

The OP16 generator set is available as a standard unit, factory tested and ready for customer installation. It includes all necessary basic turbine on-base systems and a free-standing turbine control cabinet. Additional auxiliary and accessory equipment is available to ship with the generator set, either installed on the generator set or ready for customer installation as appropriate.

OP16 Generator Set – Standard Scope of Supply

1. **OPRA OP16A or OP16B all-radial industrial gas turbine**, rated 2560 shaft horsepower (1840 KWe) at ISO conditions, suitable for continuous duty service on liquid or natural gas fuel. The turbine includes integral epicyclic reduction gear with output speed shaft of 1800 (60Hz) or 1500 (50Hz) rpm, with overload protection and accessory drives. Also includes inlet air shroud with duct attachment flange.
2. **Synchronous generator**, 2250 KVA, 0.8 Power factor, 3-phase, 480 to 4160 voltage as appropriate for the customer's application. Air cooled, open drip-proof construction to meet NEMA standards, with self-lubricated bearings, integral exciter, and solid state voltage regulator.
3. **Coupling and coupling guard**
4. **Generator set base**, fabricated heavy structural steel with integral turbine lubricating oil reservoir, drip pan, turbine mounting pads, generator mounting pads, and mounting locations for all on-base systems and related piping and wiring. Three-point installation arrangement to maintain turbine / generator alignment. Industrial coating system. Provisions for mounting indoor acoustic enclosure or outdoor weather protected acoustic enclosure.
5. **Lube oil system**, including turbine driven oil pump, motor driven auxiliary pump, duplex oil filters, pressure regulation, thermostatic valve, air-cooled oil cooler with AC motor driven fan (suitable for remote, off base installation), all on-base lube oil piping and hoses.
6. **Starter system**, including AC motor driven, variable volume hydraulic pump, axial piston hydraulic motor, reservoir (combined with lube oil reservoir), suction filter, hydraulic hoses and piping.
7. **Ignition system**, including high energy multiplex exciter, cables and igniter plugs.
8. **Gaseous fuel system**, including on-base valves, piping, filters, drains, fuel oil pump (liquid or dual fuel only), metering valves, actuator controlled block and bleed valves, combustor fuel nozzles, and fuel piping.
9. **Turbine monitoring instrumentation**, including vibration probes, speed pick-ups, pressure probes and temperature probes.
10. **Control system**, enclosed cabinet with solid state logic, including starting and shutdown sequencing, speed governing, engine protection, generator protection, generator synchronizing, alarm and status indication, and operator control interface (HMI).
11. **Operations and maintenance manuals.**

OP16 Generator Set – Optional Systems and Accessories

1. **Acoustic enclosure – standard indoor**, fabricated steel with access doors and panels for full access for inspection and maintenance. Mounts directly on generator set base with appropriate interface connections for turbine inlet air, ventilation inlet and exhaust, turbine exhaust, control wiring and generator wiring. Sound attenuation is 85 dBa at 1 meter.

2. **Acoustic enclosure – standard outdoor**, fabricated steel with access doors and panels for full access for inspection and maintenance. Mounts directly on generator set base with appropriate interface connections for turbine inlet air, ventilation inlet and exhaust, turbine exhaust, control wiring and generator wiring. Sound attenuation is 85 dBA at 1 meter.
3. **Acoustic enclosure – standard outdoor with integral control room** on extended generator set base and similar to enclosure above. Control room houses turbine and package control system, completely wired to generator set. Control room provides space for optional instrument air system and control power UPS.
4. **Installation isolation pads**, includes engineered vibration isolation pads designed for generator set load and installation requirements, sized to carry weight of generator set on 3-point mounting configuration.
5. **Control panel – remote**, free-standing panel mimics selected controls, alarms and annunciation on generator set control panel.
6. **Liquid fuel system**, supplied in lieu of gas fuel system, includes liquid fuel nozzles, fuel metering valve, fuel pump, fuel purge system, liquid fuel piping and package control system upgrade.
7. **Dual fuel system**, provides liquid fuel system described above as additive to and integrated with gas fuel system, includes dual fuel nozzles and all related components. Permits switching fuels under load.
8. **Low NOx configuration**, incorporates OP16-3B gas turbine for NOx exhaust emissions of 25 ppm.
9. **Inlet air system package**, including air inlet filter house, with replaceable filter elements and stainless demister pads, inlet air silencer, ducting, inlet air flex section, for mounting on outdoor acoustic generator set enclosure. Package may also include servicing platform, platform rails and personnel ladder all for attachment to enclosure.
10. **Exhaust gas system package**, including exhaust expansion joint, exhaust elbow, silencer, stack and silencer support. Also includes insulation from turbine exhaust flange to exhaust silencer.
11. **Enclosure ventilation package**, includes ventilation air filtration integrated with inlet air package, inlet ducting, enclosure inlet and outlet sound attenuation, motor-driven fan and outlet ducting.
12. **Safety package**, includes gas detection system and enclosure fire suppression system, all integrated with generator set control system annunciation and safety shutdown systems.
13. **Compressor water washing system**, factory installed, includes spray nozzles, stainless tubing manifold for manual periodic water wash cleaning of compressor and inlet flow path.
14. **Low heat content gas fuel system**, includes combustion cans, fuel nozzles and fuel piping designed to allow the generator set to operate on low heat content fuels, such as digester or land fill gases. Approval of fuel specification required by OPRA.
15. **Alternate generator specs**, allows the generator set to be supplied to meet specific customer and / or pertinent specifications for alternate voltages, generator enclosures, insulation groups, output lead configuration, bearings and lubrication, and other specific requirements.
16. **Maintenance options**, including levels from training and recommended spares to full contract maintenance. Options may be tailored to customer's specific needs.

Note: All items listed above as standard scope of supply or as optional or auxiliary equipment are provided for planning purposes only. Actual scope of supply to be defined in proposal.