspections we draw up an extensive report", Jan Heyselbergs continues. "For example, we have standard templates for reporting on inspections carried out on switchboxes. The infrared image is incorporated into the report along with the thermal analysis. And almost always also with a visual image of the situation. We send the report

via email to the department concerned, which can analyse it further and, if necessary, take action to resolve the problem."

MORE THAN PREVENTIVE MAINTENANCE

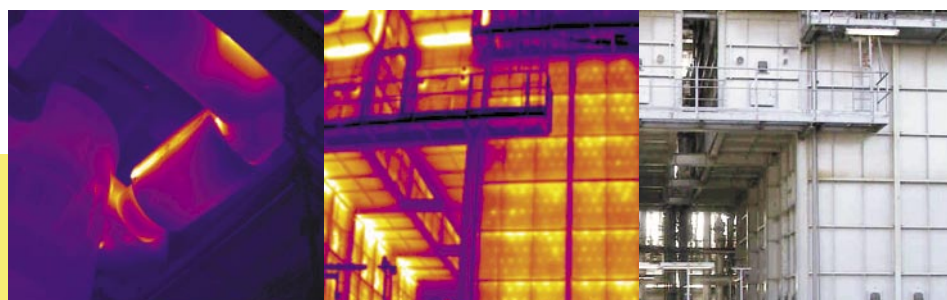
"Our main assignment naturally involves performing Preventive Maintenance", Franky Oste says. "But thanks to the FLIR Systems infrared camera we can go further. We give advice on process optimisation. The heat exchangers needed for producing ethylene oxide, for example, are regularly examined. With the help of the infrared heat image we can map possible blockages and deposits and therefore optimise the installation's performance."

"We also often look at new installations with our infrared camera before they are put into use. We check whether everything has been supplied in accordance with the standard. In addition, with a view

to safety in the company, we look at a number of critical locations for excessive temperatures and define the level in tanks filled with chemical products."



Jan Heyselbergs uses the ThermaCAM™ E2 for electrical inspections



INVESTING MORE IN INFRARED TECHNOLOGY IS BECOMING NECESSARY

"A number of inspections which are now carried out weekly should actually be done daily to ensure continuity of production and the strict safety standards now enforced in the company even more effectively", Franky Oste continues. "However, the FLIR ThermaCAM is now already being used continually and the workload is very high which means that this is impossible with only 1 camera in the company."

"We are looking at the possibility of giving a number of production units in BASF Antwerp their own infrared camera. Thanks to new product developments in the world of infrared thermography, which has meant these systems have become more affordable, this is a feasible solution. A tool such as the FLIR Systems ThermaCAM E2 could be used perfectly for day-to-day routine inspections. If a problem is detected, the people working with the ThermaCAM E2 can

call on our department for further analysis with our camera, which has more extensive analysis capabilities."

"The FLIR Systems infrared camera has proven its usefulness daily within BASF over the past ten years. The camera has more than demonstrated its utility and therefore we naturally would like to extend our infrared inspection programme", Franky concludes.

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