



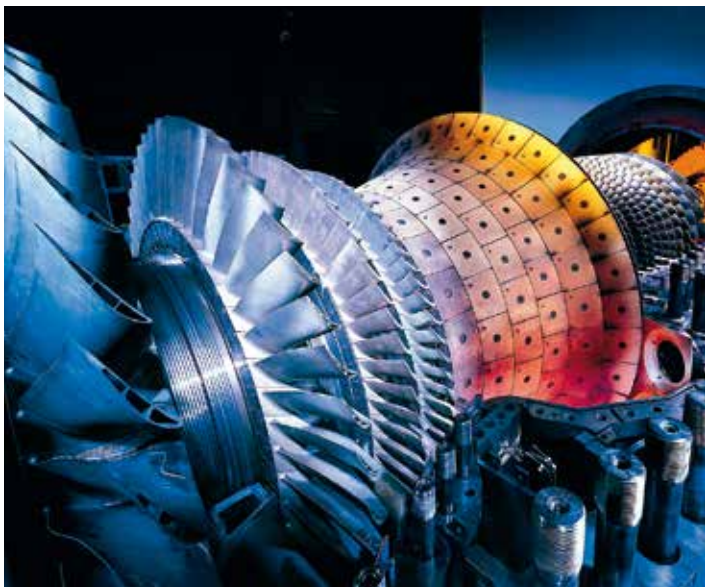
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SHELL TURBO OILS – FOR ENHANCED PROTECTION, EXTENDED OIL LIFE, AND EXCELLENT SYSTEM EFFICIENCY.

Shell
Turbo

www.shell.com/lubricants





Every part of your machine or process has been meticulously engineered, so you want to be sure that you choose a lubricant that has been designed to ensure that your equipment is well protected and works efficiently.

Shell has developed a range of turbine oils that enables users such as power companies and process plant operators to select the oil that will deliver optimum value to their operations through enhanced protection, long oil life and high system efficiency.

SYSTEM PROTECTION

From high-temperature gas turbine systems to combined-cycle systems with integral gearing, the Shell Turbo range of turbine oils is designed to protect your equipment from the effects of corrosion and to minimise the build-up of deposits and lacquer in turbine bearings and control valves. It includes Shell Turbo S4 GX, which is specifically formulated to provide additional protection for gearboxes in turbine systems that require enhanced anti-wear performance from the oil.

OIL LIFE

Because Shell understands the costs that downtime can incur in a capital-intensive plant, its lubricants are designed for exceptional oil life under continuous operating conditions. The products are designed to ensure outstanding oxidative stability and to resist the effects of water contamination. Shell's manufacturing processes are tightly controlled to ensure that customers receive only the highest-quality lubricants.

SYSTEM EFFICIENCY

To help your turbines perform to their full operating potential, the Shell Turbo range of turbine oils is designed to have rapid air release and excellent filterability characteristics.

SHELL SERVICES FOR POWER COMPANIES

The Shell offer extends beyond oil products. It also includes services such as support with commissioning, flushing, filling and filtration, and ongoing oil condition monitoring, which can help you to run your operation as efficiently and cost-effectively as possible.

REAL-WORLD VALUE DELIVERY EXTENDED OIL LIFE

Enhanced system efficiency

By switching from a competitor product to a Shell Turbo oil, one customer reported that they

- increased the oil-drain interval
- reduced lubricant and maintenance costs
- enhanced production capability.

In total, the customer stated that this was worth around \$60,000¹ a year.

Enhanced system efficiency

After suffering a series of operational issues, one turbine operator switched to a Shell Turbo oil. This

- reduced journal bearing failures
- extended the bearing life
- improved plant reliability.

In total, the customer reported that this cut operating costs by 37%¹.



¹Savings reported by individual customers. Actual savings may vary, depending on the application, the current oil used, the maintenance procedures and the conditions of the equipment.

SHELL'S RANGE OF TURBINE OILS ENABLES USERS TO SELECT THE OIL THAT WILL DELIVER OPTIMUM VALUE TO THEIR OPERATIONS THROUGH ENHANCED PROTECTION, LONG OIL LIFE AND HIGH SYSTEM EFFICIENCY.



A RANGE OF TURBINE OILS TO MEET YOUR NEEDS

To meet the challenges of a wide range of equipment designs and applications, Shell has designed a portfolio of oils that enables you to choose a product to match your technical and operational needs.

INCREASINGLY EFFICIENT PROTECTION



ADVANCED TIER 4

MAIN LINE TIER 2

<p>INDUSTRIAL STEAM, LIGHT- AND HEAVY-DUTY GAS, COMBINED-CYCLE TURBINE SYSTEMS, AND TURBO COMPRESSORS</p>	<p>INDUSTRIAL STEAM, LIGHT- AND HEAVY-DUTY GAS AND COMBINED-CYCLE TURBINES, INCLUDING GEARED TURBINES WITH LOAD REQUIREMENTS</p>	<p>INDUSTRIAL STEAM AND LIGHT-DUTY GAS TURBINES AND TURBOCOMPRESSORS</p>
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Shell Turbo S4 X

- Extended oil life²
- Enhanced efficiency²

Shell Turbo S4 GX

- Extended oil life²
- Enhanced wear protection²

Shell Turbo T

- Reliable performance
- Reliable protection

Shell Turbo J

- Satisfies requirements of MHPS steam and gas turbines

APPLICATION ICON KEY

Turbine	Turbo compressor
Power station	Enclosed gear
High temperature	Long life

²Compared with market representative products

PRODUCT	CATEGORY	BENEFITS	TECHNOLOGY	ISO VISCOSITY GRADES	SPECIFICATIONS AND APPROVALS <small>(Full details of approvals for all products can be obtained from your Shell representative; approvals and claims will vary by viscosity grade.)</small>
Shell Turbo S4 GX	Industrial steam, light- and heavy-duty gas and combined-cycle turbines, including geared turbines with load requirement.	<ul style="list-style-type: none"> Extended oil life* Enhanced wear protection* 	Shell GTL (gas-to-liquids) technology	32, 46	Approved by or meets Alstom, HTGD 90 117 V0001 Y; ASTM 4304-13 Type I, II and III; Dresser Rand 003-406-001 Type I and III; GB 11120-2011, L-TSE, L-TGE and L-TGSE; General Electric GEK 32568j, GEK 46506e, GEK 28143b, GEK 101941a, GEK 107395a and GEK 120498; Siemens Power Generation TLV 9013 04 and 05, Ruston report 65/0027, Turbo-machinery 1CW0047915; Solar ES 9-224W Class II; MAN D&T SE TED 10000494596; ISO 8068 L-TSE, L-TGE and L-TGSE; JIS K-2213 Type 2; DIN 51515 Part 1 L-TD and Part 2 L-TG
Shell Turbo S4 X	Industrial light- and heavy-duty gas turbines, and turbocompressors	<ul style="list-style-type: none"> Extended oil life* Enhanced efficiency* 	Shell GTL (gas-to-liquids) technology	32	Approved by or meets Alstom, HTGD 90 117 V0001 Y; Dresser Rand 003-406-001 Type I and III; General Electric GEK 32568j, GEK 46506e, GEK 28143b Type I and VII, GEK 107395a and GEK 120498; Siemens Power Generation TLV 9013 04 and 05, Ruston report 65/0027, Turbo-machinery 1CW0047915 (non-EP); Westinghouse 21 TO591 and 55125Z3 and Eng Spec_DP21T00000443; Solar ES 9-224W Class II; MAN D&T SE TED 10000494596; ASTM 4304-13 Type I and III; GB (China) 11120-2011, L-TGA, L-TSA and L-TGSB; DIN 51515 Part 1 L-TD and Part 2 L-TG
Shell Turbo T	Industrial steam and light-duty gas turbines and turbocompressors	<ul style="list-style-type: none"> Reliable performance Reliable protection 	Mineral oil	32, 46, 68, 100	Approved by or meets Siemens TLV 9013 04; Alstom HTGD 90-117 V; MAN Turbo SPD 10000494596; MAG Cincinnati P-38, P-55 and P-54 (appropriate viscosity grade); GEK 27070, 28143A, 46506E, 32568f and 107395a; Siemens Westinghouse 55125Z3; GEC Alstom NBA 50001A; Solar ES 9-224W Class II; DIN 51515 Parts 1 (L-TD) and 2 (L-TG); ISO 8068; JIS K-2213 Type 2; ASTM D4304-06a Type I and III; and BS 489:1999
Shell Turbo J	Industrial steam and light-duty gas turbines and turbocompressors	<ul style="list-style-type: none"> Reliable performance Reliable protection 	Mineral oil	32	Meets the following MHI specifications: Turbine Oil Type 2 (additive); MS04-MACL001 (R-1); MS04-MA-CL002 (R-1).

*Compared with market representative products

FULL PRODUCT AND SERVICE PORTFOLIO

Shell Lubricants is the market leader in lubricants and has more than 70 years of innovation. We are constantly investing to develop better lubrication solutions, as demonstrated by

- Shell Diala S4 ZX-I – a premium, inhibited transformer oil
- Shell Turbo DR – a fire-resistant, synthetic turbine oil.

In addition, Shell provides the Shell LubeAnalyst service, an early-warning system that helps to identify potential oil and equipment failures before they become critical and to extend oil-drain intervals. It is a global platform available in 95 countries and 27 languages, and with more than 75 million data points.

Whatever your needs or application, Shell can provide a full range of oils and greases, including synthetic, high-performance products and additional services.



Find out more by visiting
www.shell.com/lubricants