Liquid Fuel Medium Speed Generator Sets
Sustainable and affordable power systems
Benefits of liquid fuel engines

- **Powerful and reliable**

  Rolls-Royce has supplied liquid fuel oil-burning engines for power generation and mechanical drive applications worldwide.

The B32:40 engines are powerful and reliable diesel units exploiting strengths that characterise our well proven B-engine models. A combination of high performance, reliability and cost-effective operation delivers powerful customer benefits.

The B32:40 is designed to meet customer needs for power, flexibility and ease of maintenance.

The B32:40 provides a range of outputs between 3.9 and 7.0 MW in 9-cylinder in-line configuration and in 12- and 16-cylinder Vee configuration.

Rolls-Royce also offers Long-Term Service Agreements (LTSA) and has a global network of local service centres to support land-based installations.

Major investments in the development of new products and equipment ensure that we fully meet the challenges of today’s ultra demanding liquid fuel engine market.

- **Extensive experience**

  The B32:40 is built on a wealth of experience. We work with the latest analysis and development tools, materials and component technology to produce an exceptionally reliable engine with low wear, high availability and long overhaul intervals.

- **Low fuel oil consumption**

  We use the latest generation turbochargers and the newest fuel injection technology.

- **Low lube oil consumption**

  A specially developed piston ring pack and a carbon cutting ring reduce the lube oil consumption to optimal levels.

- **No leakage of fuel to lubricating oil system**

  Our unique deflector/collector system ensures fuel leakage is drained away without reaching the lubricating oil system.

- **No heavy fuel to clog the fuel pump**

  A cleaning/lubrication system cleans the pump’s moving parts, avoiding problems caused by fuel rack sticking.

- **Less downtime due to low wear and tear**

  Closely controlled thermal loads, plateau honed surface cylinder liners and piston ring grooves, coated piston rings and new exhaust valve seats ensure low wear, long component lives and low use of spares.

- **Good accessibility and easy overhaul**

  Excellent access is built in for all maintenance work. Special tools, including hydraulic tightening jacks for vital bolts, reduce downtime.

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Your Powerful Partner

Rolls-Royce Power Systems AG with its headquarters in Friedrichshafen, Germany, is a specialist for large engines, propulsion systems and distributed energy systems.

The product portfolio includes MTU brand high-speed engines and propulsion systems for ships, for heavy land, rail and defence vehicles, and for the oil and gas industry. Under the MTU Onsite Energy brand, the company markets diesel gensets for continuous, prime, peak and standby applications, in addition to cogeneration plants for the generation of combined heat and power based on gas engines. Medium speed engines of Rolls-Royce Power Systems are produced in Norway for marine and power generation applications. l’Orange rounds off the portfolio with fuel injection systems for large engines.
Technical highlights

TURBOCHARGING SYSTEM
- The constant pressure turbocharging system ensures optimal performance at all engine loads.
- High performance double wall exhaust bellows at each cylinder for individual and free expansion to ensure durability at all engine loads.
- Easily removable insulation panels for inspection and maintenance.

THE CAN-BUS SIGNALLING SYSTEM
- Signals for monitoring purposes are collected using a high-speed two-way data bus. Digitising signals on the engine allows easy connection to monitoring systems, reducing susceptibility to EMI and simplifying cable installations.

ENGINE CONTROL CABINET
- A comprehensive view of the engine operating parameters is provided by modern instrumentation with a touch screen menu-type display.

CYLINDER BLOCK
- Strong, stiff monoblock structure with underslung crankshaft, integral charge air receiver, lube oil and cooling water channels.
- All main bolts are hydraulically tightened.
- Very stiff and cored-out base rim enables soft rubber mounting of the engine, avoiding the risk of deflections.
- Extra main bearing supports a generator or coupling.
- Easy access via large inspection doors.
- Very rigid structure of nodular cast iron.
- Reinforced cam webs increase load margins caused by higher fuel injection pressure.
- Simplified camshaft compartment design and oil sealing, with solid pillars between camshaft covers and other monitoring systems.

FUEL INJECTION SYSTEM
- Developed for Rolls-Royce by l’Orange with 1,800 bar fuel injection pressure for increased combustion performance and low exhaust emissions.
- Mechanically rigid design of cam, drive and fuel injection pump for lasting and durable HFO operation.
- Fuel injection pump with pressure unloading delivery valve for minimised cavitation at all times.
- Nozzle design with needle dampening effect for longer nozzle lifetime.
- High nozzle opening and closing pressure for low smoke emissions.
- Nozzle holder with threaded high pressure pipe connection for safe leak-free operation.
- Advanced and simplified one-piece double wall high-pressure fuel pipe design.
- Oil leak warning etc.
- Excellent accessibility for inspection and maintenance.
- Integrated pneumatic stop device in each fuel injection pump housing for safe operation and compact design.

CRANKSHAFT
- Continuous grain flow steel forging of ample dimensions features steel plate counterweights for better balancing, precision and space utilisation. A two-piece gear at the camshaft flywheel end provides camshaft drive while generous bearing sizes and modern materials ensure low wear.
- Drop forged for continuous grain flow with high strength-to-weight ratio.
- Large diameter journals and pins for reduced bearing contact pressure.
- Hydraulically tightened counterweight bolts.

LOW PRESSURE FUEL SYSTEM
- Condition based fuel filter maintenance (differential pressure measurements) and online monitoring of essential operational parameters.
- Double fuel filters with high flow and excellent filtering capacity.
- Low pressure fuel system equipped with highly efficient pulsation dampers.

PISTON
- High strength and excellent cooling are critical aspects of this design, which features all three piston rings in the crown. The nodular cast iron skirt provides low thermal expansion, good sliding properties and low weight.
- Oil cooled two-piece design.
- The top ring has increased height and chrome-ceramic coating to reduce ring and liner wear still further.

CONNECTING ROD
- Forged in alloy steel and machined.
- Fully machined for weight optimisation.
- Three-piece connecting rod design.
- Hydraulically tightened bolts.
Flexible Power Solutions

Rolls-Royce offers a total solution using a modular product concept that offers flexibility to assemble the power plant to suit any application. The selection could vary depending on requirements, ranging from the basic reciprocating engine generating set module, to balance of plant modules. Pre-engineered modules mean they can be easily co-ordinated and assembled into a complete power plant, fully equipped with all the essential plant components.

Service concept and maintenance intervals

The Rolls-Royce service and support concept provides complete life-cycle support for your engine and its equipment.

Our engines are covered by an extensive service and maintenance network. Our local service centres support land-based installations 24 hours a day, 365 days a year – and they are backed by our first-class logistics system, to ensure rapid response to inquiries.

We know that lifelong support of your investment means minimum downtime and low life-cycle costs. We provide a wide variety of services to optimise the B32:40 engines during their lifetime. These include access to original replacement units, regular on-site inspections, life extension programmes, technical support and computer-based personal training programmes.

Regular maintenance checks, which are reduced to a minimum, are grouped within a few defined service stops. They enhance both running time and availability of your engine.

Receptiveness, clear process management and keen manufacturing quality are key drivers to ensure that the products meet customer expectations every time in a continuously changing power generation market. These expectations are reflected in a pre-engineered module design, providing compact, pre-assembled, cleaned and fully tested modules resulting in a high quality solution with a shortened installation and commissioning period.

Managing key design and manufacturing processes help to avoid potential problems and unnecessary delays during installation. This philosophy is reflected in the modular products that complement the Integrated Power Solutions concept.