



IMPROVING ENERGY EFFICIENCY
with thermal imaging

MARKET • PRODUCT • APPLICATION • CUSTOMISATION • LOGISTICS • INFRASTRUCTURE
know-how makes the difference



Thermal Imaging – the benefits

How it works

Every object, however hot or cold, emits energy. The hotter it is, the more energy it emits. Special cameras can detect this energy – even from very cold bodies – and convert it to visible light, assigning a colour which is related to the intensity of energy it has detected. The result is a thermal ‘map’ which shows where – and how much – energy is being lost in a building or piece of equipment. But while the technique is extremely powerful, making and interpreting these maps requires a skilled thermographer.

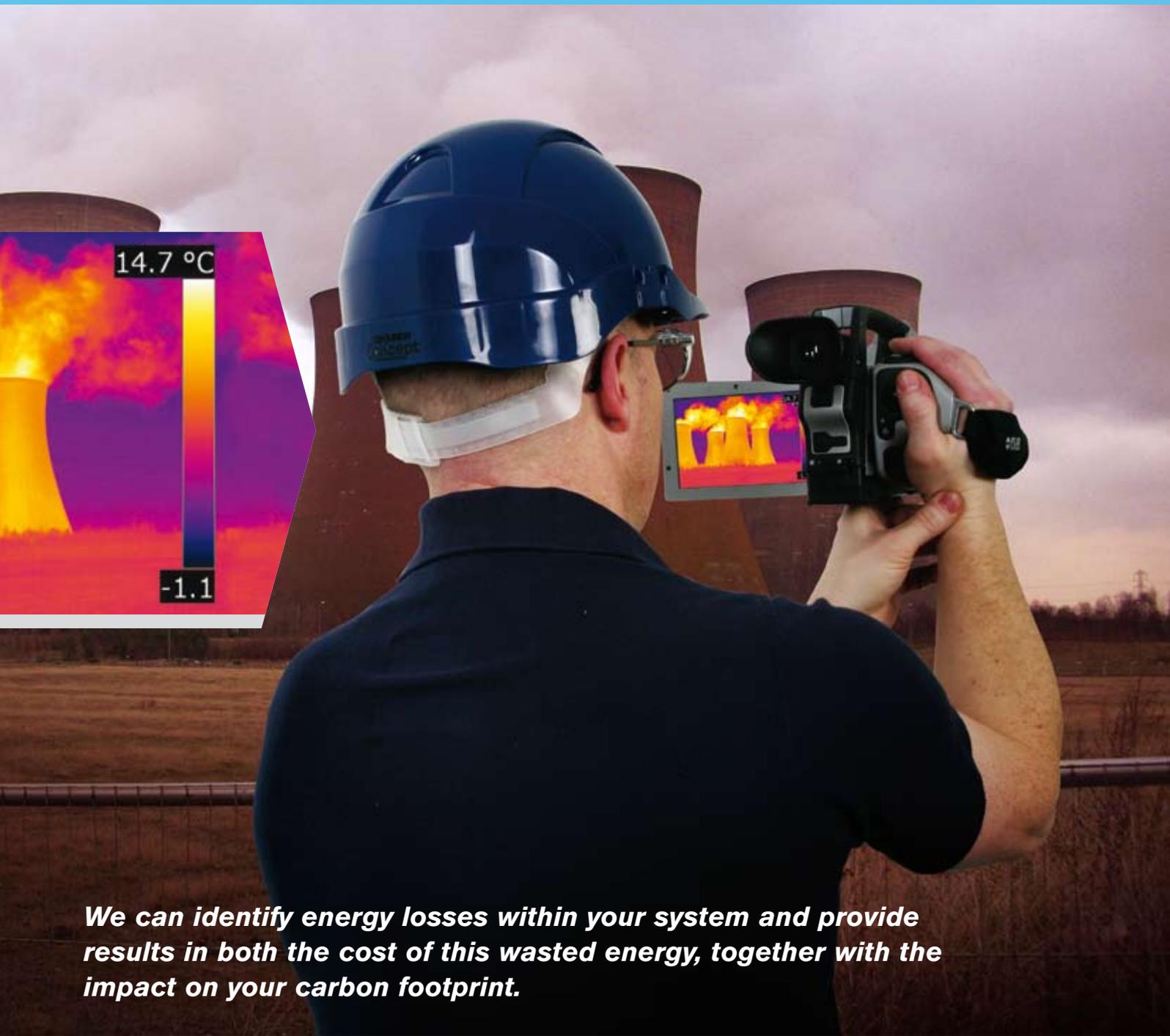
Highly experienced operators

At ERIKS we ensure that all our thermographers are highly trained and hold recognised qualifications. This means they not only have the skill to use complex thermal imaging equipment, but have the experience to eliminate issues which can all too easily distort survey data. The result is the ability to provide a highly accurate analysis of the energy performance of the site under survey.

Fast, simple, safe

The benefits of using thermal imaging are enormous. It's fast and is a non-contact technique, so problems – and potential faults – can be identified quickly and easily without the need to shut down, or even isolate plant or processes. Operators can be located at a distance from hazardous equipment, while the need to facilitate temporary access through scaffolding or ladders is reduced. In short, thermographic surveys offer an extremely powerful and effective approach to the analysis and control of energy consumption.





We can identify energy losses within your system and provide results in both the cost of this wasted energy, together with the impact on your carbon footprint.

All bodies emit energy in the form of infrared radiation. Like X-rays and radio waves, this is part of the electromagnetic spectrum, but is not visible to the human eye. Special cameras can be used to detect infrared radiation and convert it to ordinary light with a colour that denotes the temperature of the infrared source.

Thermal imaging – next steps

We hope this overview, though brief, has helped to convince you of the benefits of thermal imaging. If so, you may be wondering how you can realise these benefits. There are a number of ways of doing this, each with their own advantages.

You can for example, invest in your own thermal imaging equipment – though this route can require significant capital expense, as well as the cost of operative training. All the same, such an approach may well make sense if you are a large or complex organisation, or you operate energy-intensive activities or continuous processes. Alternatively, equipment can be hired relatively inexpensively. While this can be an effective way forward, there's still the issue of training to consider. ERIKS can advise you as to whether either of these approaches is appropriate to your situation.

Outsourcing

Using third-party services is the most practical and cost-effective approach for many organisations. A suitably experienced partner can help you identify problems and recommend solutions which deliver extremely fast return on investment, while helping you implement inherently efficient systems which offer long-term energy savings. This of course, begs the question: who is a suitably experienced partner?

A unique consultancy

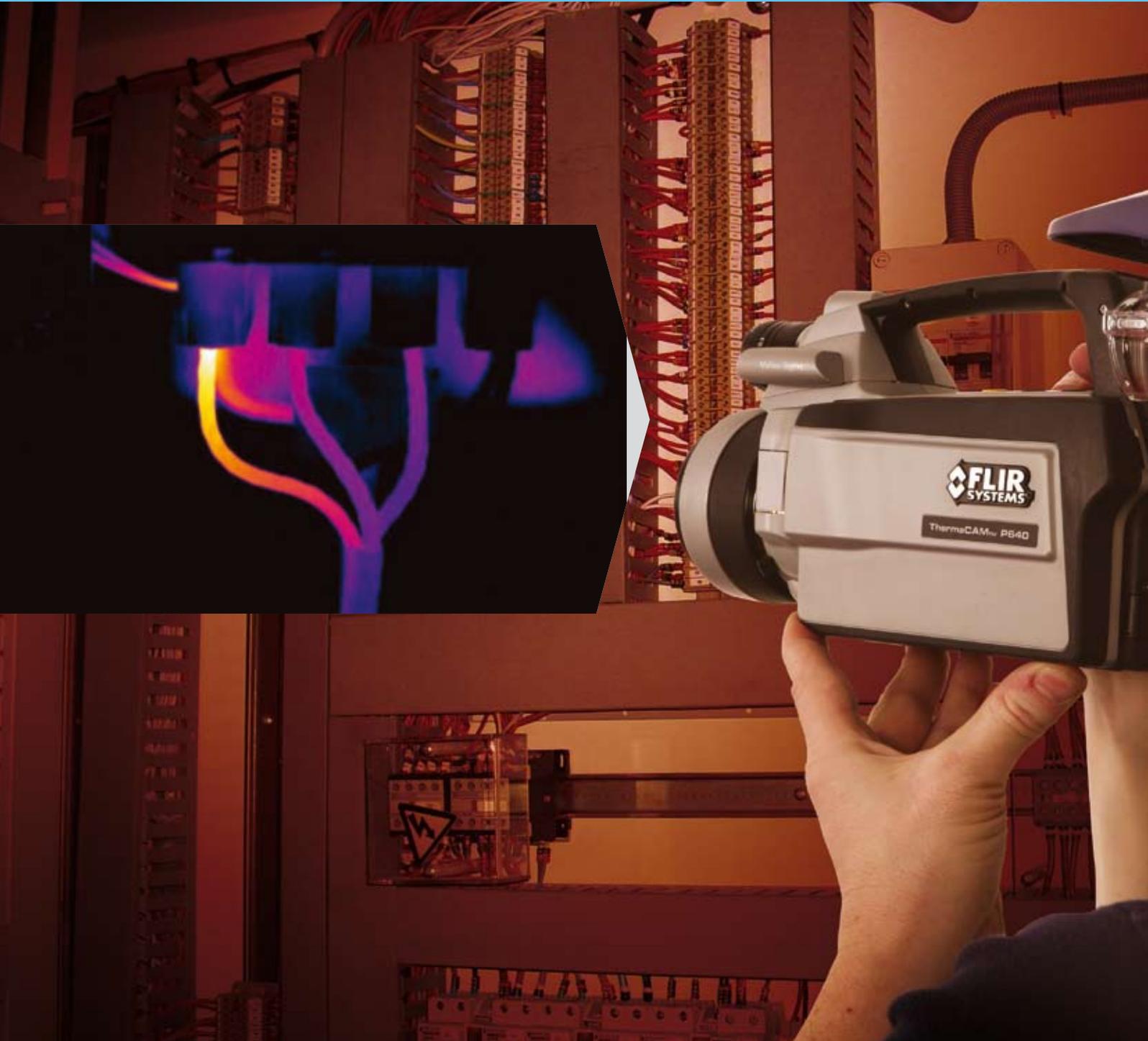
The honest answer to this is that there are a few around. But none are more experienced, or better equipped, than ERIKS – our investment in latest-generation technology, as well as the people to operate it, is second to none. Whether your organisation is large or small or in the public or private sector, you'll find we have the experience, the expertise and the resource to help.

Problem solvers

At ERIKS we focus on solving your problem. To do so, our expert thermographers carry out a survey and present you with a full report on the issues they have found, plus recommendations for a way forward. There is no obligation to use the services of our other highly experienced divisions to implement our recommendations. Of course, if you do choose ERIKS to provide an end-to-end solution, you'll see real economies as our services mesh seamlessly with one another. But it is your choice entirely. And whichever way you go, one thing's for sure: you won't regret using ERIKS thermal imaging consultancy.



Working together to protect the environment



Like every company, you want to minimise your impact on the environment. Which is another reason you should team up with ERIKS. We have the people, the experience and the know-how to help you cut your carbon footprint and reduce your energy costs.



Cutting the carbon footprint

Today, for organisations of all types, the reduction of energy consumption is both a moral and a commercial imperative. The need to combat the growing effects of climate change, coupled with the increasing necessity of maintaining a downward pressure on energy costs, means that lower carbon footprints have become a key strategic and operational target across both the public and private sectors.

Identifying inefficiencies

The question is: how can lower carbon footprints be best achieved? Clearly, to reduce energy wastage, it must be used more efficiently. But identifying where and how savings can be made is easier said than done. While some areas of inefficiency may be obvious, others are less so. In fact, some of the most significant energy losses arise from subtle aspects of building and plant design and can best be identified through the use of advanced technologies such as thermal imaging. But these technologies can require a significant investment and require considerable skill, certification and experience to operate.

No partner better qualified

That's where ERIKS can help. As the most well-resourced and experienced provider of thermal imaging services in the UK, we can help you minimise your energy costs and carbon footprint by identifying areas of heat and energy wastage wherever they lie in your organisation, from central heating systems to refrigerators. Whether you want a one-off site survey and analysis, or a comprehensive predictive maintenance programme based on advanced thermographic techniques, you'll find there's no-one better positioned than ERIKS to provide a fast, efficient and extremely cost-effective solution.



Design



Test



Service



Logistics



Manufacture



Quality

Pipes

Maximising system efficiency

Hot water systems and steam circuits are often the source of heat losses. In fact, pipes can reduce thermal efficiency of the overall delivery system by as much as 50%! Our thermographic engineers can quickly identify pipe-work that is operating at low efficiency levels and advise on an appropriate solution.

Sometimes of course, a naked-eye inspection is enough to identify obvious insulation faults. In complex or congested pipe systems however, a visual survey can be more difficult – and even impossible. Here, thermal imaging can prove invaluable, offering a fast and accurate way of spotting pipes that need to be insulated. This approach will also reveal other significant sources of heat wastage, such as flanges, valves or joints, which are often left uninsulated for purposes of access and maintenance.

Keeping heat out

And it's not just hot water and steam that needs good insulation. Chilled water or glycol systems also need to be insulated – to keep them chilled. If heat flows from outside the system to inside, more energy is required to remove it, escalating the cost of the chilling process. ERIKS thermal imaging services can show if, and where, this is happening, helping you to optimise energy consumption and costs.

Condition monitoring of steam traps

As an example of the benefits of thermal imaging technology, it's hard to beat the steam trap. Why? Because, while a failed steam trap can waste hundreds – and perhaps thousands – of pounds each year, they can be very hard to spot. The result is a wastage problem that can go unsolved – and even unnoticed – for years.

Reaching places other techniques cannot reach

But with thermal imaging, such issues can be resolved quickly and cost-efficiently. By using thermographic techniques to determine the condition of steam traps, even in inaccessible places, the technology can play an indispensable part of an effective maintenance programme, reducing ongoing energy wastage and costs. A full thermal imaging survey of your steam traps will help you understand and compare their condition, identify problems and target maintenance to precisely where it's required.

Experience is key

But analysis of steam traps is a complex issue. Surveys should be carried out by experienced operators who not only understand their equipment, but who are well-grounded in trap design and steam theory. At ERIKS, our qualified technicians understand all the issues

involved and have years of experience in using thermal imaging techniques to locate problems and recommend the most appropriate solution.

Electrical systems

Reducing waste, minimising risk

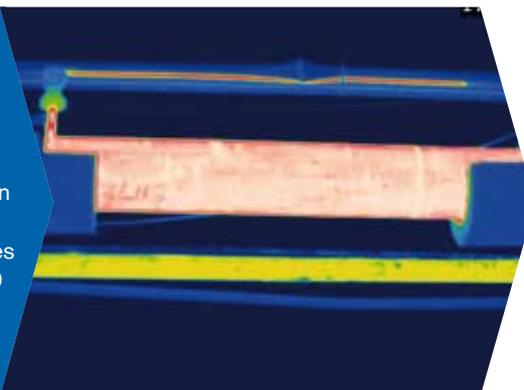
When electrical circuits are faulty, badly designed or improperly used, they can be both costly and potentially dangerous. But such faults and misuse are notoriously difficult to identify. In fact, all too often, they become obvious only when it's too late – and repair can be extremely costly. This is where thermal imaging can prove invaluable.

Even a properly working circuit and its load, will dissipate some heat. But a faulty or unbalanced circuit will produce unusual amounts of heat in places that can be analysed thermographically to provide an accurate diagnosis of the problem. The technique is extremely effective and can be used to identify a wide range of problems, from corroded connections and insulation damage to poor ventilation and circuit overload.

Safe and cost-effective

The use of thermal imaging as an electrical diagnostic tool is quick and powerful. And it's safe and cost-effective too, as the technique requires no contact the components can be checked in their

Damaged pipe insulation sounds innocent, but the effects can be expensive. This steam supply pipe was not immediately re-insulated because the process would disrupt production and the problem was then forgotten. When a thermographic survey re-discovered the issue, losses were running at an estimated £2600 per year.



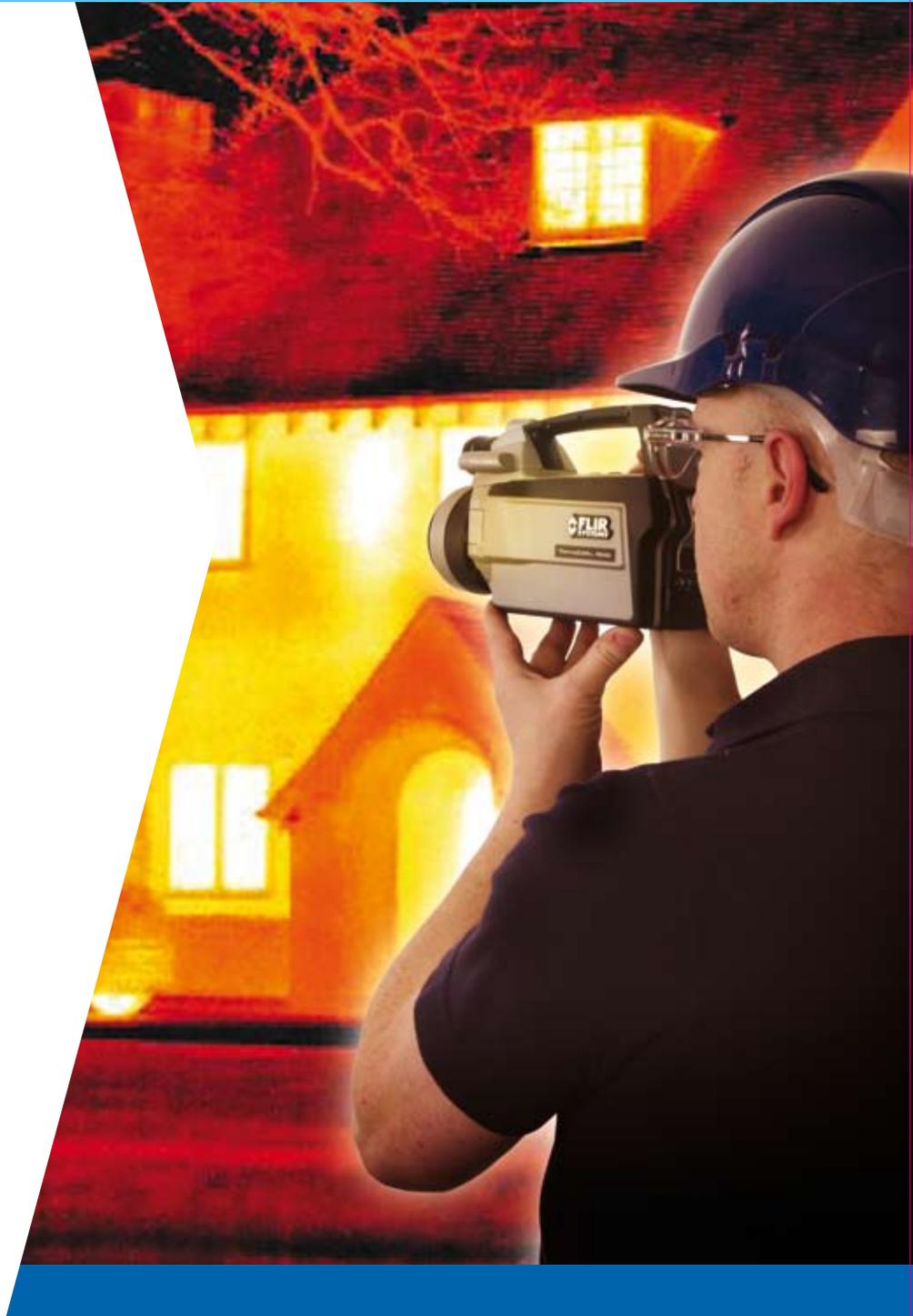
What is a steam trap?

Used to control steam systems, traps act as selective valves, allowing (mainly) liquid condensate to pass while retaining the steam. This allows the system to be drained properly and ensures maximum heat utilisation. When traps fail – they can jam open or closed – they greatly reduce the efficiency of the heating system and therefore waste energy and money.

live state, with no danger to the user. But, for an effective diagnosis, the thermographer must have extensive knowledge of how circuits and components behave under normal conditions – only then can he make a meaningful analysis of the circuit under examination. ERIKS's thermographers all have this experience.

A typical survey might include:

- **Motors, pumps, fans and their control panels**
- **Control equipment**
- **Cable runs**
- **Substations**
- **Transformers**
- **Thyristor banks**
- **Switches, fuses and circuit breakers**
- **Distribution boards**



Water ingress

When water gets where it's not wanted, it can have very damaging – and sometimes catastrophic – effects. But determining when and where this is happening can be a very difficult job – unless you have a thermographic expert on hand. Because damp materials have different thermal behaviour to dry materials, thermal imaging is an extremely effective way of finding out where water ingress has occurred. ERIKS is extremely experienced in carrying out water ingress surveys.



Buildings

In most organisations, heating or cooling represents a significant annual cost: it clearly makes sense to minimise wastage wherever possible. ERIKS's thermal imaging services can help you do this.

Insulation – a common culprit

Using thermal images of a building exterior, it's usually easy to identify heat loss problems. Often these are related to missing, or poorly-fitted insulation and have a relatively straightforward solution. Often simple and low-cost measures such as sealing door and window frames, fitting draft excluders and installing loft insulation, can make a major difference to heating and air-conditioning costs. In other cases, specialist contractors may be required. Either way, the return on investment for the thermal imaging process is usually dramatic – the payback period can be extremely short.

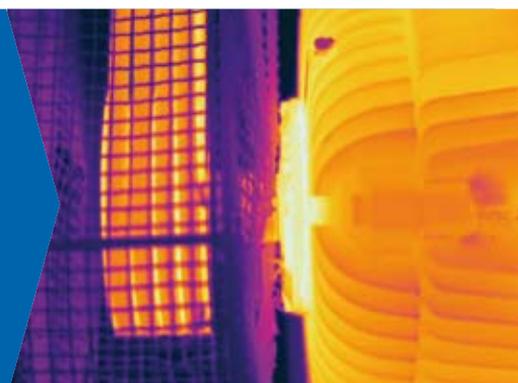
Improving ventilation efficiency

Poorly regulated ventilation is another cause of heat loss. While some air changes are necessary to maintain a healthy environment, over-ventilation is simply a waste of energy. Again thermal imaging can identify telltale signs of poor ventilation. By showing where too much warm air is escaping, or where too much cold air is being drawn in, thermographic techniques can provide the basis of a remedial strategy which balances the air-flow rates and reduces heat loss. Such a strategy will not only eliminate unnecessary heat loss, but will save energy consumed by ventilation fans.



Latest-generation technology

At ERIKS we use the most advanced camera technology available. Integrating an infrared camera, digital camera, videolight and laser pointer, cameras such as these use sophisticated software to help us generate an accurate temperature analysis and inspection report quickly and cost-effectively.



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