



# THAI POWER COMPANY EXTENDS GEAR UNIT LIFE WITH SHELL TURBO CC 46

TOTAL REPORTED ANNUAL CUSTOMER SAVING  
**US\$716,905**



**COMPANY:** Power company

**COUNTRY:** Thailand

**APPLICATION:** Steam turbines

**SAVING:** US\$716,905 total reported annual customer saving

**KEY EDGE:** Shell Turbo CC 46, Shell LubeAdvisor, Shell LubeReclaim, Shell LubeAnalyst

**A Thai power company was experiencing excessive wear in the reduction gear unit of its steam turbine. It needed to replace the gear unit, which took about seven days, and refill the turbine with lubricant. The equipment manufacturer attributed the excessive wear to the lubricant's insufficiently high specification. The company sought advice from Shell.**

Shell offered the Shell LubeAdvisor service to help the company select the replacement lubricant. The company chose Shell Turbo CC 46, which met the required specifications. Shell also provided the Shell LubeReclaim service to clean the oil sump tank and refill it with the new oil. The company took advantage of Shell LubeAnalyst to check the condition of the oil in the tank.

Since the company changed to Shell Turbo CC 46, there have been no oil-related problems with the gear unit. By extending the life of the component, the company has reduced the cost of spare parts and the staff time needed to clean the sump tank and refill it with the oil. It has also increased power production from fewer unplanned shutdowns. As a result, the company has reported total annual savings of US\$716,905.



# 1

## CHALLENGE

A Thai power company was experiencing excessive wear in the reduction gear unit of its steam turbine because the lubricant was of insufficiently high specification. The company needed to replace the gear unit and refill the turbine with lubricant.

# 2

## SOLUTION

Shell offered the Shell LubeAdvisor service to help the company select the replacement lubricant. The company chose Shell Turbo CC 46, which met the required specifications. Shell also provided the Shell LubeReclaim and Shell LubeAnalyst services.

# 3

## OUTCOME

Since the company changed to Shell Turbo CC 46, there have been no oil-related problems with the gear unit.

# 4

## VALUE

By extending the life of the gear component, the company has reduced the cost of spare parts and the staff time needed to clean the sump tank and refill it with the oil. It has also increased power production from fewer unplanned shutdowns. As a result, the company has reported total annual savings of US\$716,905.<sup>1</sup>

<sup>1</sup>The savings indicated are specific to the calculation date and mentioned site. These calculations may vary from site to site and from time to time, depending on, for example, the application, the operating conditions, the current products being used, the condition of the equipment and the maintenance practices.



## SHELL TURBO CC

PREMIUM-QUALITY INDUSTRIAL GAS, STEAM AND COMBINED-CYCLE TURBINE OILS

Shell Turbo CC oils have been developed to meet the severe demands imposed by modern, heavy-duty turbine applications and exceed equipment manufacturers' specifications for both gas and steam turbines. A patented, metal-free additive technology ensures that these products offer substantially improved performance over conventional turbine oils. The unique combination of excellent oxidation and thermal stability, resistance to the formation of deposits and varnish, sludge control and surface properties make Shell Turbo CC an excellent lubricant choice for combined-cycle turbine technology and gas and steam turbine plants.



### Applications

- Power generation combined-cycle turbines
- Industrial steam turbines
- Industrial gas turbines

### Performance features and benefits

- Superior oxidation and thermal stability. Modern combined-cycle and stationary gas turbines that operate at high power outputs can be very stressful for the oxidation and thermal stability of the turbine oil. Lubricant stability failure can create operational problems, system deposits and the formation of varnish in critical areas. Shell Turbo CC oils are especially designed to cope with these conditions. Their oxidation and thermal stability, coupled with the resistance to form deposits and varnish, reduces the possibility of unplanned outages. The result is extended oil life and less maintenance and downtime.
- Rapid air release and high resistance to foaming. High oil flows contribute to the possibility of entrapped air, which can lead to pump cavitation, premature oil oxidation and excessive wear. Shell Turbo CC oils exhibit excellent surface properties, minimal foam formation and

rapid air release, which minimises air entrapment and reduces the effects of high oil flows to a minimum.

- Excellent water-shedding properties. Water contamination is commonplace in steam turbines and causes corrosion and affects bearing lubrication. Because of Shell Turbo CC oils' good demulsibility, water can be drained easily from the lubrication system to protect the installation against corrosion and premature wear.
- Good load carrying capacity. Shell Turbo CC's ashless, non-zinc anti-wear system reduces excessive gear-tooth and turbine-component wear, which makes the lubricant suitable for use in turbines with highly loaded gears. It minimises downtime and maintenance costs.

### Specifications and approvals

Shell Turbo CC exceeds the major gas and steam turbine manufacturers lubricant specifications, including General Electric GEK 28143A, GEK 32568F, GEK 46506E, GEK 101941A and GEK 107395A; Siemens-Westinghouse 21 T0591 and 55125Z3; Siemens/Mannesmann Demag 800 037 98 TD 32/TD 46; Solar ES 9-224W Class II; DIN 51515 Part 1 L-TD and Part 2 L-TG; ISO 8068 LTGB and LTGSB; GEC Alstom NBA P50001A; JIS K-2213 Type 2; ASTM D 4304-06a Types I, II and III; and BS 489-1999. It is approved by the equipment manufacturers for Siemens TLV 9013 04 and Alstom HTGD 90-117.

### Complementary products

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