NovaLT16

Setting a new standard for 16 MW class turbines in mechanical drive and power generation applications
Today’s oil and gas operators need to transport gas from increasingly remote locations, in harsh environments and under more stringent regulations than ever before. This has led to a demand for greater efficiency, reduced emissions and easier maintainability of critical equipment.

Our new 16.5 MW LT16 gas turbine is designed to provide 37 per cent mechanical efficiency – raising the standards of efficient and reliable pipeline compression, power generation and oil and gas plant compression — to help meet increasing energy requirements across the world.

efficiency & flexibility

The LT16 is a two-shaft gas turbine specifically designed for compressor drive and power generation in oil and gas and industrial applications. With a power turbine speed of 7,800 rpm, it is ideally suited for pipeline compression — with direct coupling to the latest generation of PCL pipeline compressors featuring high performance stages and 89% or higher compressor efficiency.

It is full of exceptional advantages for any operation — including up to 99% availability. It is designed for a 35,000-hour mean time between maintenance, which translates into four years of non-stop running for the gas generator module and eight years for the power turbine module.

Adding to the benefit of long intervals without maintenance, the LT16 also enables extremely short intervals for the maintenance. In fact, the modular maintenance philosophy is so efficient that a cold-condition unit can be swapped in just 24 hours.

Beyond the mechanics of the turbine itself, the complete package is designed with the ultimate performance and support features as standard on even the base model – fully equipped with integrated monitoring and diagnostics sensors and remote tuning capability.

Topline Figures
• 16.5 MW shaft power
• 37% efficiency, mechanical drive
• 36% efficiency, electrical (simple cycle)
• 80% efficiency, CHP
• 99% availability
• 35,000 hours MTBM – 4 years of continuous operation with no need for maintenance stops
• Currently guaranteeing 25 ppm of NOx emissions

Working with purpose

From manufacturing and testing to installation and lifecycle support, our people have a sense of purpose that never falters. And wherever in the world they work — at our own advanced facilities, a customer’s site or a remote location under the most extreme conditions — their commitment to the environment, health and safety, quality and integrity is unrelenting.

Integrity
Doing it right and striving to do it better is part of our culture. That means demanding more of our processes and our technologies and operating with honesty and integrity, whatever the challenge.

Environmental Health & Safety
We work hard to mitigate risk and consider people, communities and the natural world in everything we do. That applies to everything from the layout of our workshops to GE’s global ecomagination program, dedicated to delivering products that are better for business and the environment.

Quality
Driven by practical industry challenges, our innovative solutions build on proven technologies and undergo rigorous testing and qualification. Our objective is to deliver improvements you can measure — in efficiency, reliability, availability and performance.
There’s no need for annual DLN tuning. We perform an initial DLN tuning during commissioning and on a four-year basis thereafter (via remote connection with GE Oil & Gas RM&D Centers) to coincide with the gas generator swap.

Two-stage HP turbine section featuring Single Crystal buckets on both stages – the best available metallurgy for extended durability.

Every unit comes with built-in Predictivity™ Solutions to greatly improve local team’s asset management abilities while enabling fast and easy expert support from the GE Oil & Gas iCenters in Florence, Houston and Kuala Lumpur – for isolated incidents or ongoing performance optimization.

Oil and starting systems are easily accessible outside of the enclosure, making routine maintenance more ergonomic (lower noise, lower heat) for the comfort and safety of the operator. Ladders and walkway are integrated in structures for improved ergonomics.

Primary Applications

Pipeline compression

The LT16 power and output speed rating (7,800 rpm) make it ideal for modern pipeline stations used for gas transport worldwide.

Power generation

The LT16 is widely applicable across a wide range of oil and gas plants (exploration and production, gas and oil treatment, etc.), as well as other industrial and commercial uses. It is particularly well suited to applications where thermal power is recovered from the turbine exhaust. The LT’s exhaust gas temperature is typically 490ºC, thus achieving 80% efficiency in combined heat and power (CHP) applications.

General mechanical drive

Our engineering teams have also taken into consideration the requirements for various other applications across the oil and gas industry, including gas lift, gas re-injection and gas gathering.
Compressor & combustion

- The axial compressor is an evolution of our MS5002E design with one stage added (taking it from 11 to 12) for improved efficiency – increasing the pressure ratio from 17:1 up to 19:1.
- There are three variable geometry stages (IGV, S1 and S2) for a wide speed range and surge robustness.
- The ruggedized single annular combustor and 360° combustion casing were developed from our GE5 unit – delivering a compact and flexible design with reduced emissions.

- Adapted from our GE5 and leveraging experience from our aeroderivative LM family, the 39 premixers with double counter-rotating swirler deliver perfect air-fuel mixing plus easy maintenance.

Turbine section

- The 1st and 2nd HP buckets are made of Single Crystal N4 material to ensure superior efficiency and durability while eliminating the need for thermal barrier coatings.
- The LP turbine has a variable-geometry nozzle for higher efficiency and improved emissions at part load (ideal for pipeline applications with direct coupling) and a full 360° casing for tight clearance control.

The LT16 is designed to maximize production and minimize risk. Its five-year, $330 million research and development program has combined our latest advances in design and materials with the evolutionary adaptation of key features from industry-proven GE turbines which have more than a million combined hours of operating experience in oil and gas applications. It is therefore the best of both worlds – new and proven.
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machine architecture

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Alter your perception of what a 16.5 MW gas turbine should be at:
geoilandgas.com/alter_your_perception