# The benefits offered by



## **TOTAL ANAC INDUS**

is an in-service oil monitoring solution to help you optimize drain intervals and extend the service life of your equipment.

This solution aims to improve the reliability and performance of your equipment.



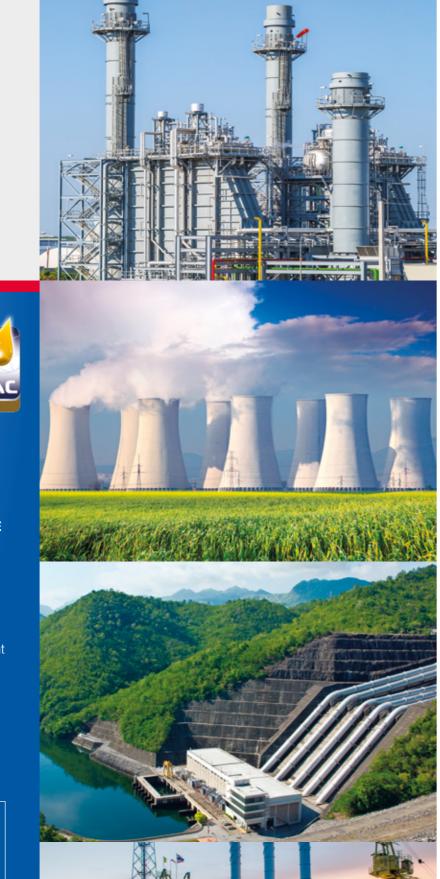
For turbines, in particular, Total offers **ANAC TURBINE** standard to help you monitor the key parameters that are critical for their operation:

- Water content (Karl Fischer Method) from 10ppm to detect accidental water pollution, ideal for hydro, steam, or gas turbines operating in a humid environment.
- AIR option (air release and foaming) to prevent wear and control malfunctions caused by air contamination in oil, regardless of turbine type.
- MPC option (Membrane Patch Colorimetry) to detect the presence of degradation byproducts, varnishes and lacquers on critical components of gas turbines.



Our teams are dedicated to assisting you with turbine oil monitoring and commissioning:

- Flushing and first fill of your turbine
- Oil filtration
- Particle counting and monitoring of oil cleanliness classes
- Water contamination treatment
- Prevention of varnish build-up
- Waste oil management



# A major player

With our production, supply chain and commercial presence in more than 150 countries, we deliver a full range of lubricants.

# Support and partnership

Thanks to local technical presence, we provide a high level of service to optimize your Total cost of Ownership.

## References & OEMs

**TOTAL** Lubricants cooperates with equipment manufacturers to create high-technology products for optimal performance and production of your machinery.



# TOTAL invests in

biotechnologies to find the most suitable components to reach energy efficiency through formulations designed in our Research Centers.

& Research

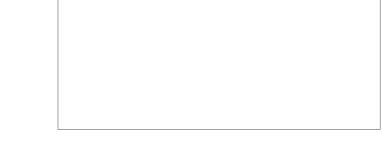






# **Quality and environment**

TOTAL Lubricants ISO 9001 certification is the guarantee of a long term commitment to quality. From the initial design stage, our R&D teams seek to develop products that minimize toxicity risks and environmental impact.



Safety Data Sheets are available at www.quickfds.com www.industrial.lubricants.total.com





Power up your performance with our turbine oils





For over 40 years, TOTAL Lubrifiants has been designing and developing innovative and highperformance products.

With the benefit of our extensive experience with original equipment manufacturers, Total offers you a complete range of lubricants and services for all turbine types: hydro, steam, gas, combined-cycle, or aeroderivative gas turbines.

RAMP UP TO FULL CAPACITY WITH PRESLIA!



# A local player, a worldwide presence.

Total Experience means you benefit from our locally based expert support and strong know-how.

It also means you have direct access to our high value-added services for turbines, including oil monitoring and implementation of our onsite turbine filling package.

You can rely on logistics support and personal assistance from our 130 affiliates to carry out your projects.

Total Commitment means you can count on us to continually produce more innovative and efficient products that respect people and the environment. By choosing Total, you share in our commitment to better energy.

# A full range of products for all your needs.

Total closely monitors technological developments and new turbine operating profiles. We have developed a range of advanced, cutting-edge oils to cover all your needs:

- Oil drain interval extension with PRESLIA GT
- Protection against varnish and degradation by-products with **PRESLIA EVO**
- Respect for the environment and aquatic systems with **BIOPRESLIA HT**

By choosing Total, you are assured of **manufacturer-approved products** that have a proven track record in the field.

Customers who trust our products include: GENERAL ELECTRIC, ALSTOM, SIEMENS, DOOSAN SKODA, ANSALDO...

# **OEMs SPECIFICATIONS**

### **MINERAL**

#### **PRESLIA**

- Prevents equipment wear.
- Suitable for all types of power stations.

### BENEFITS

#### Superior equipment protection.



Air contamination in the oil can seriously damage your equipment and cause pressure drops in pumps due to the cavitation effect. When oil ages, it inevitably loses its air release properties. That is why it is crucial to formulate ultra-high-quality turbine oils with optimal air release capacity from the start.



**PRESLIA SE JET** 

Long-life oil.

conditions.

**▶** BENEFITS



Aeroderivative gas turbines requiring

Superior equipment availability

and reliability, even under extreme

Total also operates aeroderivative gas turbines on its own

oil rigs. PRESLIA SE JET fully meets Total's reliability

and operational excellence requirements.

MIL PRF 23699 G class fluid.







# PRESLIA GT

- Excellent oxidation resistance.
- Long-life oil.
- Use under severe conditions.

## **BENEFITS**

**Reduction** in maintenance costs. Suitable for **combined-cycle power plants** and modern land-based gas turbines.

# Did you know?

PRESLIA GT has demonstrated excellent oxidation resistance, achieving a result significantly higher than 10,000 hours TOST life (Turbine Oxidation Stability Test). The TOST test is directly related to the oil lifetime.



PRESLIA SE HTS

■ Prevents deposit build-up.

BENEFITS

degradation.

category.

Aeroderivative gas turbines requiring

Designed for turbines subject to high

Due to its low coking tendency, PRESLIA SE HTS

has a 20 % longer service life than fluids of the same

SYNTHETIC

thermal stress or facing premature oil

MIL PRF 23699 G HTS class fluid.

■ Ultra-high-temperature resistance.



## PRESLIA EVO

- Excellent thermal stability.
- Prevents varnish formation and deposits.

## **BENEFITS**

**Extends critical components service life** by preventing the varnishing of bearings and servo-valves. Suited to modern highefficiency gas turbines, **flex systems** and peaking power plants.



## Did you know?

This new generation oil has proved to be effective in preventing deposits, with outstanding results in specific trials under high thermal stress (Dry TOST and MAN LTAT).











Manufacturers recommend zinc-free hydraulic oil for use

in steam turbines. Zinc-based additives can degradate

in the presence of water and form build-up deposits.

**MINERAL** 

Prevents build-up deposits when accidentally

**AZOLLA AF** 

Good filterability.

in steam turbines.

**BENEFITS** 

Did you know?

contaminated by water.

■ Excellent oxidation resistance.

Optimizes the **reliability** of the

electro-hydraulic control system



## **HYDRANSAFE FR EHC**

- Turbines requiring phosphate ester fluids (HFDR class).
- No toxicity for operators.
- Highly fire-resistant.

# **BENEFITS**

**Safe** for your facilities and operators.



## Did you know?

Conventional HFDR fluids may contain carcinogenic, mutagenic and reprotoxic substances. Total prohibits the use of these compounds, preferring a safer, more healthfriendly fluid: Hydransafe FR EHC.











#### Meets most OEMs specifications SIEMENS zinc free

#### **HYDRANSAFE FR EHC** For EHC systems in steam and combined-cycle turbines

**PRESLIA** For steam, gas, combined-cycle turbines and turbocompres

**PRESLIA GT** 

For gas, combined-cycle turbines and turbocompressors

**PRESLIA EVO** For gas, combined-cycle turbines and turbocompresso

> **BIOPRESLIA HT** For hydro turbines

> **PRESLIA SE JET**

**PRESLIA SE HTS** 

For aeroderivative gas turbines

**AZOLLA AF** 

For EHC systems in steam and combined-cycle turbi

For aeroderivative gas turbines

Ecolabel

GENERAL ELECTRIC GEK 27070, GEK 28143, GEK 46506, GEK 32568

SIEMENS Turbo AB - MAT 812101/02/

SIEMENS Turbomachinery 1CW0047915

MAN ENERGIE ME-TTS 001/18/92

MAN ENERGIE ME-TTS 001/18/92

SIEMENS Turbo AB - MAT 812101/02/

SIEMENS Turbomachinery 1CW0047915

SIEMENS Turbo AB - MAT 812101/02/ 06/07/08/09

ANDRITZ ALSTOM HYDRO

ISO 15380 (HEES fluids)

GENERAL ELECTRIC LM series

GENERAL ELECTRIC LM series

VOITH HYDRO

ALSTOM HTGD 9011 ALSTOM HYDRO HTWT 600050

DOOSAN SKODA, TURBINY PLZEN

SIEMENS POWER TLV 901304 & 05

DOOSAN SKODA, TURBINY PLZEN

FUJI ELECTRIC steam turbine

HTC Hanghzou steam turbine

SOLAR FS 9-224W Class II

ALSTOM HTGD 90117

NANJING TURRINE (NTC)

SOLAR ES 9-224 W Class II

ALSTOM HTGD 90117

SIEMENS / ROLLS-ROYO 501-K, RB 211, Avon

SIEMENS / ROLLS-ROY

MAN Turbo SPD 10000494596 SIEMENS POWER TLV 901304 & 05

ANSAL DO

ANSAL DO

Meets most OEMs specifications

ALSTOM HTGD 690 SIEMENS - TLV 90102

SYNTHETIC

- Multifunctional for hydro turbines and hydraulic

# **BENEFITS**

Environmentally friendly. Product rationalization.



That is why it is important to use biodegradable lubricants in natural environments.



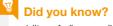
# **BIOPRESLIA HT**





- Eco-compatible 🔞
- Highly stable in the event of accidental water intake.





1 liter of oil can pollute 1,000,000 liters of water.

