

CASE STUDY: Lucite International

PROJECT: R22 Plant Replacement

LUCITE'S LARGEST EUROPEAN SITE IS FUTURE PROOF, NATURALLY

Location:	Billingham, Teesside
Equipment:	2 x Screw Compressor packages, each with 600kW 3.3KV drive motors 1 x heat exchanger package Controlled by Telstar PLC
Refrigerant:	Ammonia
Capacity	3.9MW
Temperature	-10°C

A global leader in the design, development and manufacture of acrylic-based products, Lucite International demands the highest industry standard equipment. Due to the 2015 phase out of R22 systems, the company needed to replace its old R22 plant at Cassel Works, their largest European site, with a more eco-friendly option.

Working closely with Lucite, Star's engineers developed a cost effective, bespoke industrial refrigeration system to replace the aging system. As well as complying with new R22 phase out regulations, Lucite requested increased plant reliability, equipment longevity and a plan that allowed the new cooling system to be designed, constructed and commissioned while the existing plant was still operational to avoid any loss of productivity.

Graham Wallace, Lucite's Project Manager, said, "Lucite wanted to replace the R22 chiller and

increase capacity. Star delivered an energy efficient system that ensures plant reliability and future proofs the business to meet our environmental and legislation needs over the next 25 years."

"Other challenges including space restrictions on site were met by laying out the packages and carrying out all inter-piping at their factory in order to replicate the site footprint. This gave us the confidence that the site installation would prove successful."

"Finally, all match-marked parts were shipped separately and final connections were made once the packages were positioned on site."

Alan Walkinshaw, Star's Sales Manager – Process Industries, said, "Installing the new system without jeopardising the functionality of the old one did have its difficulties. However, the team is always up for a challenge and as usual, innovation and perseverance finally paid off and we came up with an effective solution."



The Star team who specify, design, manufacture and commission Lucite's bespoke refrigeration plant to provide longevity and increased reliability with zero GWP refrigerant ammonia.

The major upgrade consisted of the installation of a 3.9MW – 10oC Glycol chilling system, running on environmentally friendly future-proof refrigerant ammonia (NH3). The entire system comprised of 3 off packages and 2 off screw compressor packages, each Leeds teams with 600KV 3.3 drive motors. Star also installed an innovative outdoor heat exchanger package equipped with water-cooled ST condenser, economiser and PSHE evaporator/separator.

Post project completion, the company stands to profit from three major benefits:

- The new system has significantly increased plant capacity, which will allow for greater productivity of present and future process needs.
- Ammonia is a climate-friendly refrigerant with zero GWP and zero Ozone Depleting Potential, hence extending the longevity of the plant and boosting Lucite's eco-credentials.
- The installation of multiple compressors will allow Lucite to process varying loads. This will enhance plant reliability as well as increase operational efficiency.

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Lucite International now enjoys complete control over the refrigeration plant using Star's next generation control system "TELSTAR", as well as a condition system for vibration monitoring.

When it comes to designing energy efficient cooling and heating systems, Star is a natural innovator. Star works with strategic partners across the globe to deliver low carbon, cost saving solutions.

For more information, phone Star Refrigeration on 0141 638 7916, email star@star-ref.co.uk or visit www.star-ref.co.uk. Star Refrigeration, Thornliebank Industrial Estate, Glasgow G46 8JW.

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