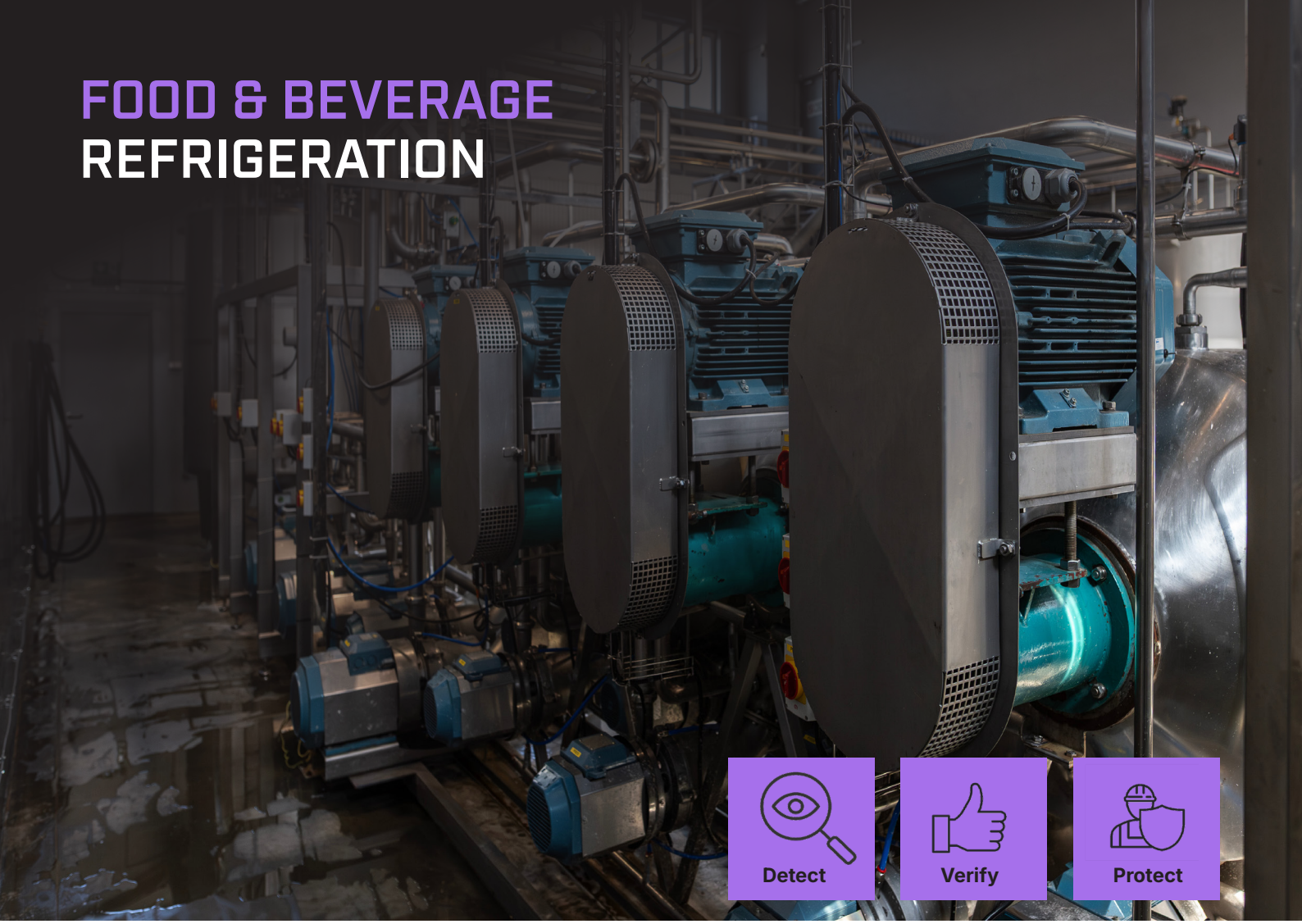
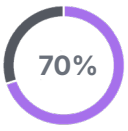
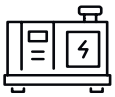
FOOD & BEVERAGE
REFRIGERATION

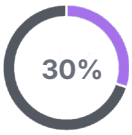


SAFEGUARD INVENTORY, CUT ENERGY WASTE, AND SUPPORT SUSTAINABILITY WITH THERMAL AND ACOUSTIC IMAGING



Up to 70% of a facility's total electrical energy use can be consumed by cold chain processes.[1] Keeping food and beverage items within acceptable temperature parameters is an energy-intensive task that has no small impact on your bottom line. With 1.3 billion tonnes of food lost to spoilage each year globally, ensuring thermal compliance is vital.[2]





Refrigeration energy consumption can increase by up to 30% when systemetic inefficiencies, faults or suboptimal conditions creep into operations.[3] Facilities that routinely use thermal and acoustic imaging to locate thermal abnormalities or compressed air leaks can help to safeguard their bottom lines by containing cost creep.

$940 billion economic impact.[4] The global economic impact of wasted food is estimated at around $940 billion annually. Reducing refrigeration-related losses protects inventory value and avoids downstream costs linked to scrappage, replacement production, and operational disruption when cooling systems underperform, or fail entirely.

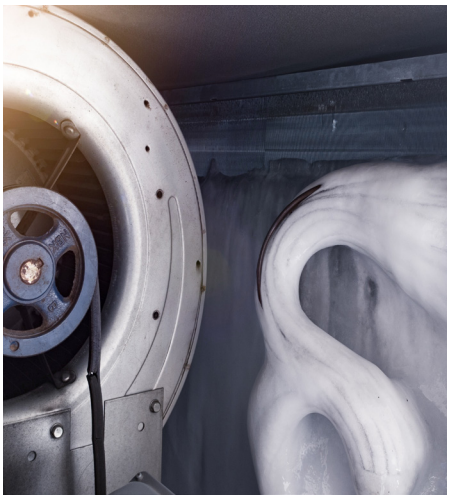
Why refrigeration is fundamental

Refrigeration is a quiet, continuous battle. Ageing units drift out of spec, refrigerant loss reduces cooling performance, and frost build-up or overheating components can steadily force up energy demand.

At the same time, compressed air and utility losses can quietly erode plant efficiency. Spot checks often miss these creeping issues until performance drops or failure becomes unavoidable. In food and beverage operations, those realities collide in the most expensive way possible: rising operating costs, unplanned downtime, and avoidable risk to cold chain integrity.

Flir thermal and acoustic imaging helps make inefficiency visible before it becomes disruption.

FLIR®



Thermal monitoring with the Flir A50 and A70 Smart Sensors can reveal abnormal temperature behaviour linked to insulation faults, deteriorating components, or declining refrigeration performance due to factors such as frost build up on interior cooling elements.

Acoustic imaging with the Flir Si2-LD supports earlier detection of refrigerant and compressed air leaks, helping facilities intervene sooner, protect uptime, and prevent energy waste from becoming embedded in day-to-day operation. For electric utility and inspection in food & beverage facilities, choose the Si2-PD. For comprehensive coverage including electric utility, leak detection, and mechanical fault applications, select the Si2-Pro.

The Flir Si2-LD acoustic imaging camera enables you to detect and reduce leaks in facilities, thereby cutting costs associated with compressed air and specialty gas leaks. Beyond these capabilities, it also identifies mechanical faults, such as bearing issues, facilitating preventative maintenance to avoid downtime. The Si2 series delivers unparalleled performance, enhances decision support, simplifies management, and integrates seamlessly with data systems.

Key values

Safeguard inventory and minimise equipment failure with earlier detection

Refrigeration equipment failures threaten inventory, especially when issues develop gradually between inspections. The same can be said of compressed air in capping and sealing equipment, pneumatic pumps for dosing sauces, syrups, and liquids all the way through to pressurised actuators and cylinders on conveyors and processing lines. With energy-intensive, compressed air systems omnipresent in the food and beverage landscape, the early detection of anomalies protects your inventory and minimises repair costs.

Maintain cold chain integrity and strengthen sustainability performance

Cold chain reliability and energy performance are inseparable. By continuously monitoring temperature behaviour and detecting leaks early, Flir thermal and acoustic imaging supports tighter control over refrigeration and utility systems. Earlier intervention protects product quality, reduces unnecessary energy demand, and helps food and beverage facilities maintain cold chain integrity while improving overall resource efficiency without relying solely on manual inspection routines.

Cut energy waste and stabilise system performance with earlier visibility

When teams rely on periodic checks, inefficiencies embed themselves into daily operation. Even a minute leak at couplings, regulators, and pneumatic tools force compressors to cycle harder and longer, quietly driving up electricity use. Thermal monitoring with Flir A50 and A70 Smart Sensors, combined with acoustic imaging from the Flir Si2-LD, helps identify abnormal patterns and ultrasonic leak signatures early, supporting corrective action before excess energy consumption becomes the norm.

Key applications

What can Flir thermal imaging do for your food and beverage refrigeration?

Enable continuous refrigeration performance visibility

Cold storage and staging areas

Thermal and acoustic imaging supports refrigeration environments where equipment failures threaten inventory and where early warning matters most.

Continuous thermal condition monitoring is well suited to cold storage and staging areas that depend on stable temperatures but are often managed through SOPs, manual thermometers, and periodic inspection routines. Where foods may be held without active temperature control, and compliance time windows are tight, thermal visibility helps reduce the risk that critical variations goes unnoticed between checks.

Resource-conscious and low-attendance operations

Flir thermal and acoustic monitoring applies to operations seeking stronger sustainability outcomes through improved reliability and resource efficiency. In cold chain environments, improving refrigeration and compressed air performance becomes a practical lever for reducing energy intensity and protecting inventory from avoidable temperature deviation.

Sources

[1] Evans, J.A., Foster, A., Huet, J.M. et al. (2015) Specific energy consumption values for various refrigerated food cold stores, Proceedings of the 24th IIR International Congress of Refrigeration: Yokohama, Japan, August 16–22, 2015.

[2] Wohner et al. (2019). Packaging-Related Food Losses and Waste: An Overview of Drivers and Issues. Sustainability. 11. 264. 10.3390/su11010264.

[3] Frontiers in Sustainable Food Systems (2023) research on cold store energy consumption

[4] divertinc.com The Cost of Wasted Food: The Economics of Wasted Food & Food Insecurity

Scan to explore all Food & Beverage applications and download the full value sheet series.

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