STAR REFRIGERATION

CPD The CPD Certification Service

Smart Thinking

Topic

Operations - Condition-Based Monitoring

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The Three Levels of Refrigeration Plant Maintenance – Reactive, Proactive and Predictive

Operating costs account for around 80% of an industrial refrigeration system's total lifecycle cost. Over the past 20 years, Star Refrigeration's Operations Group has continually invested in the development of smart technology to help plant operators reduce lifecycle costs through planned, preventative maintenance (PPM). Today, Star is using the latest in remote monitoring and intelligent data analysis to provide temperature controlled businesses with a unique market-leading PPM service.

Traditional refrigeration plant maintenance features a fixed schedule of site visits by specialist engineers. A series of visual health checks are carried out on site and adjustments are made to fix faults and rectify any performance issues. Further inspection is carried out to ensure cooling systems are compliant with the latest health and safety legislation. This type of equipment aftercare is now considered a 'reactive' and high cost approach to plant maintenance, with an increased risk of downtime. In addition, if plant performance is unmonitored between scheduled maintenance visits, faults will naturally occur resulting in inefficient, unreliable and potentially unsafe operation.

In recent years, condition based maintenance has become widespread across the industrial refrigeration industry, with growing prevalence in sectors including food processing and cold storage. This proactive approach to plant aftercare features an ongoing PPM programme, with remote monitoring of key operational data to improve efficiency and reliability.

Standard remote monitoring systems collect data from the PLC control panel of a refrigeration system, with information transmitted off-site via a broadband connection. The collected data forms the basis of computer generated reports, which are reviewed by refrigeration specialists. Targeted task lists are then created for maintenance engineers to focus on during planned site visits.

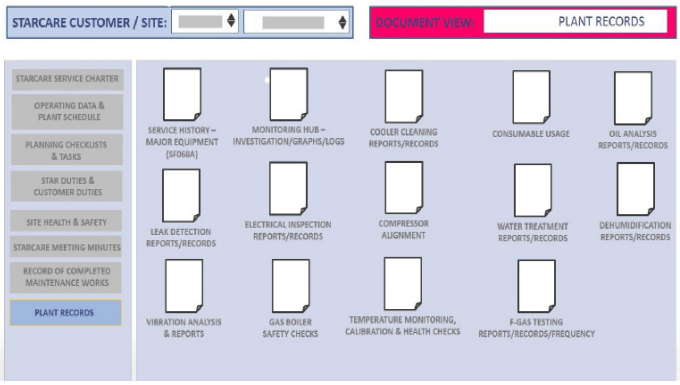
Over and above a proactive condition based maintenance programme, a predictive approach sees live performance data constantly monitored and analysed. The data is regularly reviewed to identify component faults and areas for engineers to investigate immediately to avert potential system failures and costly downtime. Performance data graphing and trend reports can also be compared with the manufacturer's design parameters, with targeted adjustments made to improve efficiency and reduce operating costs.

Star has continually refined and improved its condition based maintenance and remote monitoring service over the past two decades. The latest smart technology has been incorporated to develop its StarCare service, the ultimate in condition based PPM for users of industrial cooling across a wide range of sectors. Playing a key role in asset management, StarCare is designed to extend plant life, improve whole life cost and reduce client spend.

Star has a dedicated StarCare Monitoring Hub at its Glasgow headquarters, which delivers intelligent remote monitoring for industry-leading clients. Focusing on live data analysis, the expert team reviews plant performance and reliability against the plant manufacturer's optimum design parameters. Condition based maintenance techniques employed include quality checks of refrigerant, oil and glycol, monitoring of electrical current, energy usage and tariff optimisation, vibration monitoring of compressors, motors and pumps, thermographic system scans and airflow monitoring before and after cooler or condenser cleaning.

By analysing data from these automated processes, StarCare analysts can make recommendations for engineers to focus on during site visits. Task lists are devised for local engineers to make the appropriate technical adjustments and take action to improve system efficiency.

As well as analysing data to identify current issues and improve performance, sophisticated computer technology now allows the StarCare team to confidently undertake an increasing amount of predictive maintenance. Specialist computer software is used to produce insightful algorithms and trending data, which can be analysed to accurately predict future plant performance and maintenance requirements. As a proactive and predictive PPM programme, StarCare keeps equipment running reliably at optimum performance parameters all year round by monitoring climatic changes and making adjustments to optimise seasonal plant operation and performance. Increasing efficiency enables end users to achieve the best return on their investment by reducing the whole lifecycle cost of the plant. Intelligent data analysis and predictive maintenance also allows plant operators to plan for future capital expenditure, such as component replacement and system overhauls.



Star is continuing to invest in state-of-the-art technology to further improve the proactive and predictive focus of StarCare, its comprehensive and results driven maintenance service. In addition to a dedicated Monitoring Hub, Star provides 24/7 PPM coverage across a national network of nine branch offices, with 10 experienced management teams and over 100 mobile field engineers.

For more information on StarCare, contact: **jward@star-ref.co.uk** expenditure, such as component replacement and system overhauls.

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