CASE STUDY

CASE STUDY NUMBER 77: New Britain Oils Limited MAY 2012

SLICK SUCCESS AT SUSTAINABLE PALM OIL REFINERY, NEW BRITAIN OILS LTD

Customer:	**New Britain Oils Limited**
Location:	**Liverpool**
Equipment:	**2 x 300kW Inverter driven reciprocating compressors** **1 x Combined surge drum / receiver package unit** **1 x Evaporative condenser**
Refrigerant:	**R717**
Capacity	**600kW**

Star Refrigeration successfully completed a Total Solutions project for sustainable palm oil producer New Britain Oils Ltd (NBOL). The Liverpool based company is part of New Britain Palm Oil Ltd (NBPOL), the largest palm oil producer in Papua New Guinea and The Solomon Islands. NBOL only refines sustainable palm oil that has been independently certified against the standard defined by The Roundtable for Sustainable Palm Oil. Star Refrigeration's ethos of using green sustainable refrigerants, coupled with high efficiency cooling equipment complements the vision and policies of NBOL.

As part of their palm oil refining expansion programme Star worked alongside the NBOL project team and assisted in the development of the palm oil cooling system. Star designed, project managed, installed and commissioned an ammonia refrigeration plant to serve the clients new scraped surface heat exchangers.

The refrigeration system was designed for high energy efficiency, low carbon footprint, longevity and reliability. Key design requirements involved minimising both noise and vibration.

Evaporative condenser connected to the combined surge drum and high pressure receiver package unit

The major equipment consisted of a pair of inverter driven reciprocating compressors, a combined surge vessel/high pressure receiver package unit, an evaporative condenser and Star's refrigeration management system.

High efficiency was accomplished by using Star's very own reciprocating inverter drive technology in conjunction with high efficiency drive motors. The compressor control philosophy further enhanced system energy efficiency characteristics. Heat rejection was achieved using an evaporative condenser complete with Star's **Aether** condenser fan control

system which reduces the annual operating costs by matching fan speed to ambient conditions and cooling load.

Star achieved minimal noise and vibration through careful design of the compressor plinth. Pipework was designed and installed to prevent the transmission of the vibration through the brackets into the building structure.

Compressor plant room

Rapid variation in the production process load meant that the system needed to respond quickly to an instantaneous reduced or increased cooling requirement whilst also maintaining stable temperatures. Star's compressor control system varies compressor speed to match cooling capacity to the production heat loads. This ensures optimum system efficiency, high reliability and most importantly, continuous production.

Star's in-depth knowledge of chilling food products with scraped surface heat exchangers was significant. A key feature of the installation is Star's bespoke combined surge drum receiver which transfers any liquid that returns from the process back to the high pressure receiver within minutes. During commissioning this proved to be of paramount importance in maintaining product trials.

As part of Star Refrigeration's Total Solutions package NBOL employed Star Technical Solutions to carry out an Ammonia Hazard Assessment (based on DSEAR and Health and Safety Regulations). STS also carried out the Written Scheme of Examination. Star M & E Solutions designed and supplied the electrical panels and carried out the entire electrical installation.

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

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