

FLIR

APPLICATION STORY

FLIR SYSTEMS™



Technician Ulf Ohlsson with the ThermoCAM™ E45 and a huge Thermoking fridge unit

THERMO KING

H-O NILSSON

FLIR Systems P and E-series infrared cameras reduce maintenance and repair time at Sweden's main distributor of Thermo King transport refrigeration

The transport of perishables such as fresh or frozen food by truck, trailer or train is one of these industry sectors that directly influence and affect our habits and living standards. These logistic chains are marked by tight transport schedules and delivery times. A well-functioning cooling system is a prerequisite to be able to keep them running. Infrared cameras are perfect instruments to maintain the powerful transport refrigerators that keep the goods fresh during their long way into our home fridges.

H-O NILSSON, located in Gothenburg, Sweden, is the main distributor of transport refrigeration giant Thermo King in Sweden. Nilsson's customers, served by 25 skilled service technicians, are predominantly haulage contractors specialized in temperature-controlled transports. They mainly work for the local large retail chains and manufacturers of frozen food products. Thermo King manufactures refrigeration units for vehicles and is a market leader in this sector.

Refrigeration transport units consist of a classic vapor-compression type of refrigerators.

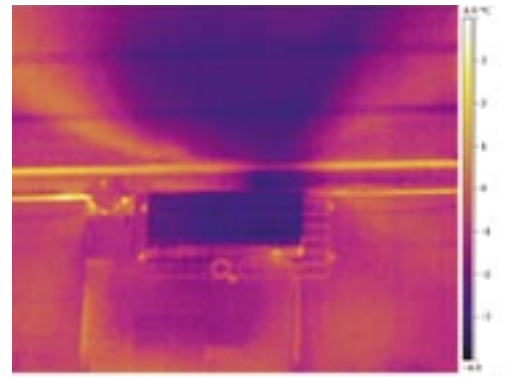
The most powerful systems with heating, cooling and freezing functions for big trucks and trailers are self-powered. They need to be maintained on a regular basis. The better they are maintained, the better they function and the less fuel they consume. With their ability to scan entire surfaces quickly and easily, infrared cameras significantly contribute to a fast detection of faults and anomalies.

"It doesn't get cold enough in my trailer"

A unit might be brand new and working flawlessly but not doing its main task : cooling goods as it should be. A careful thermographic outdoor and indoor inspection of the truck box



▲ Bad cooling in trailer: IR shows that discharge opening is blocked on the left side



FLIR



proves what's going wrong: either insulation problems (moisture intrusion), or thermal bridges, the intrusion of uncooled air into the transport box, or other reasons like blocked fans or condensers inside the box which obstruct the flowing of cooled air into the box. This inspection can be done with a low-budget infrared camera although more pixels helps to get a clear and convincing view of the problem.

Saving time: troubleshooting & check-up of the refrigeration unit

Infrared cameras help to work down an extensive checklist quickly and easily: how's the temperature of the vaporizer? Is it equal on the entire surface? If not, up to 50% cooling power can be lost. How's the condition of the refrigeration circuit compressor and in particular, the valves in the system? Slow leakages, which lead to a significant loss of performance are a frequent problem and they can be traced quickly.

How's the electrical control box? How's the plug connection outside on the refrigeration unit? Placed outside of the box it's exposed to harsh conditions and liable to corrosion.

Minimizing troubleshooting time is key for the efficiency and the profitability of the company. The number of working hours saved thanks to a consistent use of thermography at H-O NILSSON is impressive. A complete "conventional" troubleshooting of a refrigeration unit can take five to six hours. Thanks to an infrared camera, the job is finished in less than one hour. With some 8,000 work orders per year and two FLIR Systems infrared cameras, the return of investment at HO-NILSSON is huge.

"All electrical, mechanical parts can be quickly scanned", says Hans Olof Nilsson.

"In addition to our increased ability to detect faults at an early stage, we are now sure about changing the right component. Before, we could only rely on our own experience, now, thanks to the infrared camera we know for sure."

Nilsson quickly realized that this certitude could only be achieved with a good knowledge of the fundamentals of thermography and the camera, as well as a correct interpretation of the imagery. Two members of the team went to the Infrared Training Center, a renowned independent training institute offering certified training courses in many countries, and became certified thermographers.

Hans Olof Nilsson and his team use a FLIR Systems 320x240 pixel resolution ThermoCAM

S60 (a predecessor model of the current SC640) and a 160x120 pixel ThermoCAM E45. "We use both infrared cameras almost every day for all tasks, he says, "although for specific cases where resolution or burst recording are important, we only use the S-camera."

Such a particular case is the detection of very slow but harmful leaks in heat exchangers or on solenoid valves, which appear only after a lengthy temperature and load increase. The ThermoCAM S60 connected to a laptop computer allows to spot and trace these leaks that previously were very difficult to localize and to explain.

Adding value: IR images before customer handover

Before handing over a truck or trailer with a new Thermo King unit to customers, H-O NILSSON technicians check all functions and take images of the box. These infrared images in .jpeg format made by FLIR cameras are then easily stored in a new customer file and picked up again when the customer comes in for service or repair.

They also inspect second-hand truck and trailer bodies for their customers. This way, the infrared cameras add value to H-O NILSSON's service and customer care.

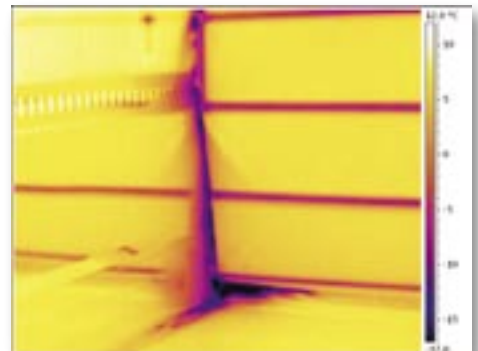
"As to other adding-value tasks," says Nilsson tongue-in-cheek, "we had a plumber in our building one day, and we decided to give him a hand, so we quickly pointed out problem. The man was quite impressed..."

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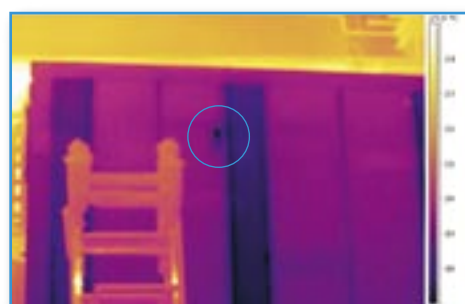
◆ Airleak in insulation curtain separating two temp zones in refrigeration box



◆ Starter motor, oil filter of Thermoking fridge unit



◆ IR image shows thermal bridges and a moisture spot in the insulation



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