Rolls-Royce

501-K Gas Turbines

Success through superior performance

501-K gas turbine

Dependable, flexible design for onshore and offshore applications

More than 2,500 Rolls-Royce 501-K gas turbines have been supplied for industrial use to 500 customers in 40 countries, accumulating an impressive 110 million operating hours since its introduction in 1963.

Today, these engines are delivered to our customers through a network of distributors who incorporate the engine into complete generator sets (both stationary and mobile) or mechanical drive units. All Rolls-Royce distributors are carefully chosen for their engineering and manufacturing capabilities and commitment to adhere to Rolls-Royce standards for quality and delivery. A complete listing of distributors is located on the back of this brochure.

Industrialized Aero Derivative

The 501-K is an aero-derived engine based on the T-56 turboprop, which is recognized for its reliability and durability in the Lockheed Martin C-130 Hercules transport, E2C Hawkeye, P-3 Orion and other widely used aircraft. Designed for use in power generation and oil & gas applications, features of the 501-K gas turbine include:

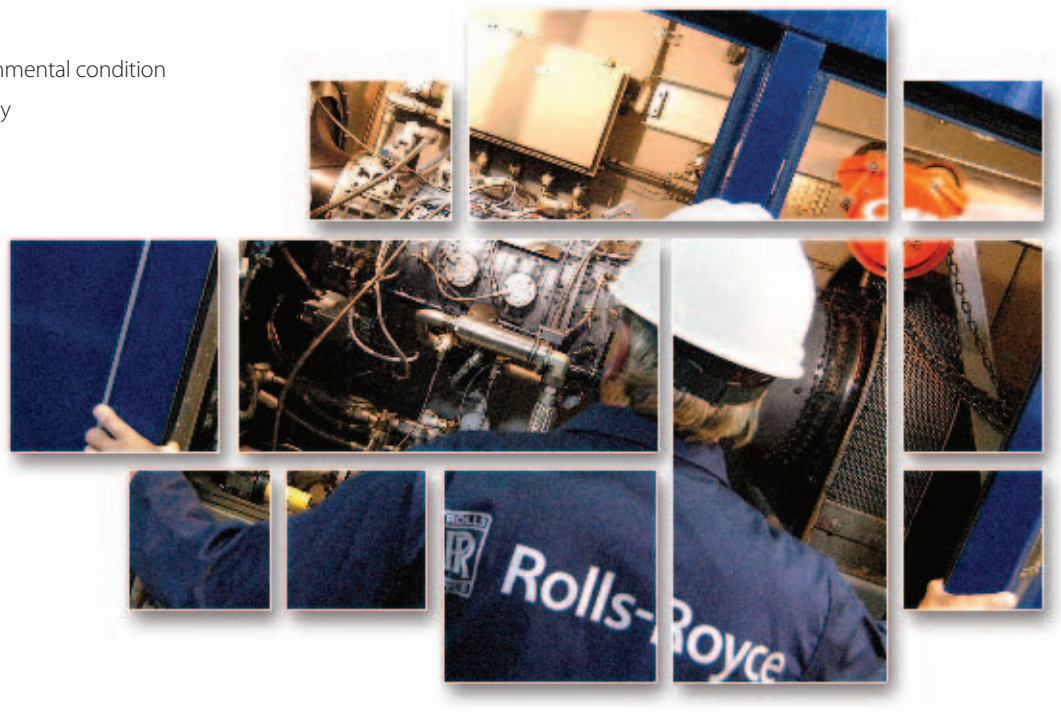
- Lightweight modular construction
- Ease of field repair
- Virtually limitless starts and stops
- Wide range of fuels in any environmental condition
- High electrical and cycle efficiency

501 Options for Power Generation Applications

The 501-K gas turbine provides electrical power output between 3.9 and 6.4MW for applications such as co-generation, offshore platforms and emergency power. The single-shaft, designated as 501-KB5S/KB7S, is designed for electrical power generation and fixed speed mechanical drive applications. The steam injected, single-shaft 501-KH provides 6.4MW of power at efficiency levels unprecedented for gas turbines of this size. Also, the amount of steam can be adjusted to meet varying process steam or electrical requirements, depending on the application.

501 Options for Mechanical Drive Applications

A two-shaft version, designated as 501-KC5/KC7 is ideal for driving pumps with centrifugal compressors, which require a wider operating speed range. Multiple versions of the engine produce between 4 and 5MW for use in pipeline transmission, gas storage and withdrawal, field gas compression and crude oil pumping.



Increased operating benefits

Improved performance through advanced engineering

The 501-K engine is designed to operate on a wide variety of fuels. Fuels include, but are not limited to, natural gas, liquid fuel (typically DF-2 or equivalent) and mid to low BTU gas fuels. Fuel system options also include dual fuel, steam and water injection. Dry Low Emissions (DLE) technology is also available.

In addition to its fuel flexibility, it accommodates a wide variety of customer requirements. The compact design of this engine also permits application versatility and ease of removal and replacement.

The 501-K measures less than 2.7 meters (8 feet) long and weighs less than 766 Kg (1,690 pounds).

The 501-K is proven to operate in various challenging conditions and locations around the world including the North Sea, West Africa, Siberia, Brazil, Alaska, South East Asia and the desert regions of the Middle East. The 501-K engine has been shock qualified to Mil-S-901C, which makes it particularly suitable for areas with frequent or severe seismic activity.

Advanced Engineering

- Core engine commonality of all five 501-K variants
- All 501-K engines are built to meet stringent industry standards including ISO 9001 and AS9100
- Anti-corrosion coatings for offshore services
- Full power available within 60 seconds from all conditions, including hot restarts, with no need to go to an idle condition
- Black Start capability
- Modular gas turbine configuration optimizes spares requirements, minimizes cost of ownership and simplifies engine maintenance

Efficiency and Low Emissions Options

- Three combustion systems are available, based on customer need
  - Standard combustion system can operate on liquid or gas fuel
  - Wet Low Emissions combustion systems utilize nozzle steam or water
  - Dry Low Emissions combustion system achieves better than 25vppm NOx and 50vppm CO
- Class leading efficiency for both simple cycle and combined heat and power operations

Reliable, Easy Installation and Maintenance

- Simple, inexpensive to maintain
- Rugged, reliable performance with up to seven years baseload duty between full overhaul
- Over 98 percent demonstrated availability/reliability
- Lightweight, aero-derivative, industrial design is easy and economical to transport and install
- Engine change-out in as little as 12 hours, and many repairs can be made at the site
- Ideal for remote, inaccessible locations and performance proven in many extreme environments



Packaged for success

Package features for all applications

Lubricating Oil System	■ Turbine synthetic lube oil system may be either integrated with or separated from the driven equipment, depending upon customer requirements ■ Main lube pump is driven off the engine accessory gearbox for normal operation and shutdown ■ Oil system components are skid-mounted and designed to industry standards for mechanical drive ■ Optional heaters/coolers to meet the climate needs of the application
Fuel System	■ On-skid fuel system includes all components needed to control fuel during start up and operation ■ Operates on natural gas, liquid, dual fuel, and low BTU gas with steam and water injection
Low Emissions	■ Dry Low Emissions (DLE) system available on 501-K variants; both power generation and mechanical drive applications
Start Systems	■ Several types of start systems are available depending on customer requirements ■ Overrunning clutch disengages when self-sustaining speed is reached
Baseplate	■ Sturdy, but small, lightweight footprint ■ Design allows easy access for maintenance ■ Jib boom provides easy installation or removal of gas turbine
Electrical	■ Available to meet local standards as needed
Air Intake System	■ Provides clean, uniform airflow to the gas turbine ■ Includes filter assembly, silencer and flow direction geometry ■ Site-specific design minimizes disruption of inlet air ■ Filtration systems are available to handle extreme environments – artic cold, salt water spray, severe heat and dust ■ Single to multiple stages handle offshore, coastal and inland sites
Gas Turbine Enclosure	■ Acoustic enclosures meet a wide range of requirements and environments ■ Factory-completed enclosure can house all auxiliary equipment on engine skid, with piping and wiring completed and tested at the factory ■ Completed enclosures shipped with connections intact for simplified installation and commissioning
Water Wash System	■ Maintains performance by preventing build-up of contaminants in the engine compressor ■ Pump or compressed air system includes storage tanks, pressure gauges, valves and piping

Comprehensive service and support

Complete customer care through the life of the product

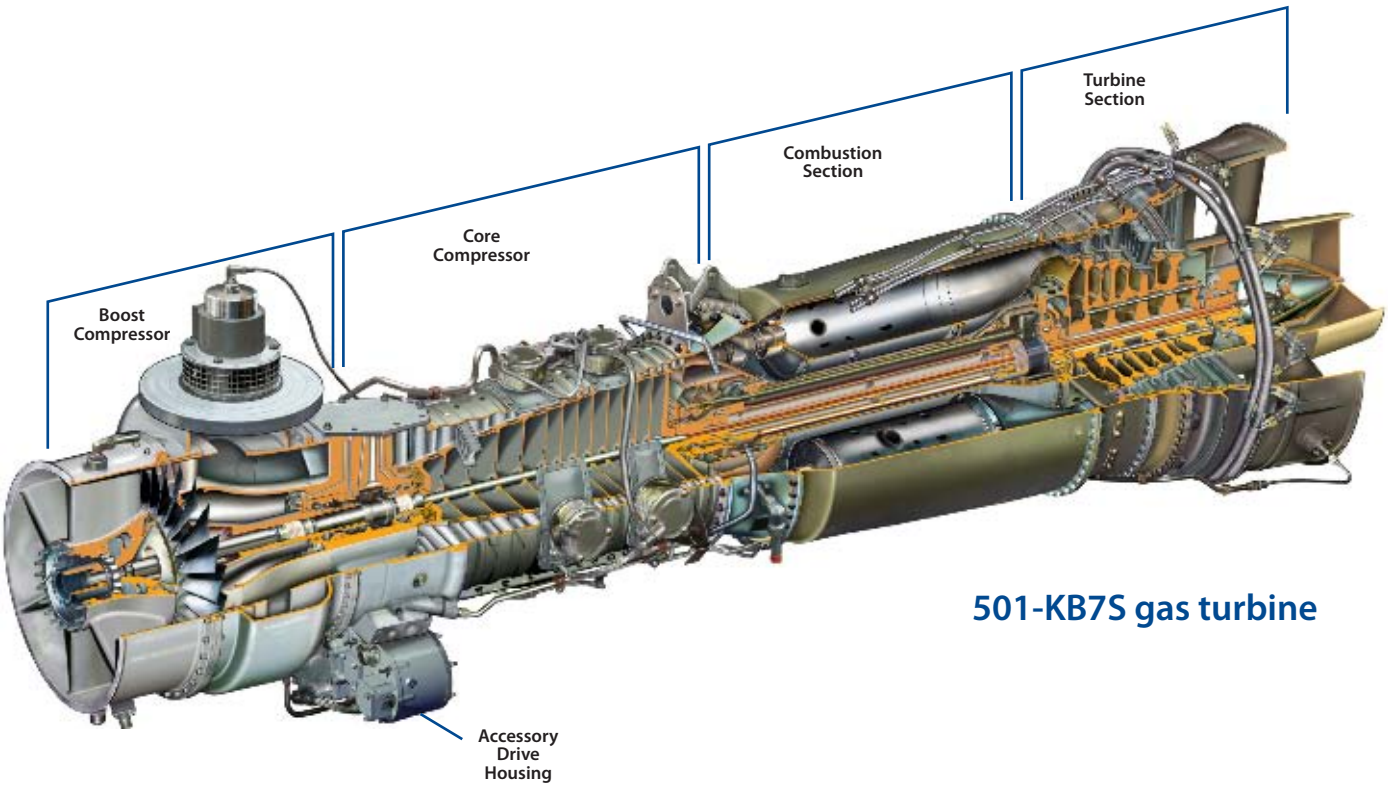
The global infrastructure of Rolls-Royce and its distributors provides customers with the support they need at any time, anywhere in the world. Service centers in every region of the world, combined with a responsive spares program and expert field service representatives, all unite to provide a comprehensive system of service to keep our customers' equipment running reliably.

Engine Lease – Engine lease programs are as varied as our customers' needs. Whether for routine maintenance, or in an emergency, engines can be made available to minimize disruptions to daily operations.

Spares – A worldwide spares inventory allows parts to be delivered anywhere in the world, and as the original equipment manufacturer, Rolls-Royce is committed to supplying only the highest quality parts, whether new or refurbished.

Field Service – Twenty-four hours a day, seven days a week, expert field service engineers work to install, maintain and service customer equipment. Their high level of skill allows them to respond rapidly and effectively to a range of situations that may arise. They also provide training and equipment monitoring. Field service is provided by the distributor network or Rolls-Royce.

Engineered Solutions – Upgrades to existing equipment are an attractive option for many customers, and a dedicated team of engineers and project managers work to ensure that the customer's equipment is providing the most power, efficiency and reliability possible. There are currently seventeen different upgrades available for the 501-K engine. Upgrades include a conversion to Dry Low Emissions (DLE), dual fuel conversion, and more.



501-KB7S gas turbine

A global network

501-K distributors and Rolls-Royce maintenance, repair and overhaul centers

Our customers may be located in diverse regions around the world, but they all have one thing in common. They all require timely and accurate support to purchase, install and maintain their 501-K engines and equipment. That's why we continually invest in our global infrastructure from distributors to repair and overhaul facilities.

501-K Distributors

Several distributors, backed by the engineering and support of Rolls-Royce, are available globally to provide 501-K equipment and support to your operation.

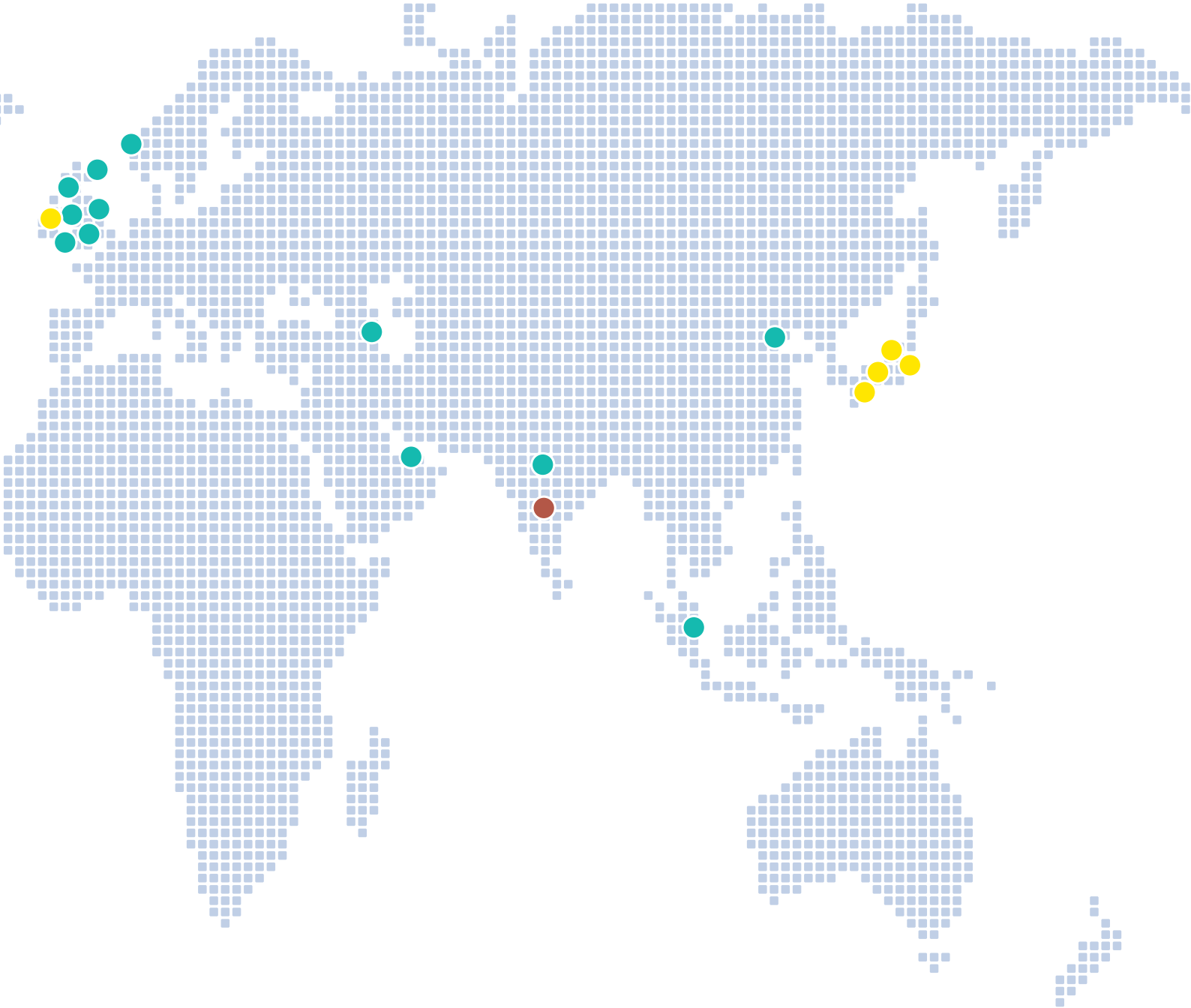
Repair and Overhaul Facilities

Rolls-Royce repair and overhaul facilities are strategically placed around the globe to provide rapid turnaround on all repair and overhaul services.

Energy Business Locations

Rolls-Royce Energy offices are located globally to provide direct contact with our customers and more effectively meet the needs of those in both the oil & gas and power generation industries.

Rolls-Royce


Distributors
Repair and Overhaul Facilities
Energy Business Locations

Rolls-Royce

Regional Sales Offices

Energy Small Engine Business
420 S. Meridian Street
Speed Code MC-N1-03
Indianapolis, Indiana 46225 USA
Telephone: +1 317 230 4152
Fax: +1 317 230 3509

North & Central America
8303 McHard Road
Houston, Texas 77053 USA
Telephone: +281 436 6700
Fax: +281 436 6777

South America
Av. Almirante Barroso 52, 20th Floor,
20031-000, Rio de Janeiro, Brazil
Telephone: +55 21 2277 0100
Fax: +55 21 2277-0186

Europe, Russia & Africa
The Iceni Centre,
Warwick Technology Park
Warwick CV34 6DA, United Kingdom
Tel: +44 (0)1926 307700
or +44 (0)1926 307701
Fax: +44 (0)1926 307987

Middle East & Central Asia
Rolls-Royce Energy
HQ Building,7th Floor ,SW
P.O. Box 144294
Abu Dhabi UAE
Telephone: +971 (0) 26169000
Fax :+971 (0) 26169051

Asia, Far East & Australasia
Rolls-Royce Singapore Pte Ltd
6 Seletar Aerospace Rise
Singapore 797575
Tel: +65 6240 3333

www.rolls-royce.com
www.energymanager-online.com

501 Distributors

CENTRAX Limited, Gas Turbine Division
Shaldon Road, Newton Abbott
Devon TQ12 4SQ England
+44 1626 358 000
Europe

OnPower, Inc.
3525 Grant Drive, Suite A
Lebanon, Ohio 45036
+1 513 228 2100
North America

Hitachi Zosen Corporation
7-89 Nanko-kita 1-Chome
Sumineo-ku, Osaka 559-8559 Japan
+81 6 6569 0209
Japan

IHI Jet Services
Toyosu IHI Building
1-1, Toyosu 3-chome
Koto-ku, Tokyo 135-8710 Japan
+81 3 6204 7718
Japan

Kobe Steel, Ltd.
1-3, 4-chome, Bingo-machi
Chuo-ku, Osaka 541-8536 Japan
+81 6 6206 6518
Japan

Tominaga & Co., Ltd.
2-6-3, Nihonbashi Honcho
Chuo-Ku, Tokyo 103-0023
+81 3 3639 5360
Japan

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

EO201NA-09/13-5M
Printed in USA