

Protecting your machinery using a premium turbine oil can prevent serious damage leading to serious savings

Total customer saving

US\$72,000



The customer is one of the UK's most dynamic electricity generators, responsible for the management and operation of pumped storage plants.

Country: United Kingdom

Application: Hydro electric turbines

Saving: US\$72,000 total customer saving

Key edge: Shell Turbo GT 46 and Shell LubeAdvisor

An increase in operational temperatures caused serious bearing wear and production outages.

Due to its performance characteristic of producing lower operational bearing temperatures, Shell Turbo Oil GT 46 synthetic based turbine oil was introduced to the plant which experienced an immediate decrease in thrust bearing temperatures saving the company approximately US\$72,000 in avoided downtime.



1 The Challenge:

The customer's turbine units ran well on a Shell conventional mineral oil however, sudden changes in load increased the thrust bearing temperature. This resulted in the white metal being stripped from the bearings causing the turbine to trip. Numerous bearings failed and although poor bearing design was recognised to be the cause of the problem, Shell was approached for lubrication support.

3 The Outcome:

The customer experienced both short and long term benefits subsequent to the implementation of Shell Turbo GT 46.

- Thrust bearing temperatures dropped almost immediately by 8°C (from high to low 90's)
- Shell Turbo GT 46 lowered the bearing temperature of the white metals, which gave the operators time to work on an engineering fix
- Where the previous product required renewal every two years, oil life increased using Shell Turbo GT 46, which was in good condition after the same amount of time. As a result, maintenance intervals also increased.

2 The Solution:

After a thorough inspection including an assessment using Shell LubeAdvisor, a Shell Product Plus Service, Shell Turbo GT 46 turbine oil was recommended as a premium product alternative due to its properties generating lower bearing operating temperatures. Designed to offer long service life under severe operating conditions, Shell Turbo GT 46 also provides protection against rust and corrosion.

4 The Value:

A quick change to Shell Turbo GT 46 prevented this power plant from experiencing an unplanned outage where penalties can cost as much as US\$60,000 per day. On top of this the company saved on bearing remounting costs of approximately US\$12,000. This quick and effective solution can be seen as generating a cost saving of US\$72,000 in avoided downtime.

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

Shell Turbo Oil GT

High performance industrial gas turbine lubricant

Shell Turbo Oil GT has been developed for the most severe operating conditions imposed by modern, heavy duty industrial gas turbines.

Outstanding oxidation stability

The lubricant's service life depends, to a great extent, on its oxidative stability.

Greater protection against thermal degradation

Higher bearing temperatures which are particularly severe during stop/start cycling conditions, may lead to bearing deposits and the formation of harmful sludge in the system which subsequently may result in expensive downtime and reduce service life of system components.

Excellent air release characteristics

Effective air release with a minimum of foaming tendency as required by modern gas turbines.



Main applications

Shell Turbo GT is used as lubricating oil for main shaft bearings and mechanical gears as well as governor oil in the turbine control valves in modern gas turbines.

Further industrial applications

Shell Turbo GT may also be used for other industrial applications requiring a high performance gas turbine oil, like lubrication of turbo compressors.

Complementary products

Equipment	Lubricants
Turbines - Gas and Steam	Shell Turbo C, Shell Turbo T



Shell Lubricants

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