Meet the SGT-750

Proven technology.
Perfected results.

37 MW.

Industrial Gas Turbines

Answers for energy.

SIEMENS

Count on it.

The Siemens SGT-750 gas turbine is designed to meet the highest demands for efficiency, reliability, uptime and environmental compatibility. Combining years of experience and proven, cutting-edge technology with new ideas throughout the design process, the results are nothing less than impressive.

Count on it.

A new power range, completing the Siemens offer

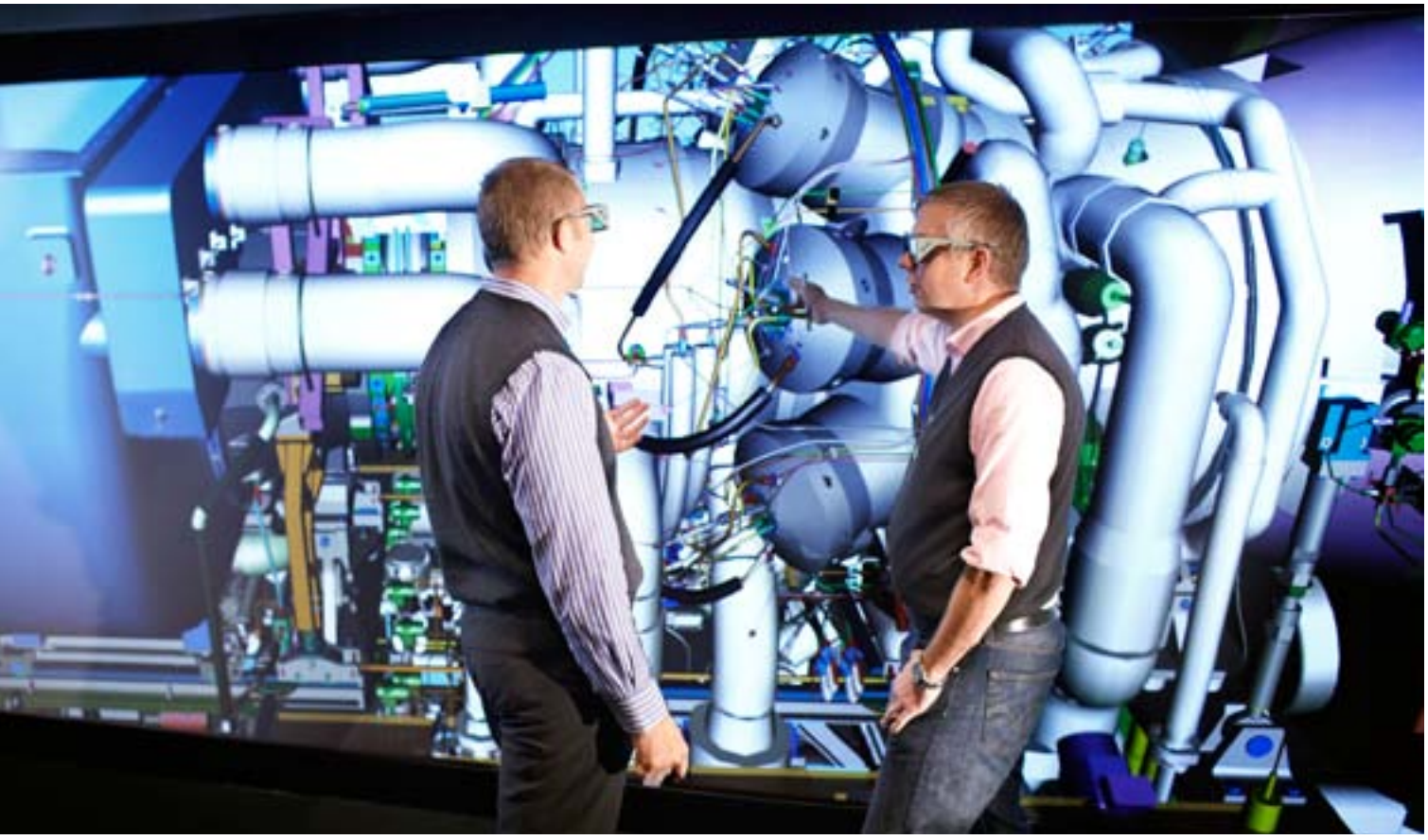
With a launch output of 37 MW, the Siemens SGT-750 fits perfectly into the Siemens range of industrial gas turbines. It offers high output, market-leading efficiency and future-proof DLE emission control. All in a compact, low-weight design. With a combination of proud heritage and leading-edge engineering, this machine sets a new industry benchmark.

Maximized uptime, total peace of mind

With just 17 scheduled maintenance days in 17 years, you can trust your SGT-750 to deliver profitable results, day in and day out. One of the most important factors in a profitable investment is utter reliability and uptime. Siemens has a strong tradition of delivering dependable machinery that brings peace of mind to both operators and owners. The SGT-750 takes this level of reliability up another notch.

Value for money, value for life

Groundbreaking design methods and new cost-efficient solutions in the engineering process contribute to outstanding value for money. This is true for initial investment and installation as well as for total lifecycle cost – maintenance and fuel consumption included. All this results in better profitability for you as a customer.



High efficiency, low fuel consumption

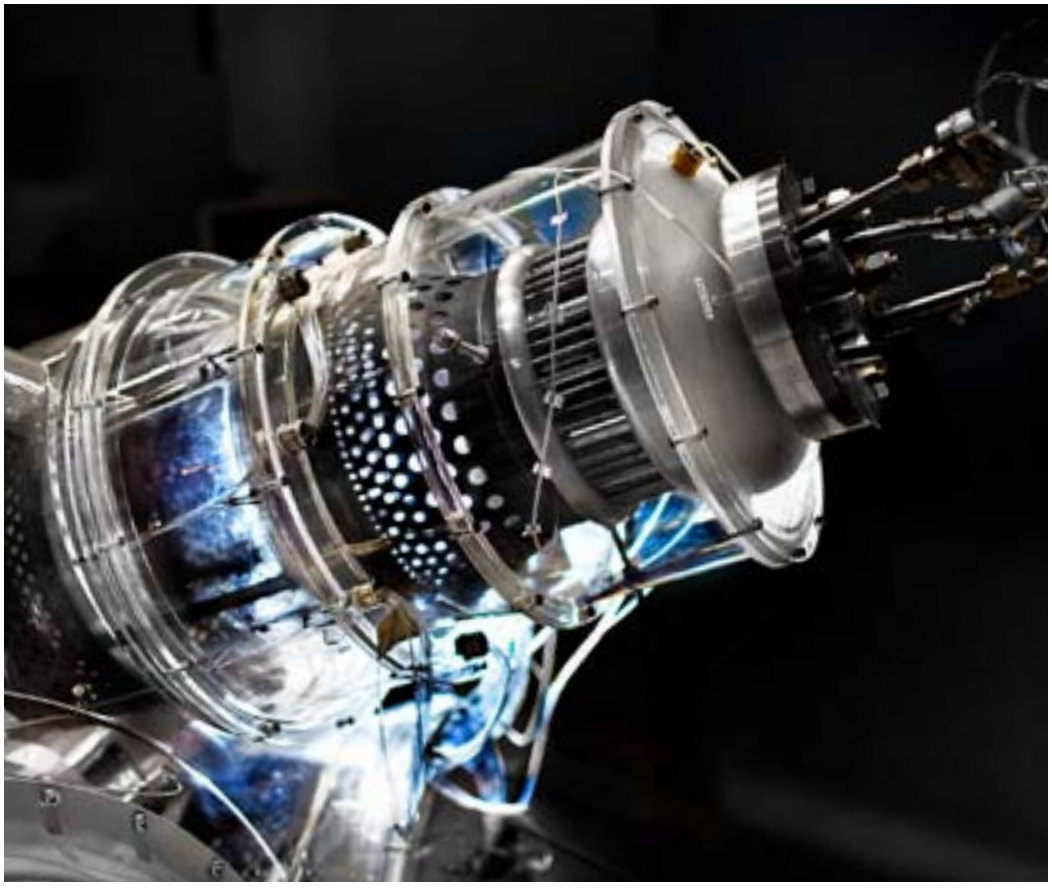
SGT-750 sets a new standard of efficiency for industrial gas turbines in this power range. Reaching 38.7% in power generation applications and a full 40% in mechanical drive applications helps push fuel consumption down to even lower levels, still keeping – and improving – all the benefits of a robust, easy-to-service industrial design.

The perfect option for power generation

When put to work in either simple-cycle or combined-cycle power generation plants, SGT-750 demonstrates its flexibility, being the perfect option for base load, standby power and peak lopping. The fast start-up and cycling capability both support intermediate to continuous operation with improved turndown capability, high efficiency and low emission levels. Through the use of a free power turbine, the 36 MW_e SGT-750 is also well suited where grid requirements call for maintained power output in the event of frequency drop.

Reliable mechanical drive

The sheer robustness and stability of the 37 MW_s SGT-750 makes it a perfect option for mechanical drive applications within the oil and gas industry. The gas turbine features dual-fuel online switchover capabilities, a unique built-in flexibility when it comes to ambient climate, and perfect adaptabililty to fixed or floating installations, onshore and offshore, upstream, midstream or downstream.

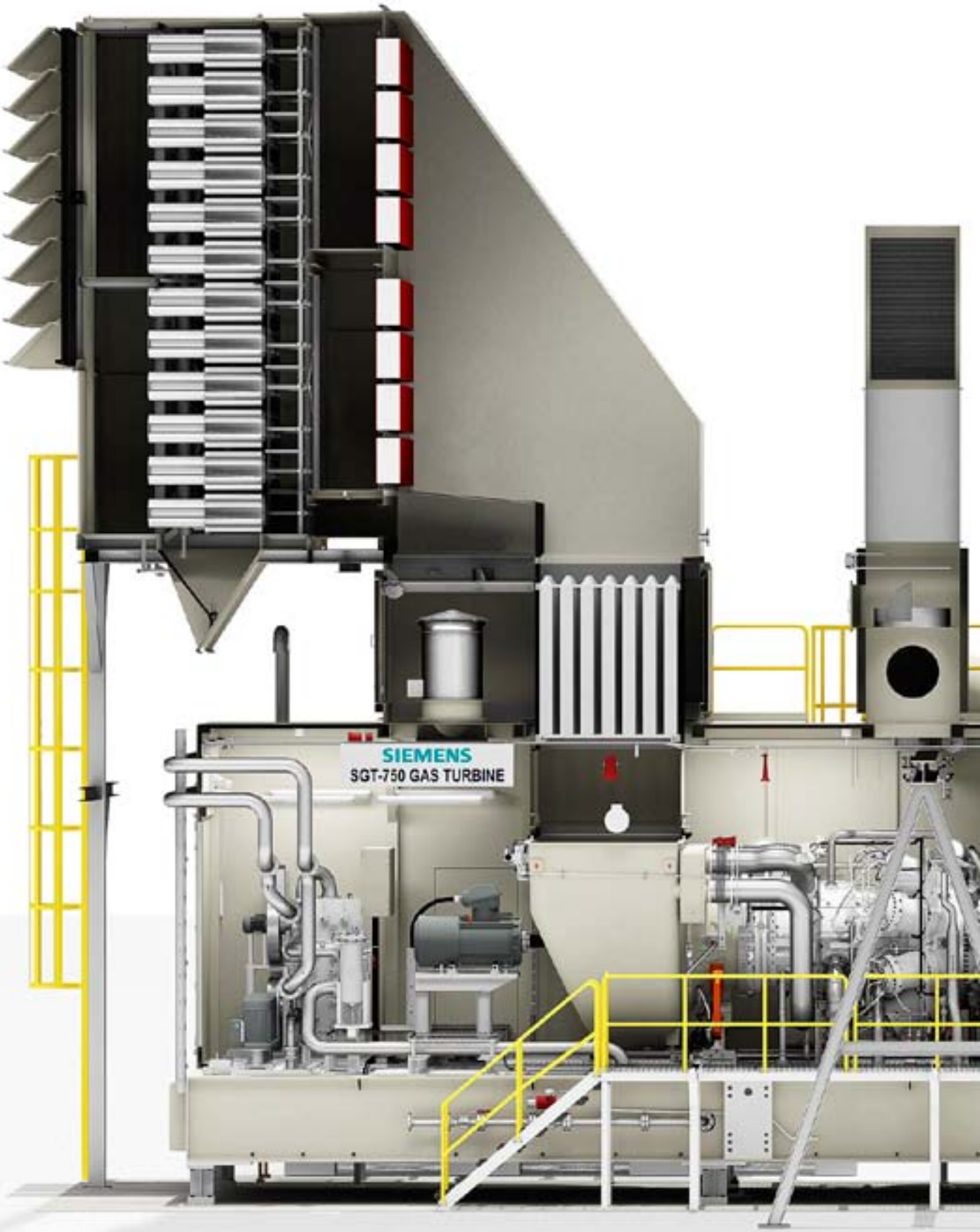


Robust burners with future-proof DLE technology

The burners provide reliable operation through the use of well-proven, simple engine control, eliminating unstable combustor staging. They are designed to further increase the power turndown range compared to their predecessors – maintaining single-digit NO_x emissions and CO emissions well within legislation levels. The DLE (Dry Low Emissions) method enables the use of large single turbines, rather than multiple small units whilst allowing the same operating envelope.

New design process

The design process of the SGT-750 incorporated the use of several new technologies. One of the most important was the use of full-scale 3D visualization. This technology enabled close cooperation between designers and service engineers in order to ensure maximized serviceability with minimized load-to-load downtime. Every component and every system has naturally been subjected to thorough and extensive laboratory tests to determine top-quality performance.


SIEMENS
SGT-750 GAS TURBINE

A complete solution.

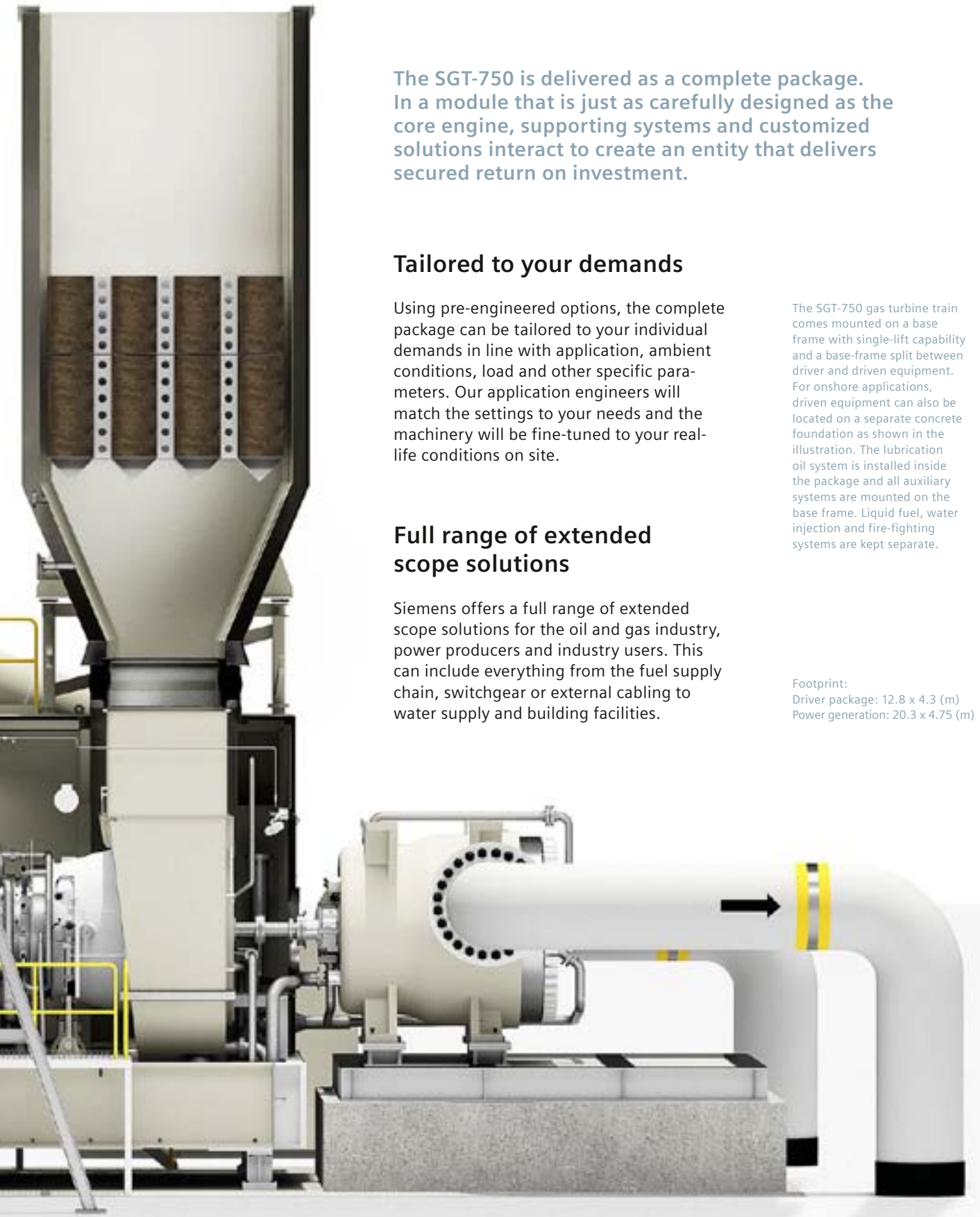
The SGT-750 is delivered as a complete package. In a module that is just as carefully designed as the core engine, supporting systems and customized solutions interact to create an entity that delivers secured return on investment.

Tailored to your demands

Using pre-engineered options, the complete package can be tailored to your individual demands in line with application, ambient conditions, load and other specific parameters. Our application engineers will match the settings to your needs and the machinery will be fine-tuned to your real-life conditions on site.

Full range of extended scope solutions

Siemens offers a full range of extended scope solutions for the oil and gas industry, power producers and industry users. This can include everything from the fuel supply chain, switchgear or external cabling to water supply and building facilities.



The SGT-750 gas turbine train comes mounted on a base frame with single-lift capability and a base-frame split between driver and driven equipment. For onshore applications, driven equipment can also be located on a separate concrete foundation as shown in the illustration. The lubrication oil system is installed inside the package and all auxiliary systems are mounted on the base frame. Liquid fuel, water injection and fire-fighting systems are kept separate.

Footprint:
Driver package: 12.8 x 4.3 (m)
Power generation: 20.3 x 4.75 (m)

Siemens SGT-750

Proven technology.
Perfected results.

1 Single rigid compressor rotor body

The rotors incorporate the advantages of electron beam welding, forming a solid compressor rotor body.

Unsurpassed stability and uniform run-ups

The rigid rotor body is the foundation of the rotor stability in the SGT-750. This stability enables more uniform and smoother run-ups in all conditions.

2 Horizontal and vertical split casings

The compressor section utilizes the conventional horizontal split-casing design, while the hot parts of the unit are surrounded by vertically split single-piece circular components.

Combining the best of both worlds

Horizontal split for unbeatable accessibility and vertical split for optimized clearances and stability. This combination of casing design unites the best qualities of two concepts into one.

3 Variable guide vanes

Two variable guide vanes in the compressor offer optimized performance even in the most extreme conditions.

Outstanding flexibility

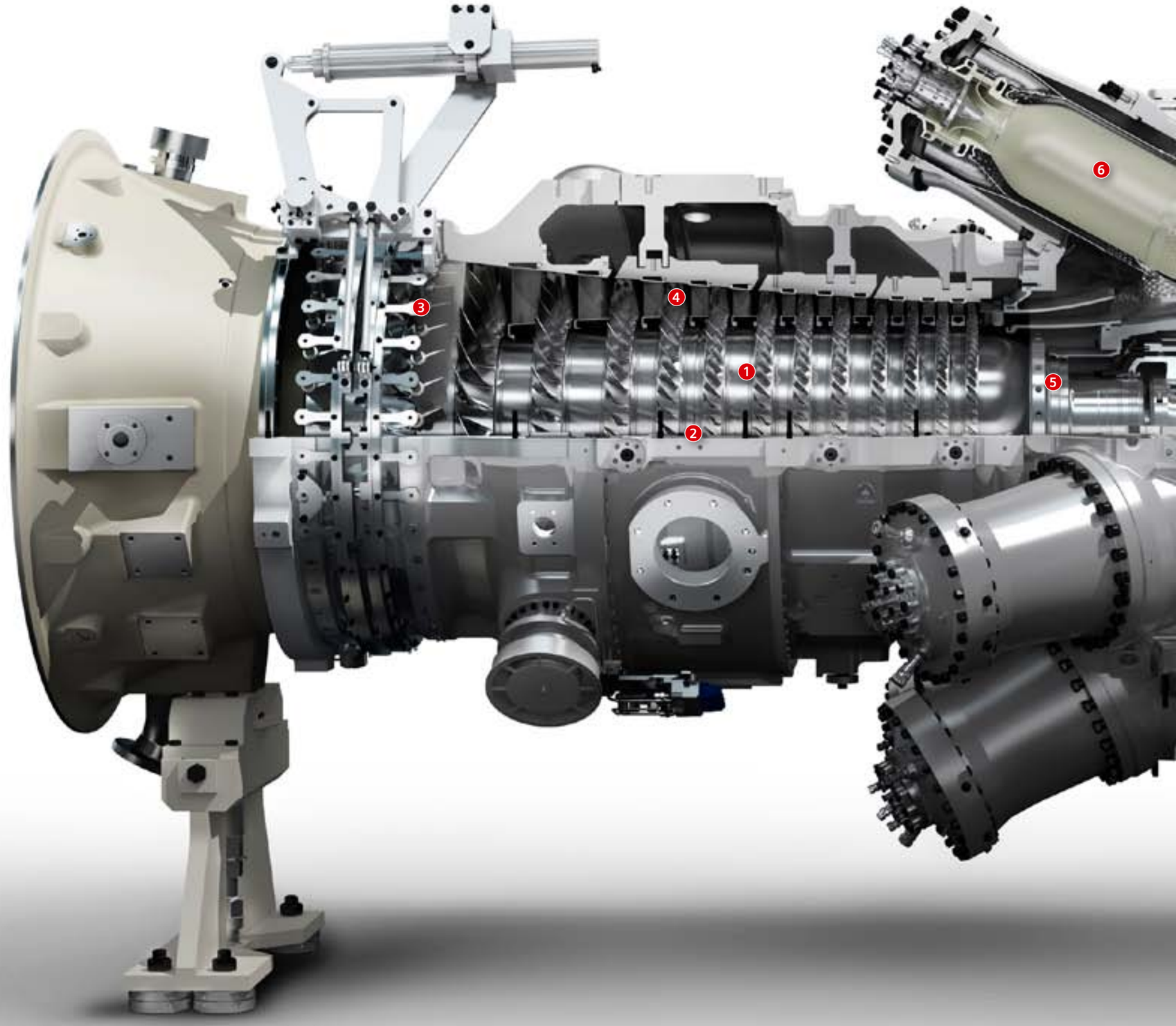
No matter what the application, load or environment, SGT-750 is designed to give its owners maximized fuel efficiency.

4 13-stage axial-flow compressor

The compressor is a 13-stage axial flow compressor with a 24:1 pressure ratio. It offers a controlled diffusion airfoil for high efficiency and two variable guide vanes for optimized performance even in the most extreme conditions.

Reblading without rotor removal

The axial blade attachment grooves allow complete compressor reblading without rotor removal. Speeding up service visits contributes to a higher overall uptime and higher profitability in the long run.



5 Bearings and balancing planes

The rotor is supported by mineral-oil-lubricated long-life tilting pad bearings. Five easy-to-reach balancing planes allow field balancing without disassembly.

On-site field balancing

The SGT-750 is designed with serviceability in mind. The potential to carry out on-site field balancing without disassembly means improved uptime and lifetime customer value.

6 Can combustors with DLE burners

The can combustion chamber system consists of eight cans with a double-skin serial-cooled design and eight transition ducts of double-skin parallel-cooled design, suitable for both liquid and gaseous fuels.

Easy access and emission control

This can design provides for excellent maintainability and easy-access exchangeability without casing disassembly. The fourth generation of Siemens DLE burners offer dual-fuel on-line switchover capability, increased power turndown range and emission control.

7 Two-stage compressor turbine

The two-stage compressor turbine blades are made of state-of-the-art proven materials with several years of confirmed performance. The blades and guide vanes are cooled with a combination of internal convective cooling and film cooling.

Maximized durability

The use of conventional materials and efficient cooling of the turbine blades guarantees optimal durability.

8 Online monitoring

All SGT-750 are mapped with infrared (IR) cameras during engine delivery test and during regular scheduled inspections.

Early warning – faster maintenance

The IR cameras enable early detection of possible deviations, helping to keep the turbine in a good, healthy condition. The IR images also speed up the service procedure by giving accurate diagnostic information to technicians.

9 Two-stage high-speed free power turbine

The free turbine is a two-stage high-speed module, nominally running at 6100 rpm.

Easy to optimize for all conditions

The SGT-750 is equally suited for mechanical drive applications, and with speed reduction gear for power generation. The turbine can be optimized for all ambient conditions, whether arctic, temperate or tropical climates.

For more information, please visit
www.siemens.com/energy/countonit


IENS

Built-in serviceability.

The design and construction of the SGT-750 was created with maximized serviceability and minimized load-to-load downtime in focus. To start with, the modular build-up facilitates swift disassembly and parts replacement. And with a 24-hour engine swap time, downtime can be kept to an absolute minimum.

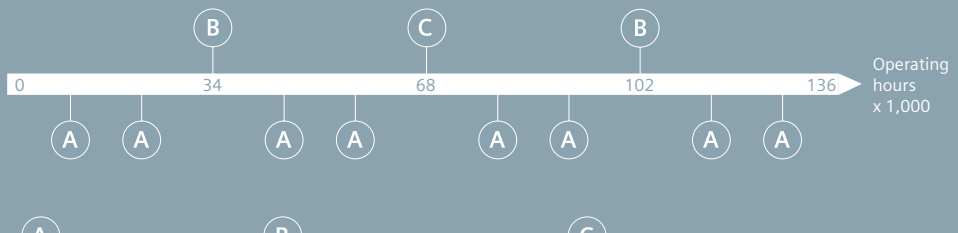
Remote diagnostics service and annual on-load evaluations

The annual performance evaluations are fundamental in the SGT-750 maintenance package. Online monitoring, expert performance data analysis and fleet data comparisons form a solid foundation for such evaluations. The typical four years of base load operation before the machinery is opened for the first time, is an outstanding, market-leading figure in itself. Yet, with lower loads and carefully customer-managed daily, weekly and monthly inspections, time between overhauls can easily be increased by several thousands of hours.

17 maintenance days in 17 years

As little as 17 days maintenance time over a 17-year service cycle is now within reach by combining our maintenance plan with a 24-hour engine swap. The on-site maintenance plan is divided into three levels as shown in the figure below. Level A is a 24-hour borescope inspection. Level B's hot parts replacement is performed in 12 days, with six 10-hour working days per week. The Level C complete overhaul takes 16 days. A replacement engine for B or C inspections naturally maximizes uptime.

The low-weight construction and easy-access design mean no need for special workshops. Standard lifting equipment and facilities will do just fine.



A
On-site borescope inspections.

B
Hot sections parts replacement. Can be performed off-site using the replacement concept 34,000 and 102,000 hours.

C
Complete turbine overhaul can be performed off-site using the 68,000 hours replacement concept.

The figure shows scheduled maintenance of the SGT-750. With the option to choose from an on- or off-site maintenance concept during Level B and C inspection, downtime can be shortened with 10 and 11 days respectively if a replacement turbine is used – leading to 17 maintenance days in 17 years. The schedule illustrated include time for other activities such as gearbox inspections and check-ups of auxiliary equipment. Load-to-load engine swap time is just 24 hours.

Technical data.

Power generation 35.93 MW(e)

- Fuel: Natural gas
- Frequency: 50/60 Hz
- Electrical efficiency: 38.7 %
- Heat rate: 9296 kJ/kWh (8811 Btu/kWh)
- Turbine speed: 6100 rpm
- Compressor pressure ratio: 23.8:1
- Exhaust gas flow: 113.3 kg/s (249.8 lb/s)
- Exhaust temperature: 462° C (864° F)
- NO_x emissions (with DLE, corrected to 15 % O_2 dry): ≤ 15 ppmV

Mechanical drive 37.11 MW (49,765 bhp)

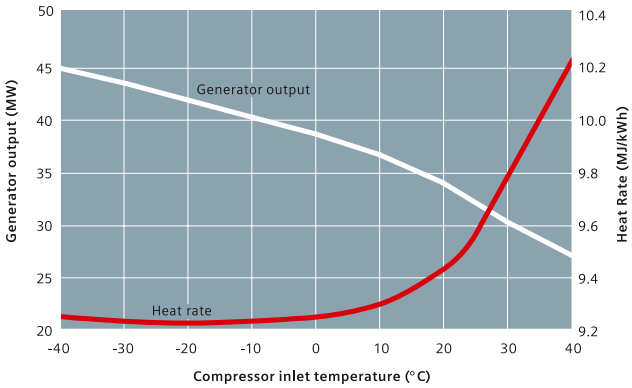
- Fuel: Natural gas
- Efficiency: 40.0 %
- Heat rate: 9002 kJ/kWh (6,362 Btu/bhp)
- Turbine speed: 3050-6405 rpm
- Compressor pressure ratio: 23.8:1
- Exhaust gas flow: 113.3 kg/s (249.8 lb/s)
- Temperature: 462° C (864° F)
- NO_x emissions (with DLE, corrected to 15 % O_2 dry): ≤ 15 ppmV

Extensive program for long-term service agreements

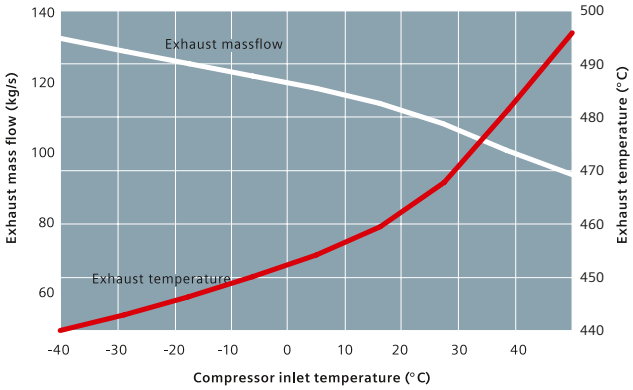
- Support program
- Preventive maintenance
- Corrective maintenance
- Full operation and maintenance program (O&M)

For more information, please visit
www.siemens.com/energy/countonit

Nominal generator output and heat rate



Nominal exhaust mass flow and temperature



Mechanical drive performance

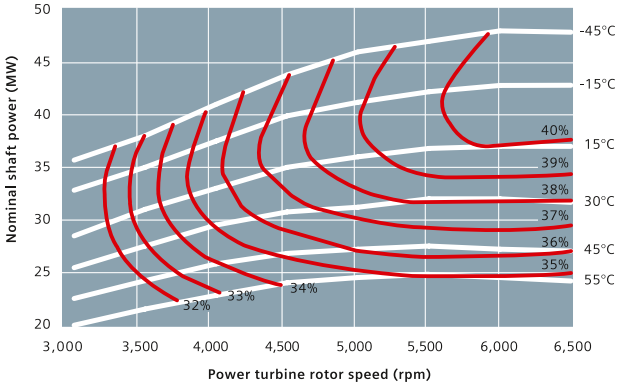


Diagram conversion factors:

To convert	To	Multiply by
˚C	˚F	(˚Cx9/5)+32
Mj/kWh	Btu/kWh	949

Published by and copyright © 2010:
Siemens AG
Energy Sector
Freyeslebenstrasse 1
91058 Erlangen, Germany

Siemens AG
Energy Sector
Oil & Gas Division
Wolfgang-Reuter-Platz
47053 Duisburg, Germany

Siemens Energy, Inc.
10730 Telge Road
Houston, Texas 77095, USA

Siemens Industrial Turbomachinery AB
SE-612 83 Finspong, Sweden

For more information, please contact
our Customer Support Center.
Tel: +49 180 524 70 00
Fax: +49 180 524 24 71
(Charges depending on provider)
E-mail: support.energy@siemens.com

Oil & Gas Division
Order No. E50001-G430-A112-X-4A00
Printed in Sweden
Dispo 34806, c4bs No. 7477, WS 11102.

Printed on elementary chlorine-free bleached paper.

www.siemens.com/energy

LEON