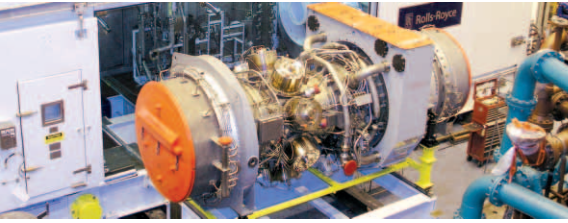




Rolls-Royce

The Trent 60 Gas Turbine

for power generation and mechanical drives



Power Generation

The Rolls-Royce Trent 60 is the most advanced aeroderivative gas turbine available today. Delivering up to 64MW of electric power in simple cycle service, at 42 per cent efficiency, the Trent 60 has established a new benchmark for fuel economy and cost savings. It also offers operators fast delivery and installation times and beneficial environmental performance.

Key features

- Highest power aero derivative gas turbine
- Highest simple cycle efficiency gas turbine
- Efficient package for installation and maintenance
- Power generation at 50 or 60 Hz without a gear
- Available for 25 ppm NOx control
- Small footprint and low weight
- Proven history from aircraft engine lineage
- Full load train starting with only 250 kW motor
- High cyclic life meets daily peaking market
- Cold start to full power in under 10 minutes



Trent 60 – Dry Low Emissions (DLE)

The Trent 60 DLE engine is designed to meet stringent environmental requirements. The use of an eight canular staged combustion system allows the successful operation of the engine in part load operation while still maintaining NOx and CO compliance. The engine is designed to produce 52MW of power at ISO conditions and is flat rated at 58MW power at temperatures below approximately 2°C.

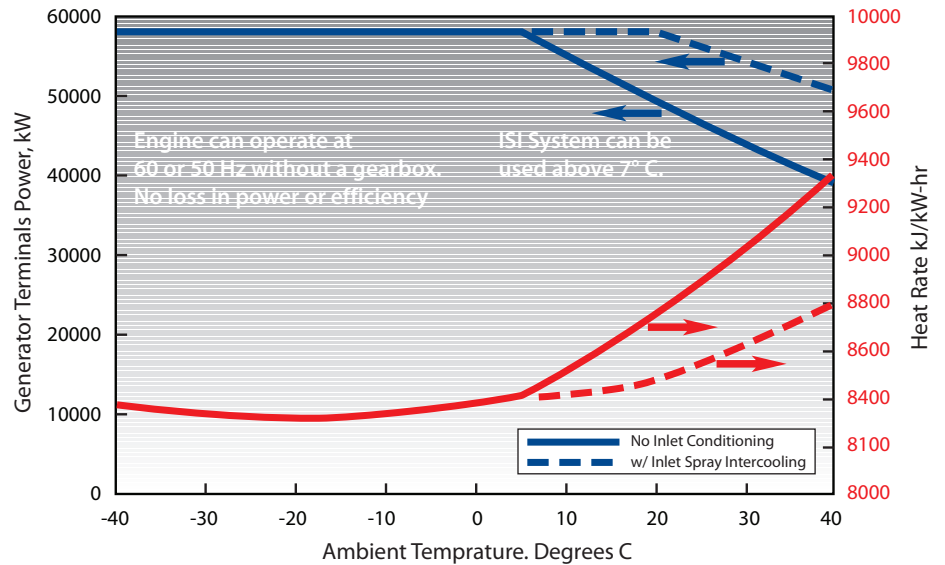
Trent 60 – Wet Low Emissions (WLE)

The Trent 60 WLE uses an annular combustor system from the Trent aero engine modified to operate with liquid and gas fuel. The injection of water is used to reduce emissions and boost performance. At ISO conditions the engine is rated for 64 MWe.

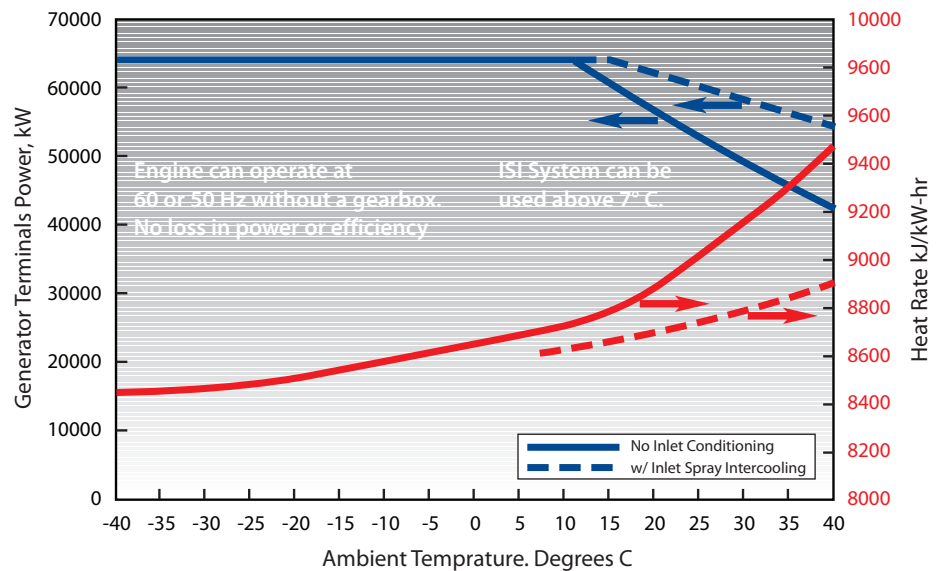
Inlet Spray Intercooling

The Trent 60 can be offered with an Inlet Spray Intercooling (ISI) system to reduce the ambient inlet temperature and decrease the energy required for compression. This results in higher powers and efficiency at ambients above 7° C.

Trent 60 Nominal Performance
ISO Conditions, Zero Installation Losses, Natural Gas Fuel



Trent 60 WLE (Water Injected) Nominal Performance
ISO Conditions, Zero Installation Losses, Natural Gas Fuel

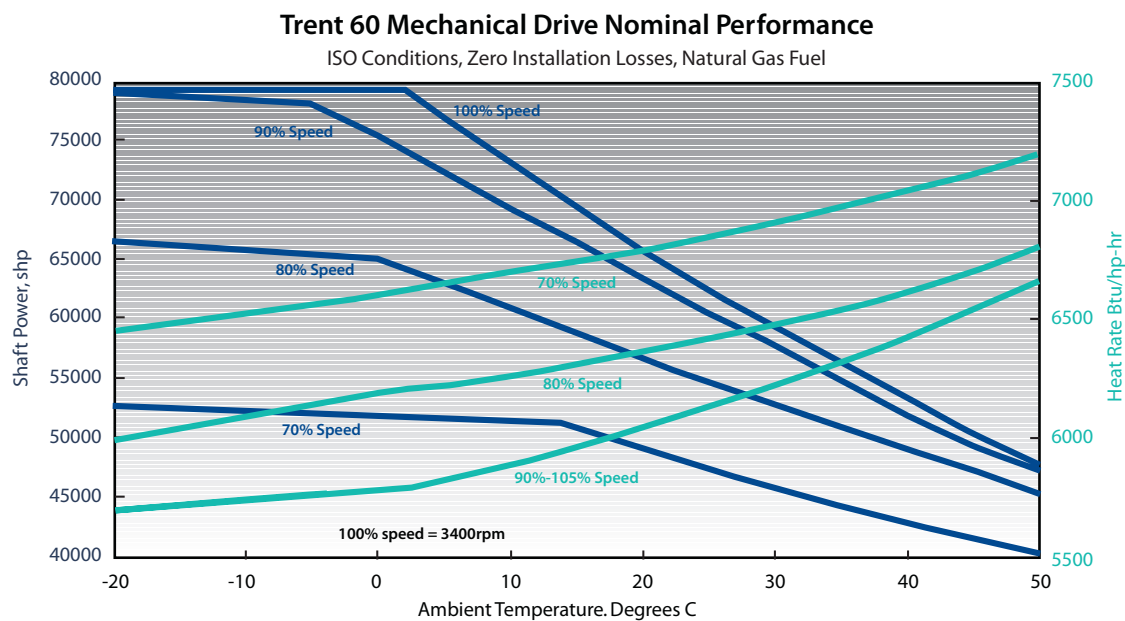


Mechanical drive

Onshore or offshore

The Trent 60 is ideally suited to meet the higher power, variable speed demands required by applications like natural gas liquefaction, gas transportation and gas Injection for oil recovery. The design flexibility of the Trent allows the same engine that serves the power generation market to meet the needs of mechanical drive service with no design changes. The Trent, due to its three independent shaft design, is capable of meeting driven equipment power demand at reduced speeds with a minimal drop off in efficiency. The Trent design also allows the starting of large trains with the same standard, low power, starting system that is employed for power generation.

- The engine is designed for a 100% speed of 3400 RPM
- Can be direct connected to driven equipment or use a gear
- Engine control system can be modified to support a variety of driven equipment
- Speed range of 70-105%.
- Low starting power requirement for large trains
- Identical engine and package for power generation and mechanical drive.
- Multiple daily starts with no extended wait time between starts.



The Trent 60 package

Modular concept

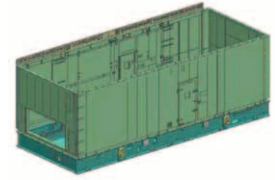
The Trent 60 package is designed with a modular concept to not only allow for quick installation but also for ease of maintenance in the field.

Each of the modules is fully assembled and tested before shipment to the field. The gas turbine base plate holds the required oil system thus allowing installation, testing and flushing in a shop environment. This greatly reduces site installation time.

The control system is designed to allow for easy site installation by using remote IO technology to greatly reduce the number of interconnect cables between the unit control panel and the equipment skids. All train control systems are then accessed by a Human Machine Interface (HMI) which can be located in the main control room.

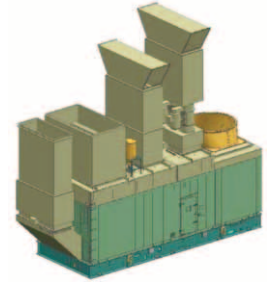
Step One

Install the main gas turbine skid baseplate. This includes all required engine lubrication and fuel systems as well as the remote IO module.



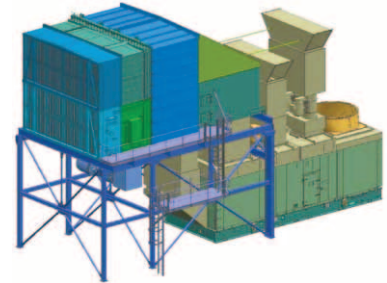
Step Two

Install the gas turbine enclosure roof, ventilation system, and exhaust transition.



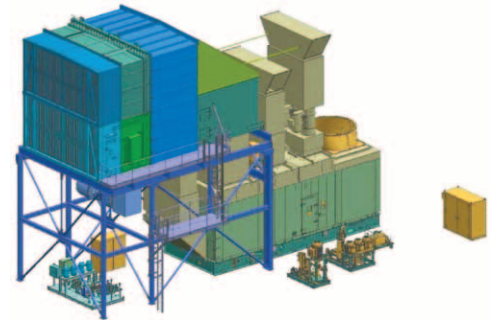
Step Three

Install air filter and support structure.



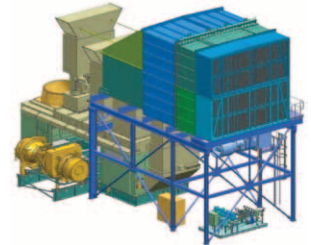
Step Four

Install auxiliary equipment skids.



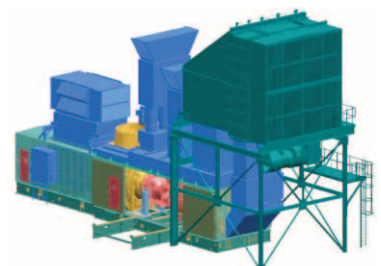
Step Five

Install Trent 60 Gas turbine.



Step Six

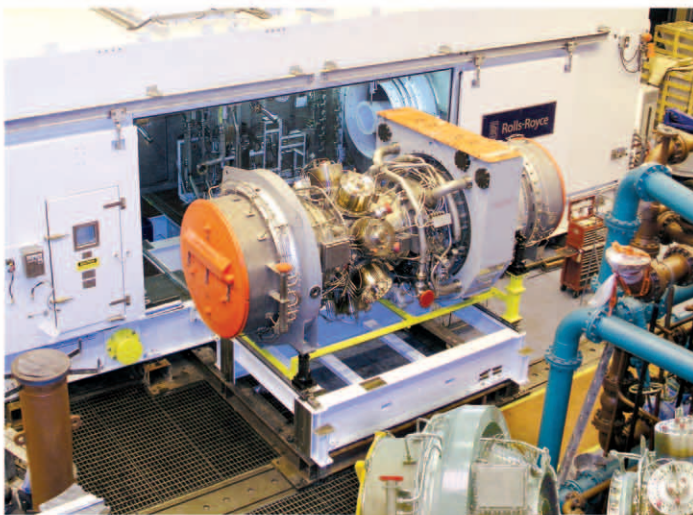
Install Driven Equipment – This can be done concurrently with the other steps.



Trent maintenance

Flexible design

Due to the Trent's aircraft engine lineage, maintenance of the engine can be accomplished quickly and easily. The Trent package is designed to facilitate engine change out in under 24 hours of working time. Complete engine servicing can take place in a Rolls-Royce facility.



The engine is installed and removed from the side of the package. The use of sliding doors allows full access to the engine and is designed for a complete engine change out in 24 working hours.

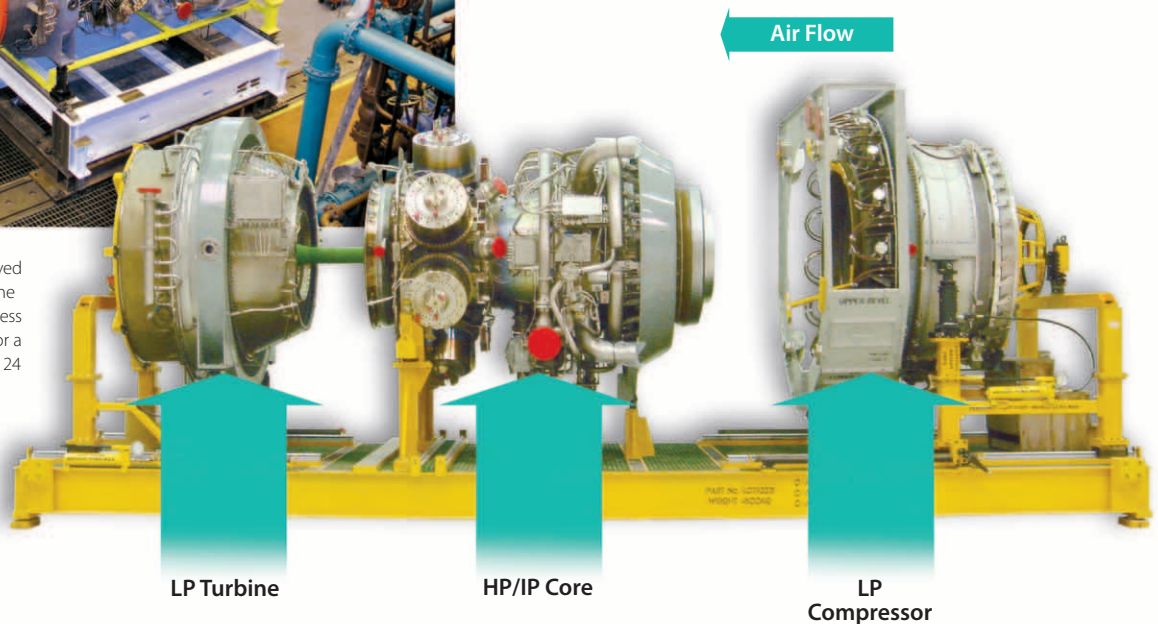
Rolls-Royce can provide support services to ensure maximum availability and years of trouble free operation.

The Trent engine is also capable of being split into three interchangeable modules:

1. Low pressure compressor
2. Intermediate and high pressure compressors and turbines
3. Low pressure turbine

It is possible to swap these engine modules in under 72 working hours. This reduces overall transport and costs associated with inventory of a spare engine. Rolls-Royce can also offer access to a lease engine or module program.

This program reduces the need for a spare engine and allows significant flexibility in maintenance.



Customer service business

Experience holds the key to success

In today's evolving and demanding energy market, Trent gas turbine based packages offer distinct advantages to the power generation and oil and gas industries. This competitive advantage is complemented by an innovative and diverse suite of service solutions tailored to customers' specific needs.

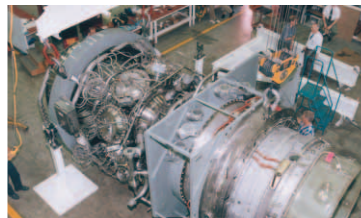
Our ability to keep you operational is a direct result of our focus to develop customized service solutions for your business. Our EarlyCare and TotalCare® service solutions create partnerships designed to share risk and help control operators' maintenance budgets while maximizing your production.

This is accomplished via aligned metrics, priority service and support, and performance and availability guarantees. Utilizing Unit Health Monitoring (UHM), we can also diligently monitor your equipment's performance, avoid or minimize unscheduled maintenance, and increase the time between overhauls to consistently maximize its life cycle operational efficiency.

Other service options include onsite resident engineers, lease and exchange engine support, spare parts inventory management, and protection against unscheduled maintenance costs.

As your equipment continues to operate over time, we are also constantly offering upgrades as part of our suite of Engineered Solutions. These provide you with the latest technology to maximize output, efficiency, reliability and minimize maintenance, operational costs, and emissions.

- Installation & commissioning services
- Spare parts
- Field services
- Technical support
- Customer training
- Repair and overhaul
- Lease and exchange engines
- Long Term Service Agreement
- Equipment upgrades
- Package Refurbishments





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Note: Standard equipment, specifications and data are subject to change without notice.

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