

STAR AFTERCARE REDUCES CUSTOMER OPERATING COSTS

Operating and maintenance typically contributes to more than 80% of the life cycle cost of refrigeration plant (see chart below). When selecting new plant, emphasis is often placed on purchasing the most efficient design but this does not guarantee low running costs. Pro-active maintenance is key to ensuring the plant continues to operate at its design parameters throughout its life.

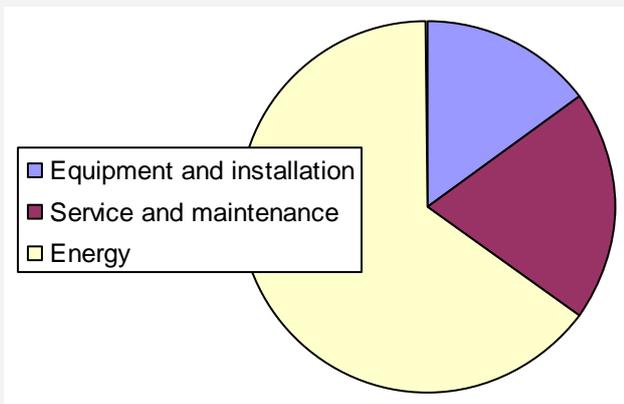


Figure 1 – Typical life cycle cost split for refrigeration plant

Star Refrigeration's operations team is focused on ensuring our customers have plant that operates efficiently and reliably throughout the year. Our nationwide network of nine branch offices are fully staffed with experienced management teams and we have more than 80 mobile field engineers to support your business.

Our aftercare team continuously reviews plant performance against design parameters to ensure the lowest possible running costs for our customers. We look for ways of improving performance from simple changes to operating parameters through to the retrofitting of new energy enhancing technology to existing systems. Examples include:

- Application of inverter technology (compressors, condenser fans, pumps)
- Defrost on demand
- Automatic oil recovery
- Electronic expansion valves

We work closely with our customers to develop a proactive maintenance programme, tailored to their needs. When undertaking a new contract, we review the existing equipment and provide a free of charge plant review that highlights areas for action to bring the plant back to design and suggestions for improving reliability and efficiency. These are then developed into an action plan that is reviewed regularly with our customers.

Our Telstar control system enables offsite monitoring of plant faults and alarms. More recent installations also include maintenance alerts which detect movement away from the plants design conditions. These provide early warning of reduction in efficiency and potential future problems, enabling our engineers to attend site to resolve before a problem occurs.

Our proactive approach to maintenance is effective in reducing life cycle costs and is demonstrated in data measured by our customers. Below are examples of how the Star approach to maintenance has reducing operating costs for two customers.

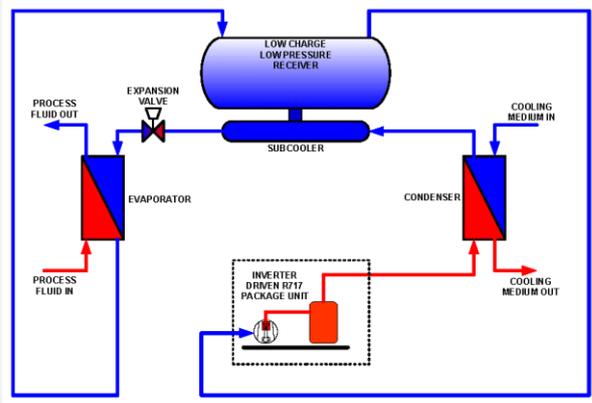
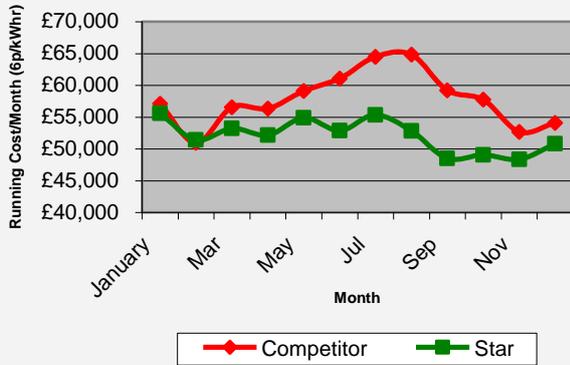
Case Study 1 - Temperature Controlled Distribution Centre

This multi-temperature distribution store was completed in 2006 and has a two stage central ammonia refrigeration system installed by a competitor. The plant consists of three high stage screw compressors, two low stage reciprocating compressors, two evaporative condensers and 20 evaporators in three temperature controlled chambers. Following an 18 month maintenance period with the original installer Star took over in February 2008. Following a full site survey, modifications were made to reinstate the plant back to its design conditions. We made a number of zero cost changes to the plant control to enhance operating efficiency and improve store temperatures. Refrigerant was also added to the plant as the survey found it was running undercharged. This improved both efficiency and reliability.

An energy monitoring system installed on site has provided detailed energy data since the plant was installed. The graph below compares running costs

from 2007 and 2008. A comparison of plant running costs over 12 months indicates an average energy saving of 100,000kWhr per month since Star took over the site maintenance contract. This corresponds to a saving of £6,000 per month based on an energy costs of 6p/kWhr. Data for 2009 is following the same trend as 2008, underlining our ability to reduce and preserve operating cost savings.

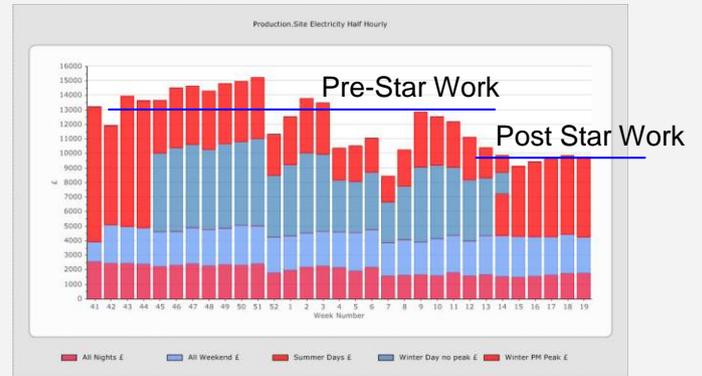
Annual Running Cost Comparison



Star modified one of the three systems, installing a new inverter controlled reciprocating compressor package (in place of the original fixed speed machine). A new compressor sequencing system was also installed to supervise the starting and stopping of all three systems. This has resulted in a £2,000 per week reduction in running costs and a payback of less than 2 years on the investment.

Case Study 2 – Brewery

Star has recently completed modifications to an existing brewery maintenance customer's cooling system to enhance operating efficiency. The customer has three modular water cooled plants as indicated in the following diagram:



For more information on how we can help reduce your running costs, visit our website at www.star-ref.co.uk and click on contact us.

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