GE Oil & Gas

NovaLT16

Setting a new standard for 16 MW class turbines in mechanical drive and power generation applications

Our focus on technology development for oil and gas applications is at the core of everything we do. GE Oil & Gas leverages the vast capability of the GE global research organization to bring the best technology from a wide range of industries into the oil and gas segment. We work closely with our customers to create practical solutions to their most extreme operational challenges.

efficiency & flexibility

Our new 16.5 MW NovaLT16 gas turbine is designed to provide 37 per cent mechanical efficiency for pipeline compression, power generation and oil and gas plant compression to help meet increasing energy requirements across the world.

The NovaLT16 is a two-shaft gas turbine specifically designed for mechanical 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 NovaLT16 also enables extremely short intervals for conducting maintenance activities. In fact, the modular maintenance philosophy is so fully optimized that a cold-condition engine 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 – 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.

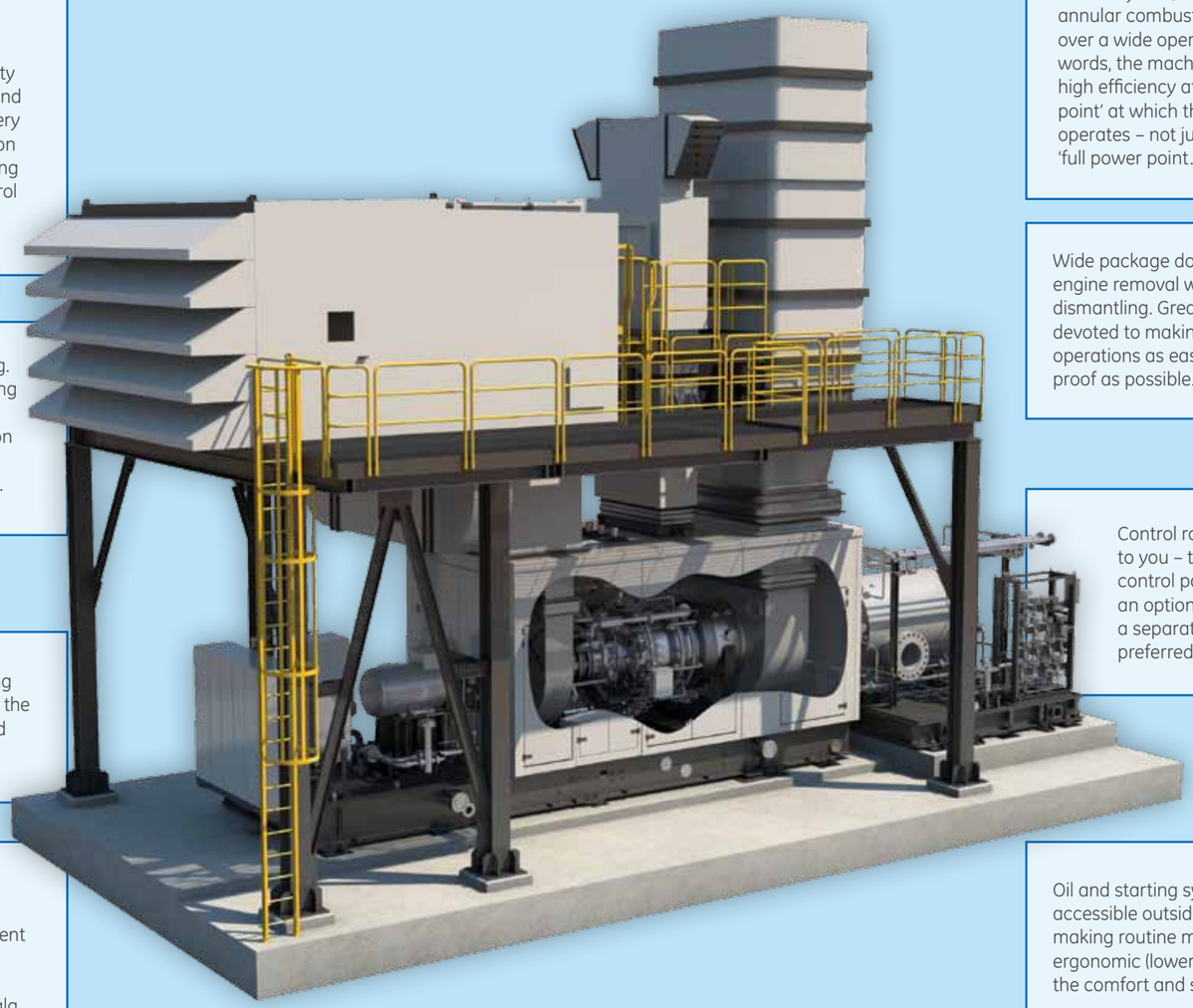
availability & maintainability

The package is designed for performance-enhancing connectivity to minimize the need for worker activity and reduce potential security issues and operating costs. Standard items in every NovaLT16 package include: combustion dynamic monitoring, remote monitoring and diagnostics hardware in the control panel, built-in diagnostic software.

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 ongoing performance optimization.



Two-stage LP turbine with variable geometry nozzle maintains high efficiency and, together with the DLN annular combustor, reduce emissions over a wide operating range. In other words, the machine is designed for high efficiency at the 'partial power point' at which the machine usually operates – not just the rarely used 'full power point.'

Wide package doors for simplified engine removal with no structural dismantling. Great attention was devoted to making engine in/out operations as easy and mistake-proof as possible.

Control room location is up to you – there's an on-skid control panel as standard and an optional control panel for a separate control room if preferred.

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.

Primary Applications

Pipeline compression

The NovaLT16 power and output speed rating (7,800 rpm) make it ideal for modern pipeline stations used for gas transport worldwide.

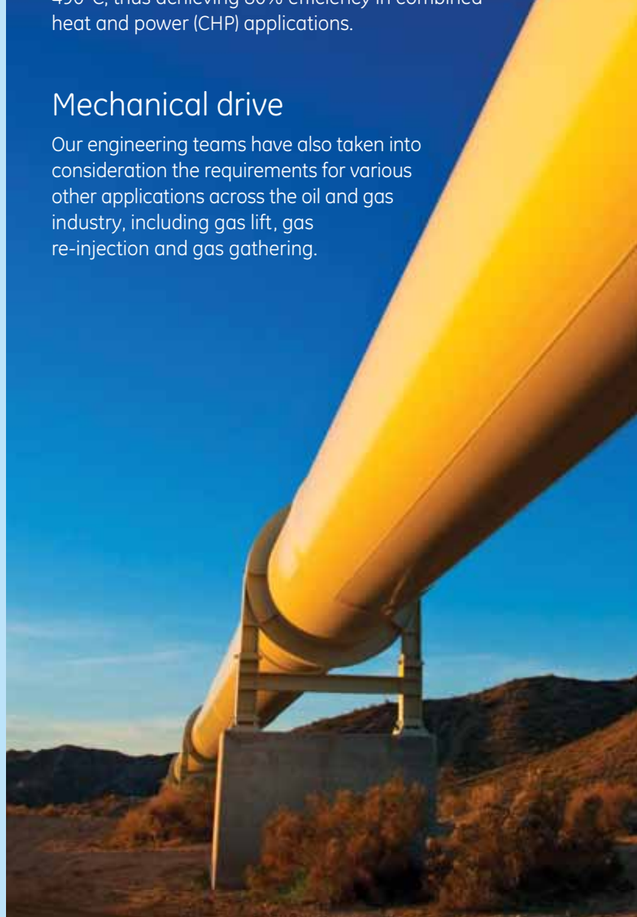
Power generation

The NovaLT16 is widely applicable across a broad 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 NovaLT16's exhaust gas temperature is typically 490°C, thus achieving 80% efficiency in combined heat and power (CHP) applications.

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.



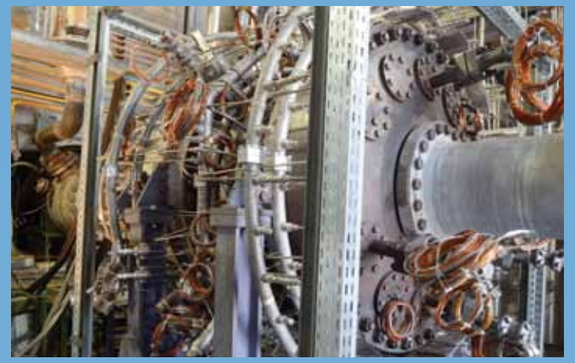
machine architecture

The NovaLT16 is designed to maximize production and minimize risk. The product of decades of industry-proven GE technologies and expertise, it combines our latest advances in design and materials with the evolutionary adaptation of key features from GE turbines with 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.

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) on the axial compressor 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.

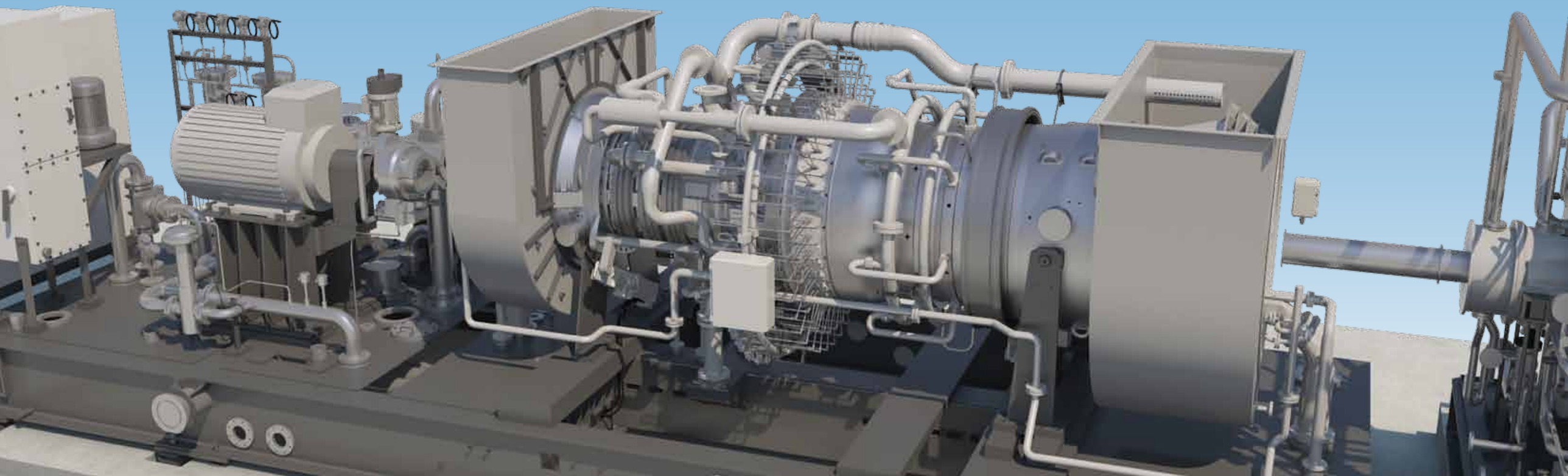
Premixers with double counter-rotating swirler



Full scale combustion vessel for full-annular-rig test

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.



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geoilandgas.com

Alter your perception of what a 16.5 MW gas turbine should be at:

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