STEEL MILL KEEPS ROLLING, THANKS TO SHELL TURBINE OIL AND VALUE-ADDED SERVICES

TOTAL REPORTED ANNUAL CUSTOMER SAVING

US$57,088

COMPANY: Jiangsu Shagang Group

COUNTRY: China

APPLICATION: Steam turbines

SAVING: US$57,088 total reported annual customer saving

KEY EDGE: Shell Turbo T 46, Shell LubeAnalyst; Shell LubeExpert

Jiangsu Shagang Group (Shagang) in Zhangjiagang, China, is one of the country's largest steel producers. During 2004, the company commissioned four new steam turbines at its power plant using a competitor's steam turbine oil. A few months after commissioning, Shagang discovered that excessive steam ingress to the lubricant system had caused the turbine oil to emulsify and significant amounts of sludge to settle at the bottom of the sump. The site had also experienced accelerated wear to two journal bearings owing to the contamination.

Following a review of the turbine lubricant system, oil analysis data and discussions with site management, the Shell Lubricants technical team proposed ways to improve turbine reliability, which included switching to Shell Turbo T 46 turbine oil, adopting the Shell LubeAnalyst oil condition monitoring service, fitting improved seals to prevent steam ingress and implementing regular draining of water from the bottom of the lubricant tank.

Upgrading to Shell Turbo T 46 has helped Shagang to reduce journal-bearing failures, extend bearing life, prolong steam turbine oil life and improve turbine availability. As a result, the company has benefited from a reported annual saving of US$57,088. Since making the switch, the technical support provided by Shell engineering staff has helped Shagang to maintain reliable turbine operations.

1 CHALLENGE

Shagang experienced problems in its power plant steam turbines. Excessive steam ingress to the lubricant system had caused the turbine oil to emulsify and form significant amounts of sludge, which settled at the bottom of the sump. The excessive contamination had further contributed to the accelerated wear of two journal bearings.

2 SOLUTION

Shagang switched to Shell Turbo T 46, which provides excellent steam and water demulsibility. Utilising the Shell LubeAnalyst oil condition monitoring service enabled the company to proactively manage the lubricant's condition. The Shell LubeExpert service helped Shagang to improve its seal design, scheduled maintenance activities and contamination control.

3 OUTCOME

By taking advantage of Shell Turbo T 46's excellent performance and the Shell LubeAnalyst and Shell LubeExpert value-adding technical services, Shagang has reduced the incidence of bearing failures, extended the oil-drain interval and improved overall turbine reliability.

4 VALUE

The company has benefited from a reported annual saving of US$57,088.[1] The technical support provided by Shell engineering staff has helped Shagang to maintain reliable turbine operation.

[1]The savings indicated are specific to the calculation date and mentioned site. These calculations may vary from site to site, depending on the application, the operating conditions, the current products being used, the condition of the equipment and the maintenance practices.

SHELL TURBO T

HIGH-QUALITY INDUSTRIAL STEAM AND GAS TURBINE OILS

Shell Turbo T oils have long been regarded as the industry-standard for turbine oils. Building on this reputation, Shell Lubricants has developed the oils to offer improved performance that meets the demands of the most modern steam turbine systems and light-duty gas turbines that do not require enhanced anti-wear performance for the gearbox. Shell Turbo T oils are formulated from high-quality hydrotreated base oils and a zinc-free additive combination that provide excellent oxidative stability, protection against rust and corrosion, low foaming tendency and excellent demulsibility.

Applications

Shell Turbo T oils are available in ISO grades 32, 46, 68 and 100, and are suitable for

- industrial steam turbines and light-duty gas turbines that do not require enhanced anti-wear performance for the gearbox
- hydro-turbine lubrication
- turbocompressors
- applications where a high-performance rust and oxidation inhibited oil is required.

Performance features and benefits

- Strong control of oxidation. The use of inherently oxidation-resistant base oils with an effective inhibitor package provides high resistance to oxidative degradation. The result is extended oil life; minimal formation of aggressive, corrosive acids, deposits and sludge; and reduced operating costs.
- High resistance to foaming with rapid air release. The oils are formulated with a non-silicone anti-foam additive, which generally controls foam formation. This feature, coupled with fast air-release from the lubricant, reduces the possibility of problems such as pump cavitation, excessive wear and premature oil oxidation to give increased system reliability.
- Positive water-shedding properties. Shell Turbo T oils offer robust demulsibility control such that excess water, commonplace in steam turbines, can be easily drained from the lubrication system. This minimises corrosion and premature wear, and lowers the risk of unplanned maintenance.
- Excellent rust and corrosion protection. The oils help to prevent the formation of rust and guard against the onset of corrosion, which provides protection for equipment that is exposed to humidity or water during operation or shutdown, thereby minimising maintenance.

Specifications and approvals

Siemens TLV 901304; Alstom Power Turbo-Systems HTGD 90-117; General Electric GEK 28143b Type I (ISO 32), GEK 28143b Type II (ISO 46) and GEK 46506E; Siemens Westinghouse 21T0591 and PD-55125Z3; DIN 51515 Parts 1 and 2; ISO 8068; Solar ES 9-224W Class II; GEC Alstom NBA P50001; JIS K2213 Type 2; BS 489-1999; ASTM D4304, Type I; and Siemens/Mannesmann Demag 800037 98.

Complementary products

Equipment	Lubricants
Steam turbines	Shell Turbo DR 46 fire-resistant EHC fluid
Transmission systems	Shell Diala electrical oils
Coal pulverisers	Shell Omala gear oils