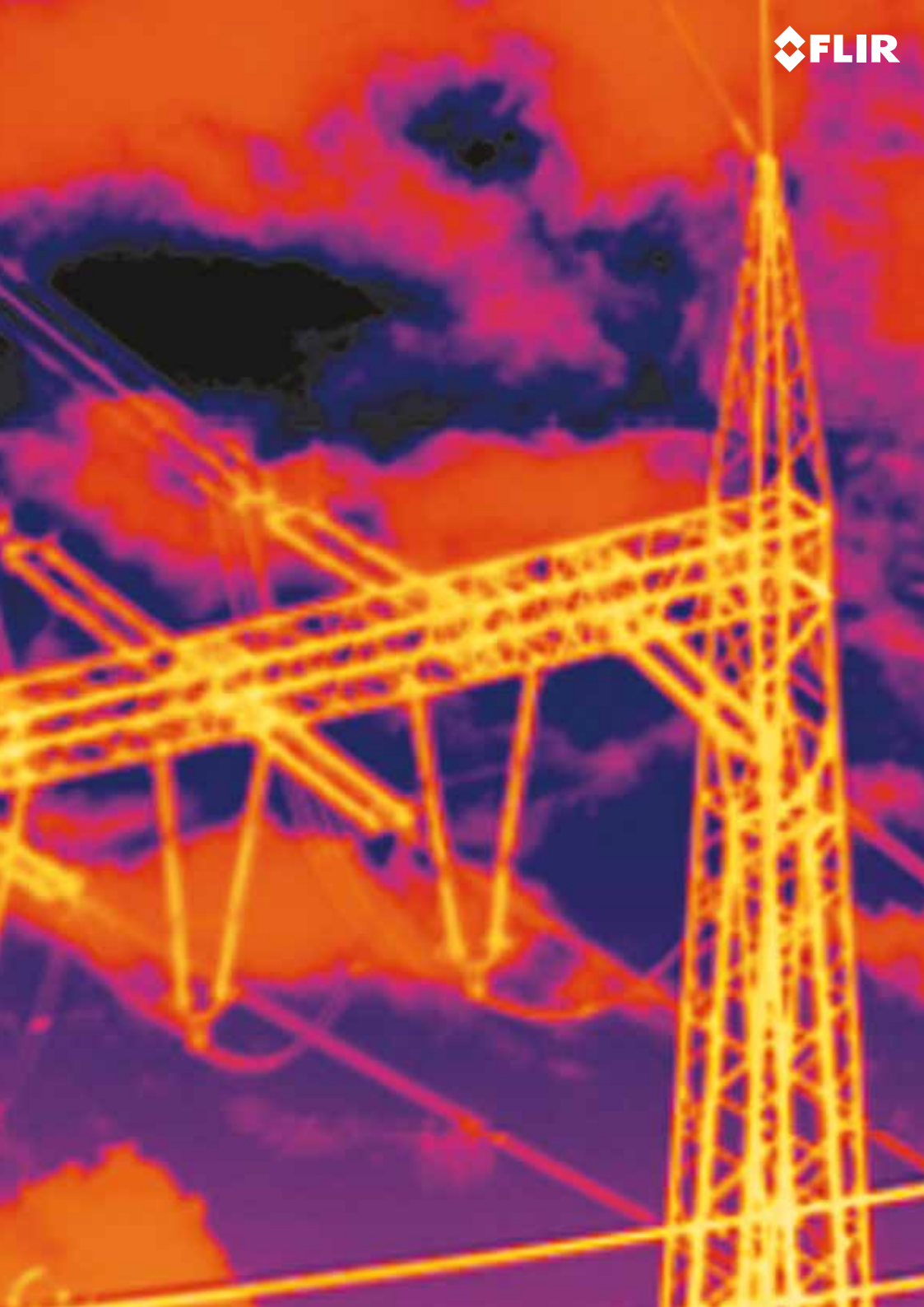




# Thermal imaging for electrical / mechanical diagnostics

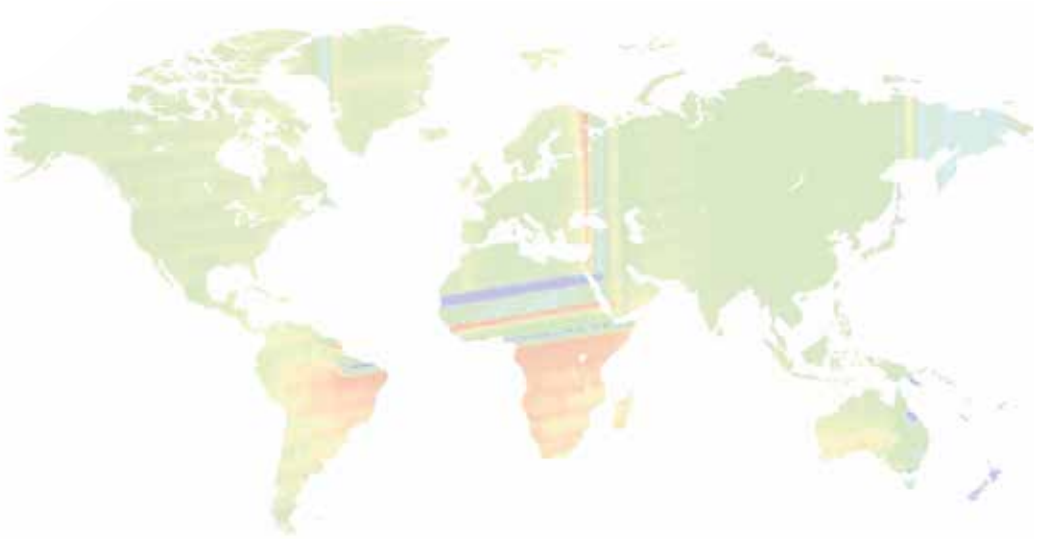
Discover a wide variety of applications



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# 1 Introduction



## **FLIR Systems: the world leader in thermal imaging cameras**

FLIR Systems is the world leader in the design, manufacturing and marketing of thermal imaging systems for a wide variety of commercial and government applications.

## **Rapidly emerging markets and organization**

Interest for thermal imaging has grown considerably over the last few years in a large variety of markets. To face this increased demand, FLIR Systems has expanded its organization drastically. Today we employ more than 4,000 people. Together, these infrared specialists realize a consolidated annual turnover of more than 1 billion US dollars. This makes FLIR Systems the largest manufacturer of commercial thermal imaging cameras in the world.

## Manufacturing capabilities

FLIR currently operates 6 manufacturing plants: three in the USA (Portland, Boston and Santa Barbara, California) one in Stockholm, Sweden, one in Estonia and one near Paris, France.



*FLIR, Sweden*



*FLIR ATS, France*



*FLIR, Boston, USA*



*FLIR Santa Barbara, USA*

## All markets and all applications

FLIR Systems is totally focused on thermal imaging cameras. No other manufacturer produces more thermal imaging cameras than FLIR Systems.

FLIR Systems is active in all markets where thermal imaging cameras are being used: electrical / mechanical, building, automation / process control, maritime and security are just a few markets in which FLIR Systems thermal imaging cameras have proven their worth.



# 2 The thermal imaging camera and how it works

A thermal imaging camera records the intensity of radiation in the infrared part of the electromagnetic spectrum and converts it to a visible image.



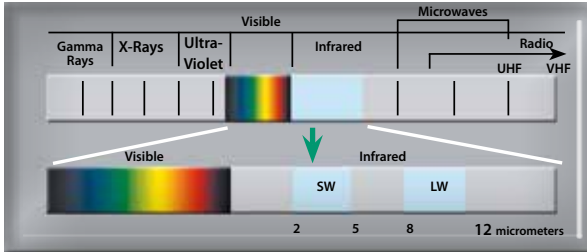
## What is infrared?

Our eyes are detectors that are designed to detect electromagnetic radiation in the visible light spectrum. All other forms of electromagnetic radiation, such as infrared, are invisible to the human eye.

The existence of infrared was discovered in 1800 by astronomer Sir Frederick William Herschel. Curious to the thermal difference between different light colors, he directed sunlight through a glass prism to create a spectrum and then measured the temperature of each color. He found that the temperatures of the colors increased from the violet to the red part of the spectrum.

After noticing this pattern Herschel decided to measure the temperature just beyond the red portion of the spectrum in a region where no sunlight was visible. To his surprise, he found that this region had the highest temperature of all.

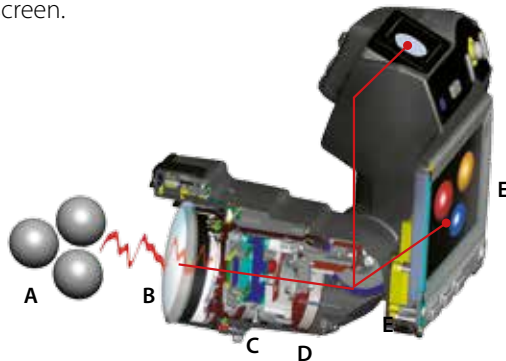
Infrared radiation lies between the visible and microwave portions of the electromagnetic spectrum. The primary source of infrared radiation is heat or thermal radiation. Any object that has a temperature above absolute zero (-273.15 degrees Celsius or 0 Kelvin) emits radiation in the infrared region. Even objects that we think of as being very cold, such as ice cubes, emit infrared radiation.



We experience infrared radiation every day. The heat that we feel from sunlight, a fire or a radiator is all infrared. Although our eyes cannot see it, the nerves in our skin can feel it as heat. The warmer the object, the more infrared radiation it emits.

### The thermal imaging camera

Infrared energy (A) coming from an object is focused by the optics (B) onto an infrared detector (C). The detector sends the information to sensor electronics (D) for image processing. The electronics translate the data coming from the detector into an image (E) that can be viewed in the viewfinder or on a standard video monitor or LCD screen.



Infrared thermography is the art of transforming an infrared image into a radiometric one, which allows temperature values to be read from the image. So every pixel in the radiometric image is in fact a temperature measurement. In order to do this, complex algorithms are incorporated into the thermal imaging camera. This makes the thermal imaging camera a perfect tool for electrical / mechanical applications.

# 3 Why use thermal imaging?

Producing faster, better, more efficiently and at a lower cost. In order to reach these goals, industrial plants need to be running continuously: 24 hours a day, 365 days a year. No costly breakdowns, no waste of time.

To keep plants operational at all times many industries have combined their predictive maintenance programs with the most valuable diagnostic tools for industrial applications on the market: thermal imaging cameras.

## FLIR thermal imaging cameras:

- Are as easy to use as a camcorder or a digital camera
- Give you a full image of the situation
- Identify and locate the problem
- Measure temperatures
- Store information
- Tell you exactly what needs to be fixed
- Help you find faults before real problems occur
- Save you valuable time and money



*Poor connection and internal damage*



*Internal fuse damage*



*Incorrectly secured connection*

FLIR Systems offers a wide range of thermal imaging cameras. Whether you are just discovering the benefits thermal imaging has to offer or whether you are a thermal imaging specialist, FLIR has just the right thermal imaging camera for you.





## Why use thermal imaging cameras?

Why would you choose a FLIR thermal imaging camera? There are other technologies available to help you measure temperatures in a non-contact mode. Infrared thermometers for example.

## Infrared thermometers versus thermal imaging cameras

Infrared (IR) thermometers are reliable and very useful for single-spot temperature readings, but when scanning large areas, it's easy to miss critical parts. Whether you're monitoring high voltage equipment, low voltage cabinets, motors, pumps, high temperature equipment, looking for insulation losses... A thermal imaging camera is the one tool that really lets you SEE it all.



*IR thermometer, temperature measurement in one spot*



*FLIR i3, temperature in 3,600 spots*

## Find problems faster and easier with extreme accuracy

It is easy to miss a critical electrical / mechanical problem if you are only using a spot IR thermometer. A FLIR thermal imaging camera will give you a total view of the situation and instant diagnostic insights. It not only locates electrical / mechanical anomalies but it can also help to avoid fires.

## Fire

A small electrical problem can have extremely far-reaching consequences. The efficiency of the electrical grid becomes low, and so the energy is spent generating heat. If left unchecked, heat can rise to the point where connections start to melt. Not only that, but sparks can fly that might start a fire. Regular inspections with a thermal imaging camera can help to avoid fires.

# 4 Electrical / mechanical applications

Thermal imaging cameras for electrical / mechanical applications are powerful and non invasive tools for monitoring and diagnosing the condition of electrical / mechanical installations and components. With a thermal imaging camera you can identify problems early, allowing them to be documented and corrected before becoming more serious and more costly to repair.

FLIR Systems offers a wide range of thermal imaging cameras. Whether you use thermal imaging for an inspection of large industrial installations or for an inspection of a fuse box in a domestic residence, FLIR will have just the right thermal imaging camera for you.

A thermal image that includes accurate temperature data provides the maintenance expert with important information about the condition of the inspected equipment. These inspections can be done with the production process in full operation and in many cases the use of a thermal imaging camera can even help optimize the production process itself.

Thermal imaging cameras are such a valuable and versatile tool that we cannot possibly list all the possible applications. New and innovative ways of using the technology are being developed every day.



# 5 Our customers testify

FLIR Systems has many customers that are active in a wide variety of markets. FLIR Systems thermal imaging cameras are being used by a wide variety of people.

All of them have discovered the benefits that thermal imaging has to offer. They know that thermal imaging cameras are helping them to save time and money on a daily basis.

Many have chosen for a FLIR Systems thermal imaging camera. They have acknowledged that FLIR Systems produces the most advanced, the most ergonomic and the most user friendly systems.

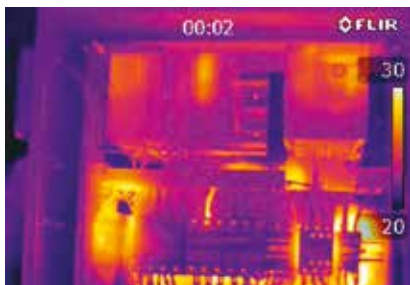
On the following pages you will find a couple of short testimonies of users of FLIR thermal imaging cameras. It are these users that are the best promotion for thermal imaging technology and for FLIR Systems.

**Do not take it from us. Read what the users of FLIR thermal imaging cameras have to say.**



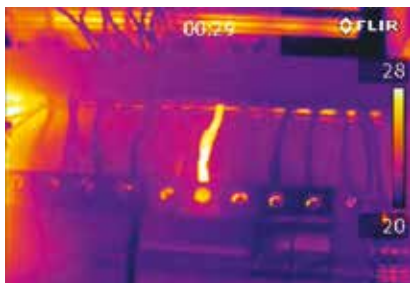
# The technicians of the future use FLIR thermal imaging cameras

Industrial technicians of the future should use the most modern tools available on the market today. Göteborgs Tekniska College (Technical college of Gothenburg) uses a FLIR thermal imaging camera to instruct its pupils in the use of thermal imaging for maintenance inspections.



*Thermal inspection of an electrical cabinet.*

*"In my opinion it would definitely be a lack in the education of our pupils if we wouldn't include the possibilities and the handling of thermal imaging cameras in their curriculum.," says Bengtsson, says Johan Bengtsson, Group Leader of the GTC.*



*Overheated cable.*



*A thermal imaging camera can be used to inspect many different devices.*



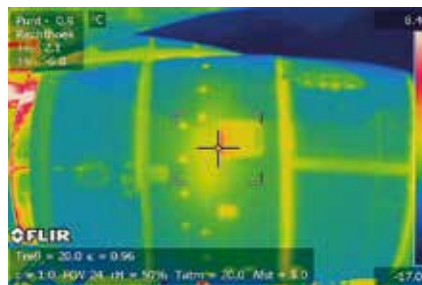
*Both mechanical and electrical components can be inspected with thermal imaging cameras.*

# Thermal imaging helps to detect water ingress in airplanes

Water ingress in an airplane part can create a dangerous situation. Although the honeycomb is very strong and lightweight, it loses these characteristics when it is damaged by, in this case, ice.



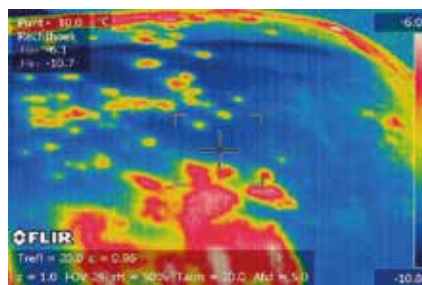
Inspecting an airplane with a FLIR thermal imaging camera.



An overview (inboard) of an engine, taken from a Boeing 767-300ER.



Thermal image of an engine; It takes expertise to "read" the thermal pictures of an airplane as different materials have different emission.

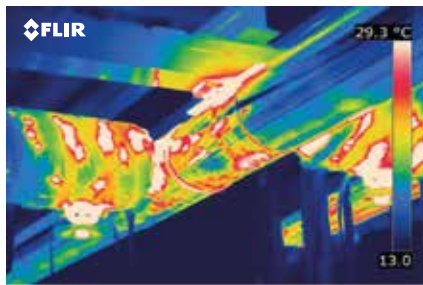


A lot of damage on top of an engine, located directly after the airplane has landed.

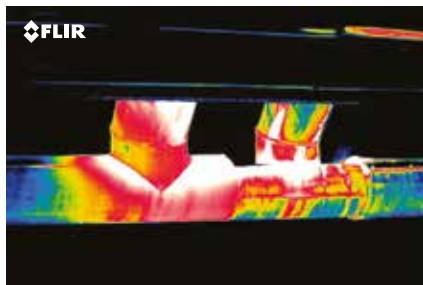
*"Thermal imaging is a great technology to inspect water ingress," explains Mr. Paul Kennedy, Composite/Painting and Supervisor/Inspector at Air Atlanta Aero Engineering. "At high altitude, at temperatures of -40°C or lower, the water in the honeycomb cells freezes. The airplane descends relatively fast so when it lands, the water is still frozen. The thermal imaging camera can clearly distinguish these coldspots."*

# Thermal imaging inspections help optimize steam transport

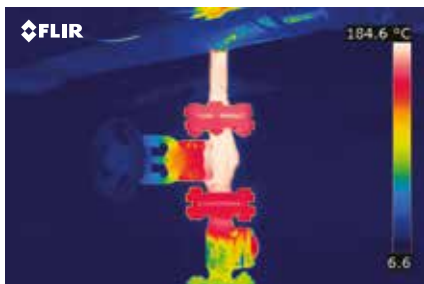
When transporting high volumes of hot gaseous or liquid chemicals through a network of pipes the quality of the pipework insulation is of vital importance. Inspections with FLIR thermal imaging cameras can help detect heat leakage so imperfect insulation can be repaired.



*Heat leakage due to failing insulation clearly shows up on the thermal image.*



*Visual and thermal image of one of the pipes in the network. The thermal image clearly shows imperfect insulation.*

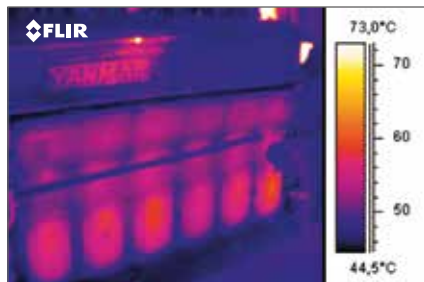


*The inspection revealed about 150 problem areas that were extensively documented using the highly accurate FLIR thermal imaging camera.*

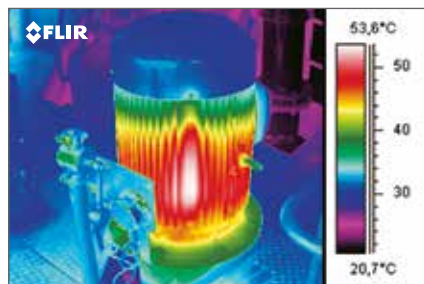
*"There simply is no other thermal imaging camera supplier that provides the same level of service and product quality as FLIR Systems.," says Ralf Grispem from Thermografisch Adviesbureau Uden BV.*

# Thermal imaging keeps ships operational

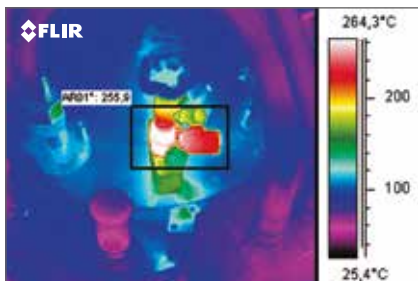
Commercial ships are rewarding objects for thermal inspections: they have huge machinery, vast electrical installations, extended electronic systems, which can hardly be surveyed by visual inspections. Moreover, fire prevention is an important issue.



Visual and thermal image of a part of the engine room.



Visual and thermal image of an electric engine driving a pump in a tanker engine room.



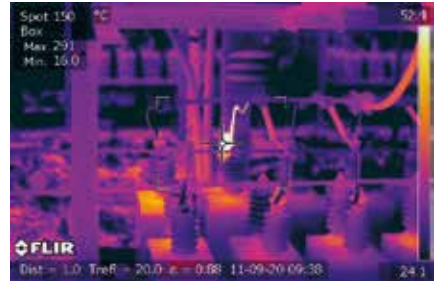
Indicator valve to measure oil level of main engine: not insulated and too hot.

*"In the near future, mechanical machinery on board vessels will also benefit from thermal imaging, especially as a pre-docking strategy to identify and target equipment to inspect."*  
forecasted Lloyd's Register.

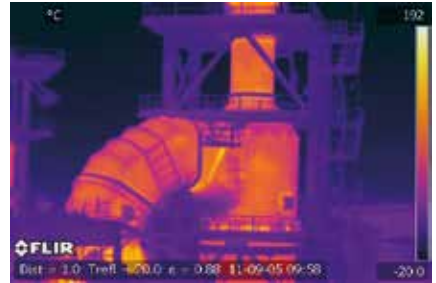
# FLIR thermal imaging cameras help ensure continuous steel production

Production plants have to keep running all the time. No breakdown, no downtime. To ensure proper operation of its production plants in Vanderbijlpark, ArcelorMittal South Africa uses FLIR thermal imaging cameras.

*"The advantage is that you can see a problem before it becomes visible to the naked eye, enabling you to make informed decisions regarding a suitable course of action," explains Douglas Glen, Senior Thermographer at the Condition Monitoring Team.*



*This thermal image of a high voltage capacitor shows a hot spot indicating a faulty connection.*



*Every week this boiler is inspected with a thermal imaging camera to monitor the condition of the refractory lining.*



*These images form part of a weekly inspection done. The images are analysed to detect refractory degradation or product build-up on the inside.*

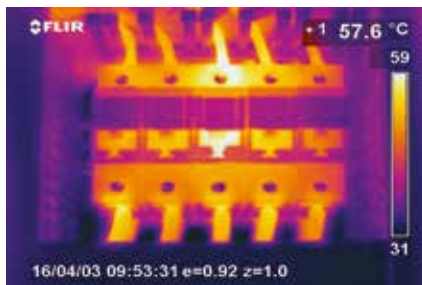


# Thermal imaging: an essential technology at BASF Antwerp

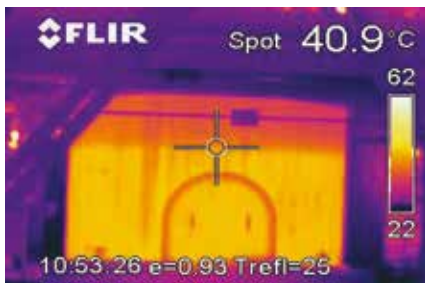
BASF is one of the largest international chemical groups in the world. A FLIR Systems thermal imaging camera is a vital tool for keeping the BASF plant in Antwerp up and running.



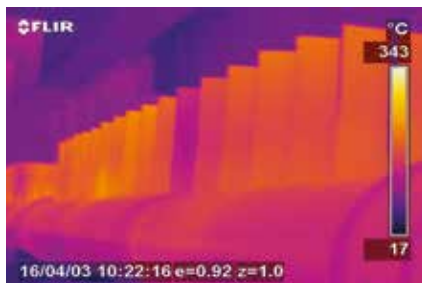
BASF has been using thermal imaging cameras for a long time.



Overheated fuse.



Level detection of tanks is just one thermal imaging application at BASF.

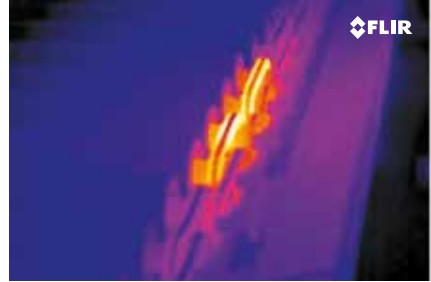
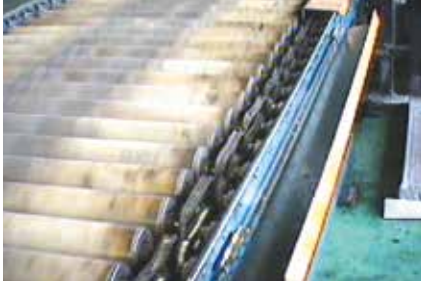


Thermal inspections of the cracking pipes of the ammonia production installation.

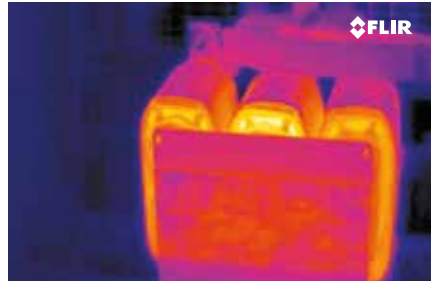
*"Independently of whether hot-spot detection, insulation checks, level measurements, switchbox inspection, process optimisation, etc. are involved, the FLIR thermal imaging camera is a perfect tool. We can quickly obtain a full picture of the thermal situation in a non-contact mode and detect faults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

# Bridgestone/Firestone chooses thermal imaging

FLIR Systems cameras, have proven to offer considerable advantages. It enables Bridgestone / Firestone to keep their production units running at all times.



Visual and thermal image of heated rollers on a conveyor belt.



Visual and thermal image of a tri-phase transformer.

*"The response was extremely positive," explains Claudio Bosurgi "All our plants are convinced that thermal imaging is a great tool for predictive maintenance. It gives you a clear image of the situation and problems are detected before they really start troubling the production."*

# Thermal imaging camera proves ideal for offshore inspections

CAN Offshore is well known as the pioneer of roped access services for oil installations. CAN Offshore's multi-disciplined project services include a range of Non Destructive Testing (NDT) inspection techniques which include thermal imaging.

*"Thermal imaging is an important addition to our services. It is non-intrusive, no shutdown is needed." concludes CAN Offshore's Peter Barker. "The FLIR software enables us to analyse the results quickly, enabling any remedial action to be taken on failing plant or equipment without delay."*



*Thermal image of an oil installation.*

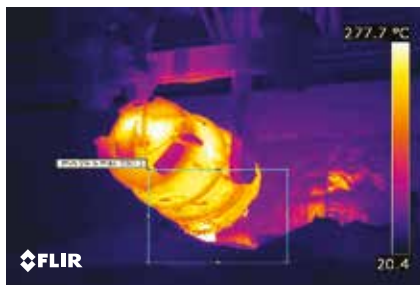


*Bad electrical connection.*

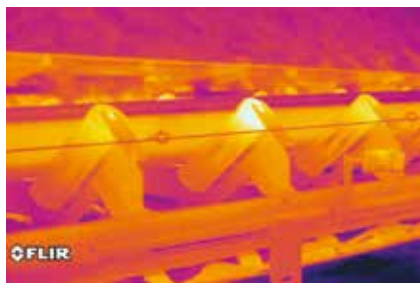


# Thermal imaging cameras are a great tool for predictive maintenance inspections

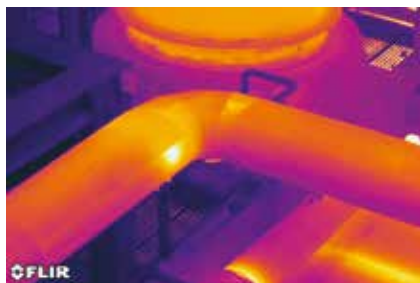
Gunther Willems, Technology Manager at one of Europe's largest condition monitoring consultancy agencies – Coservices, – explains why thermal imaging is the fastest growing predictive maintenance technology on the market today. "It is simply the only technology that allows you to immediately 'see' what's wrong."



*The refractory on this ladle shows signs of wear and if it degenerates further needs to be replaced. Thermal imaging cameras are the only practical tool available for refractory inspections.*



*Visual and thermal image of a roller bearing that is overheated and should be replaced.*



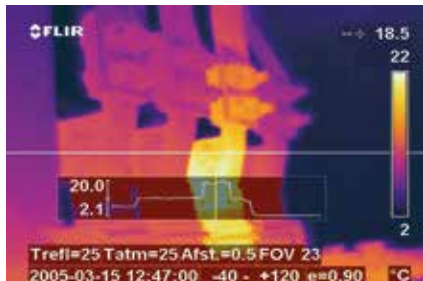
*The thermal image shows faulty pipework insulation. This can disrupt the production process and might cause dangerous accidents.*

# Thermal imaging saves a quarter of a million dollars per year

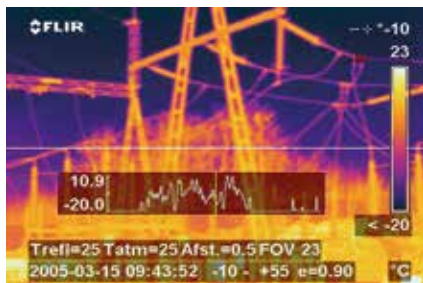
Predictive maintenance is not just a matter of organization: it also requires knowledge and the efficient handling of gathered information. A suitable thermal imaging camera helps in both of these areas, with an impact which makes itself abundantly clear in the cost-benefit analysis.



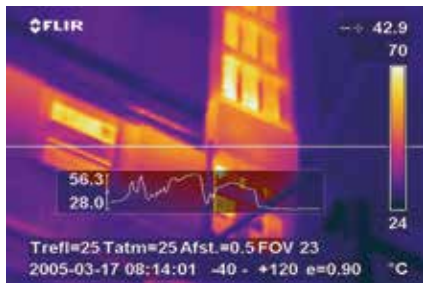
Top of transformer; high-voltage connection.



150 KV station, visual and thermal images.

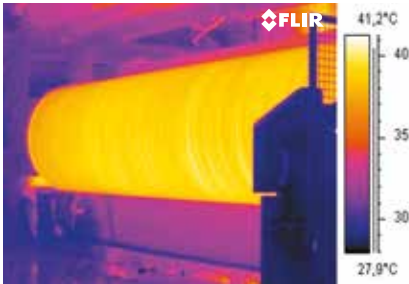


Visual and thermal image of a busbar rail system in production hall.



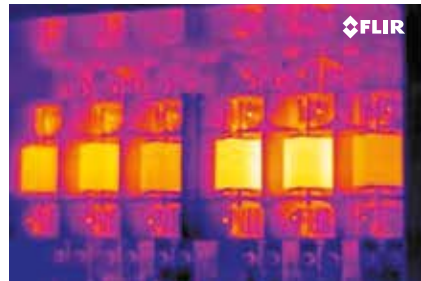
# Thermal imaging camera prevents production losses at paper factory

Parengo, the only manufacturer of newsprint in the Netherlands, forms part of Haindl Papier GmbH. To guarantee the continuity of production, radical measures have been taken. A stoppage of one of the two paper making machines means a loss of tens of thousands of Euros per hour.



Inspection of the moisture distribution in the paper web shooting past at a speed of 1600 metres per minute.

*“The high voltage components are of course extremely critical for the business process. Defective contact resistances in a high voltage cable for example can cause serious damage. Thanks to thermal imaging we can now examine all the installations for suspected hot spots during full operation.”*



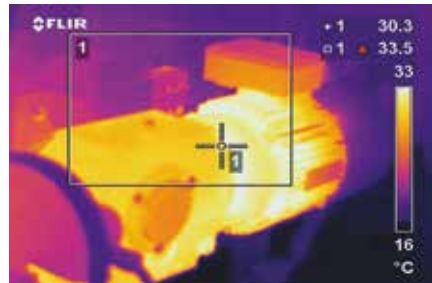
Visual and thermal image of an electrical installation.

# Heathrow, an airport of the British Airport Authority, is saving money thanks to thermal imaging cameras.

Just like any airport Heathrow needs to be up and running 24/7. Preventing electrical and mechanical failures is of the utmost importance. A thermal imaging camera plays a crucial role.

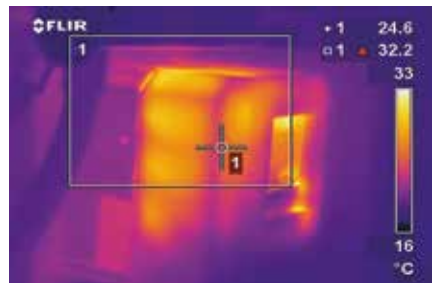


*A leak in the underground hot water pipeline can be clearly located thanks to thermal imaging.*



*Visual and thermal image of a motor and a gearbox at Heathrow's baggage handling system.*

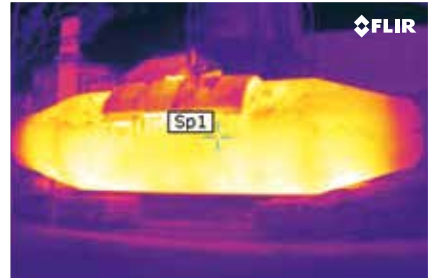
*"The cameras will also extensively be used by our maintenance engineers. They are of course very concerned that all facilities are running at all times."*



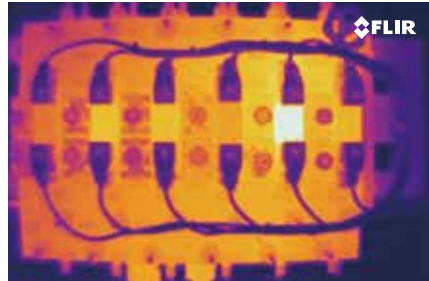
*Thermal image of an inverter in Heathrow's baggage handling system.*

# Krupp Mannesmann ironworks use thermal imaging

Thermal imaging is a vital tool to inspect, control and optimize metallurgic production processes and installations. As contactless and reliable tools, thermal imaging cameras provide temperature readings across an entire surface area instead of just at a few single points.



*A visual and thermal image of a torpedo ladle.*



*Visual and thermal image of a defective control module (second from right).*

*"Temperature tracking through the use of a thermal imaging camera has proven invaluable within our industry.," says Dirk Ehrlich, a technician at HKM's Energy Management Department.*



# Hochtief Facility Management uses thermal imaging to inspect customer facilities

HOCHTIEF Facility Management provides facility management solutions to renowned companies in Germany and abroad. It maintains production plants, office buildings, public facilities like airports, sports stadiums and hospitals.



*Thermal image of electrical cables.*

*"It allows us to work faster, but also more accurate and precise," says Stefan Canje, Service Technician at the HTFM subsidiary.*

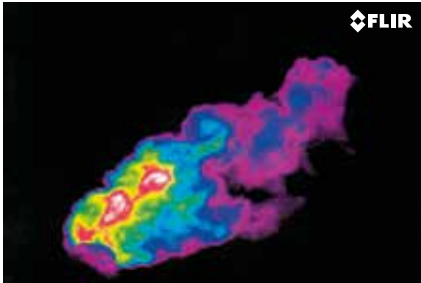


*Thermal imaging provides sharp imagery of data centers and electrical installations.*



# Keeping the flame burning: thermal imaging at refineries

Oil refineries are places where the black gold is heated up and cooled down in order to produce its pricey derivatives. Production installations have to be kept up and running to ensure a stable production and to satisfy the current high demand for oil products.

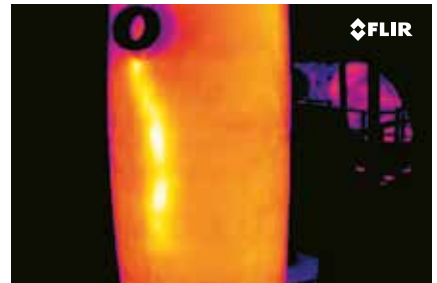


Thermal image of a flare in daylight.

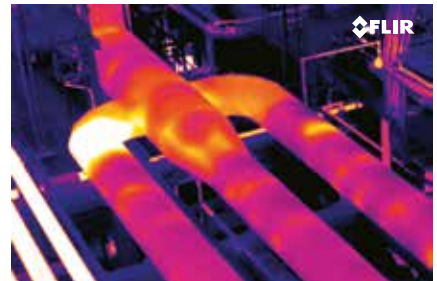
*“Electrical fault detection, distribution lines and substation inspections have saved millions of dollars,” says John J. Nyholt, Inspection specialist at bp, Houston, Texas (US).*



Visual and thermal image of a failure in an internal refractory lining.



Visual and thermal image of a refractory lining breakdown in an air line.

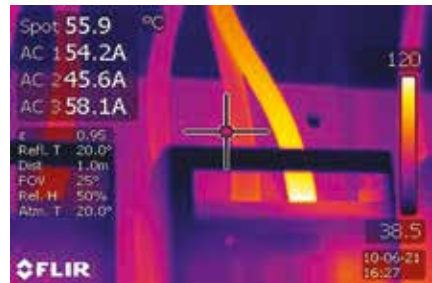


# FLIR thermal imaging camera equipped with MeterLink speeds up thermal inspections

Medite Europe Ltd is the leading European brand of medium density fibreboard, a construction material that is more commonly known as MDF.



*Inspection of electrical cables reveals the existence of electrical anomalies.*



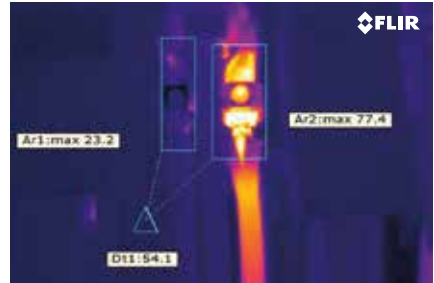
*Thanks to MeterLink, the values read by the clamp meter are displayed on the thermal image.*

*"Meterlink™ allows the camera to receive data automatically from an Extech EX845 clamp meter," explains Bob Berry, the consultant performing the thermal inspections.*

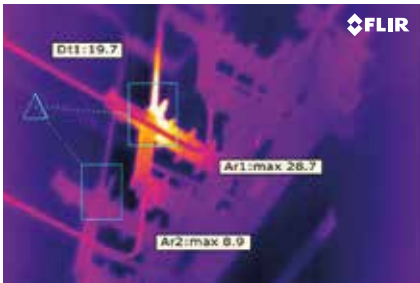


# FLIR thermal imaging cameras help prevent power failures at utilities

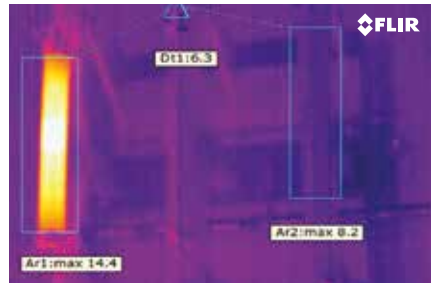
To ensure continuous power supply regular inspections of the network's components are really a must. Thermal imaging can play an important role in determining the state of operation of these components, so utility companies can more accurately maintain and repair their network.



*This connector has become resistive due to loosening and corrosion. This can be easily remedied by opening, cleaning and reassembling the connector.*

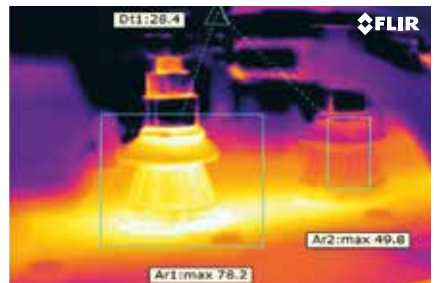


*This switch requires further inspection and might have to be replaced.*



*The overheating high voltage fuse should be replaced and the contacts should be cleaned.*

*"In our maintenance program thermal imaging plays a pivotal role in ensuring that components are replaced before any failures occur," explains Ronald Hintzsche, head of the measurement department of E.ON Bayern.*



*With temperatures approaching 80°C this transformer requires further inspection.*

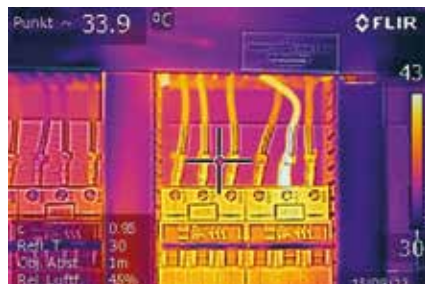
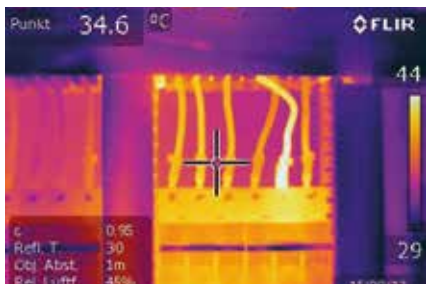
# Thermal imaging cameras: a perfect tool for preventing shut downs and fires

Thermal imaging has become an important tool for electrical inspections in many industries. A power failure can result in expensive shut downs. But there is more. Aside from the production loss there is a greater danger: FIRE.

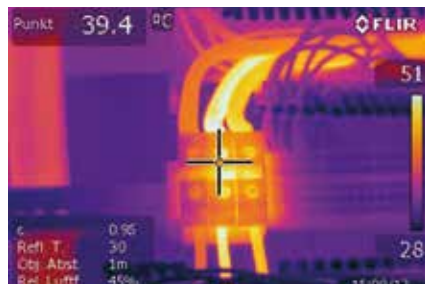
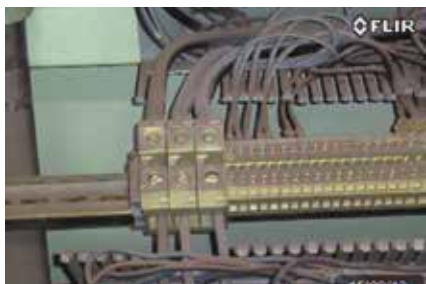


The FLIR thermal imaging camera transfers the thermal images to a tablet PC via Wireless LAN.

*Inspection with a thermal imaging camera allows the system to be under load. Electrical systems tend to heat up before they break down. A thermal imaging camera will clearly identify "hot spots" so that preventive action can be taken before failure occurs.*



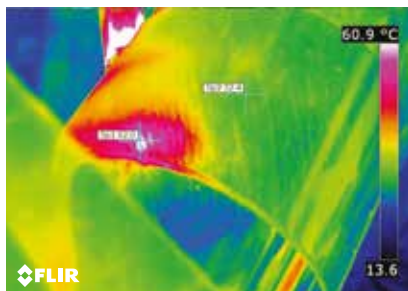
Thermal image without and with MSX: As compared to standard thermal images, MSX technology allows for the additional detection of important details.



A conspicuous cable or terminal can be detected here. The system operator should inspect the cause.

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

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.

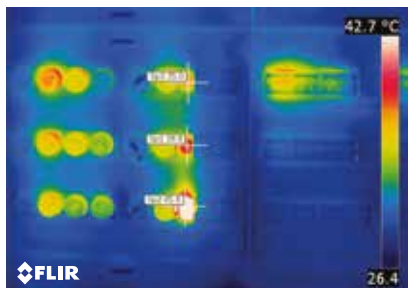


The hotspot in the thermal image shows that this hot steam pipe has either a small leak or faulty isolation.



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

“You can use thermal imaging to scan distribution boards, fuse boxes and to survey wires and connections. It provides an instant picture of the thermal differences that indicate an overload,” explains maintenance engineer Thorsten Krämer.



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



# 6 FLIR Systems, world leader in thermal imaging cameras

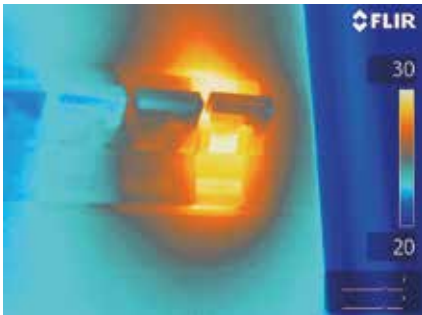
FLIR Systems manufactures the most advanced thermal imaging cameras on the market today. Depending on the model they are equipped with unique, time-saving features.

## Multi Spectral Dynamic Imaging (MSX)

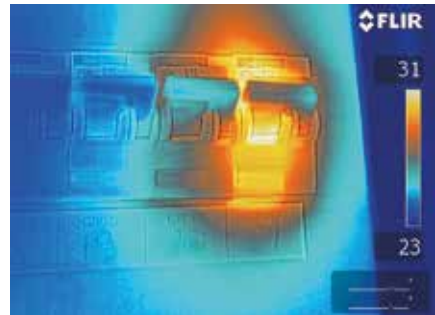
A new, patent-pending fusion based on FLIR's unique onboard processor that provides extraordinary thermal image details in real time.

- Real-time IR video enhanced with visible spectrum definition
- Exceptional thermal clarity to highlight exactly where the problem is
- Easier target identification without compromising radiometric data
- Quality so good, you won't need a separate digital photo for reports

Unlike traditional thermal fusion that inserts an IR image into a visible-light picture, FLIR's new MSX embosses digital camera detail onto thermal video and stills.



*Thermal image of an overheated fuse.*



*Thermal image of the same overheated fuse, now using the MSX-setting. The text below the fuse is readable, making it very easy to identify and repair the correct fuse.*

## Image sketch

This new FLIR Systems feature allows to clearly indicate on a saved image the location of the problem area both on the thermal and the visual image. This can be done immediately on the touch screen of the camera. The indications you make on the thermal image will automatically appear in your report.





### WiFi compatibility

Allows to wirelessly transfer images from your thermal imaging camera to a tablet PC or smartphone.



### Continuous auto-focus

A solution with two digital cameras allows for continuous autofocus of the thermal images. As a result the camera is fully automatic.

### MeterLink

FLIR MeterLink technology makes it possible to transfer, via Bluetooth, the data acquired by an Extech clamp meter into the thermal imaging camera.



EX845  
Clamp meter

# 7 Thermal imaging: a wide variety of applications

*As more and more people are discovering the benefits that thermal imaging cameras have to offer, volumes have gone up and prices are coming down. This means that thermal imaging cameras are finding their way to more and more markets. FLIR Systems has the correct camera for every application.*

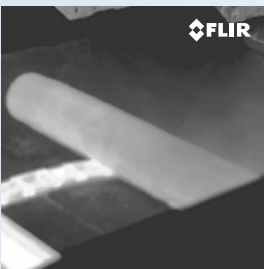


## Electrical / Mechanical

In industrial environments thermal imaging is used to find hot-spots that can lead to failures in electrical and mechanical installations. By detecting anomalies at an early stage production breakdowns can be avoided and money can be saved.

## Security

Our security customers benefit from thermal imaging cameras because they help them to secure facilities like ports, airports, nuclear facilities, warehouses, estates and many more against intruders.

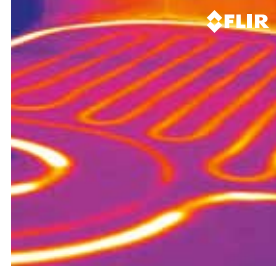


## Cores & components

FLIR Systems also markets a wide variety of thermal imaging cores that other manufacturers integrate in their own products.

## Building diagnostics

Building professionals look for insulation losses and other building related defects with a thermal imaging camera. Finding insulation losses and repairing them can mean huge energy savings.



## Border security

Border security specialists protect their country's border against smugglers and other intruders. With a thermal imaging camera they are able to see a man at a distance of 20 kilometers away in total darkness.

## Science / R&D

Thermal imaging also plays a pivotal role in both applied and fundamental R&D. It can speed up the design cycle so that products can go to market faster. For these demanding applications FLIR Systems markets extremely high performance thermal imaging cameras.



## Maritime

On both yachts and commercial vessels, FLIR thermal imaging cameras are being used for night time navigation, shipboard security, man-overboard situations and anti-piracy.

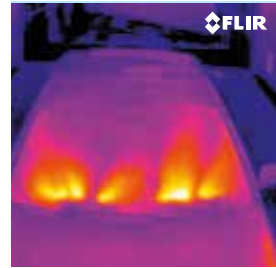


## Transportation

FLIR thermal imaging cameras are installed in cars for driver vision enhancement. They help the driver to see up to 4 times further than headlights. They are also installed in specialty vehicles such as fire-trucks, mining and military vehicles.

## Automation / process control

Thermal imaging cameras are also installed to continuously monitor production processes and to avoid fires.

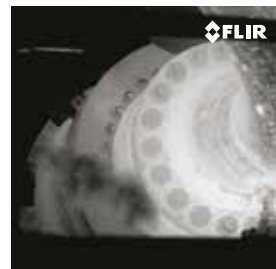


## Law enforcement

Police officers use the power of thermal imaging to see without being seen. They can easily find suspects in total darkness without giving away their position.

## Optical gas imaging

Gas leaks can also be detected seamlessly with a thermal imaging camera.





## Personal vision systems

Outdoor enthusiasts can see clearly at night with the help of a thermal imaging camera.

## Firefighting

Firefighters are able to see through smoke. It helps them to find victims in a smoke filled room and also to see if fires are well extinguished. It helps them to save lives.



## Extech

Under the Extech brand, FLIR systems is marketing a full line of test and measurement equipment.

# 8 Selecting the correct thermal imaging camera manufacturer

Since thermal imaging cameras have become increasingly popular over the last few years more and more manufacturers are starting to produce thermal imaging cameras.

Regardless of your application, there are some considerations to take when investing in a thermal imaging camera.

## The correct camera for the correct application

Choose a thermal imaging camera manufacturer that offers you a choice. Different applications require different types of thermal imaging cameras. First time users have different needs than those that have already discovered the benefits of thermal imaging. Different image qualities are available. A reliable manufacturer offers you a thermal imaging camera that is completely suited for your application.



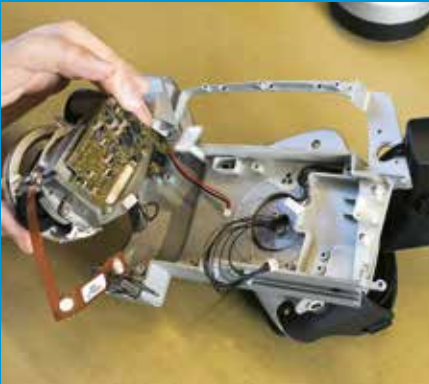
## Choose a system that can grow with your needs

As you start to discover the benefits thermal imaging has to offer your needs will undoubtedly change. Go for a manufacturer that is able to take your first camera back and offer you a more advanced model. Make sure that accessories are available. Lenses are important. Some applications require a wide angle lens, others are better served with a telephoto lens.



### Software is important

For practically all applications it is important to have the correct software. It will help you analyze and report your findings. Make sure that the hardware manufacturer is able to deliver you the correct software as well.



### Service

Once in operation a thermal imaging camera rapidly becomes a vital piece of equipment. Make sure that the manufacturer can service your camera in the shortest period of time if a problem should occur.

### Training

Using a thermal imaging camera is as easy as using a camcorder. There are however some things you need to take into account. A reliable thermal imaging camera will be able to give you initial or extensive training so that you can get the most out of your thermal imaging camera.



# 9 Send us your application

On the previous pages you could read how some of our users are using FLIR thermal imaging cameras.

**We are always looking for new application stories and new customer testimonies. If you have an interesting application please contact us. We will be happy to include you in the next edition of this booklet.**

**Please fill out the following form, scan it and send it to [flir@flir.com](mailto:flir@flir.com) or fax this form to +32 3 303 56 24**

Company : \_\_\_\_\_

Name : \_\_\_\_\_

Address : \_\_\_\_\_

Postal Code : \_\_\_\_\_

City : \_\_\_\_\_

Country : \_\_\_\_\_

Tel : \_\_\_\_\_

Application : \_\_\_\_\_

Short Description : \_\_\_\_\_

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# Notes

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