

TECHNICAL SPECIFICATION
FOR GAS ENGINE GENERATOR

18H35/40GV X 2 SETS



SYNCHRONOUS GENERATOR

Manufacturer	Hyundai Electric	
Rated output	kW	8,380
	kVA	10,475
Rated Voltage	V	11,500
Rated Amperes	A	526
Rated Frequency	Hz	50
Insulation Class	F	
Temperature Rise	F	
Number of pole	Nos	8
Cooling type	IC0A1	
IP degree	IP23	
Rated Voltage regulation	%	± 2.5
Efficiency at full load (without tolerance)	%	97.0
Rated Power Factor	0.8	
AVR	Digital, single	
Type of bearing	Single	
Design temperature	°C	Max. 55.0
Type of excitation	Brushless and self excited with AVR rotating field with damper winding	
<p>Accessories :</p> <ol style="list-style-type: none"> 1) Thermometer in bearing for local reading (1ea/bearing) 2) Stator winding temp. detector of PT 100 ohm (2ea/phase) 3) Bearing temp. detector of PT 100 ohm (1ea/each bearing) 4) Space heater 5) Air filter mat. 6) PMG assembly 7) CT's for differential protection - 3ea(1ea/phase) on the neutral side of generator 8) CT for AVR current sensing -1ea on the neutral side of generator 		

2. PRINCIPAL PARTICULARS

2.1 GAS ENGINE

Vee-type, 4-cycle, port injection, single acting, trunk piston type with exhaust turbocharged and charge air cooled design

. Model	: 18H35/40GV
. No. of cylinder	: 18
. Cylinder bore x piston stroke	: 350 mm x 400 mm
. Out-put at MCR	: 8640 kW at 750 rpm according to ISO 3046/1
. Brake-mean effective pressure	: 20.0 bar
. Mean piston speed	: 10.0 m/s
. Maximum pressure (design value)	: ** bar
. Dry weight of genset (approx.)	: Refer to General arrangement drawing
. No. of gas engine	: 2 set(s)/project
. Rotating direction (seen from flywheel)	: Clock-wise

**) Note

- . Please refer to the actual data on the shop test result for each project.
- . Allowable deviation of individual cylinders from average of total cylinders : ± 5 bar

2.2 ALTERNATOR

. Supplier	: HHI-EMD
. Maker	: HHI-EES
. Alternator model	: HAR7 185-8P
. Alternator capacity	: 8,380 kWe / 50 Hz / 11,000 VAC
. Alternator bearing lubrication	: Forced lubrication

3. DESCRIPTION OF MAJOR COMPONENTS

3.1 CHARGE AIR COOLER

- . Tube with fin type, two stage, attached water mist catcher.

3.2 TURBOCHARGER

- . High efficiency turbocharger, un-cooled casings
- . Lubrication by engine system oil with SAE 40.

3.3 GOVERNING ENGINE CONTROL SYSTEM

- . Electric control of Gas feeding system, ignition system, speed adjustment, monitoring and load limit controls are standard feature.

3.4 TURNING FOR FLYWHEEL

- . Electric driven turning device

3.5 COMPRESSED AIR SYSTEM

- . Supply of compressed air of max. 30 bar is required from the starting air reservoir for the starting, control and safety system of the engine.

3.6 COOLING WATER SYSTEM

- . The cooling water system consists of a low temperature system and a high temperature system.
- . HT & LT Cooling water pumps are mounted on the engine.

3.7 FUEL GAS SYSTEM

- . The fuel injection equipment comprise gas mixer tube, gas admission valve and flexible pipe.

3.8 LUBE OIL SYSTEM

- . The engine driven main L.O pump, electric motor driven prelubricating pump, 34 micron automatic backflushing filter, and pressure regulating valve are mounted on engine.

3.9 ENGINE CONTROL AND MONITORING SYSTEM

- . Speed regulator & adjustment.
- . Engine safety.
- . Engine speed & T/C speed.
- . Pressure & temperature monitoring
- . Valve control & monitoring
- . Cylinder pressure control & monitoring
- . Knocking control & monitoring
- . Engine start/stop
- . Emergency stop
- . ECS will provide engine control & monitoring system for local control & monitoring at engine side and communicate with EGCP.
- . Also the necessary sensors such as temperature, pressure and speed, etc. will be integrated with ECS and the numbers and types of sensors are chosen according to manufacturer`s standard.

3.10 ENGINE SHUT-DOWN AND OVERSPEED STOP

- . The engine shut-down and overspeed trip can be done by ECS.

3.12 MATERIAL SPECIFICATION OF MAJOR COMPONENTS

- | | |
|------------------------------------|--|
| . Engine block | : Gray cast iron |
| . Front end block | : Gray cast iron |
| . Crankshaft | : Forged, hardened and tempered steel |
| . Connecting rod | : Forged, hardened and tempered Cr-Mo steel |
| . Piston | : Composite type, nodular cast iron skirt, forged Cr-Mo steel crown. |
| . Cylinder head | : Spherical graphite cast iron |
| . Cylinder liner | : Special alloy cast iron |
| . Exhaust and inlet valve spindles | : Heat treated Cr-Mn-Si alloy |
| . Fuel gas supply equipment | : Maker standard |
| . Turbocharger | : Maker standard |
| . ECS(Engine Control System) | : Maker standard |

4. ENGINE AUXILIARY EQUIPMENT

The following accessory components are equipped on the engine except (*) marked components which shall be delivered separately.

The quantities of components are provided as per each engine, unless otherwise mentioned.

4.1 FUEL GAS SYSTEM

- . Gas admission valve, Gas mixer tube on each cylinder
- . Prechamber & check valve on each cylinder
- . Fuel gas venting valve
- (*) . Gas regulating unit including flow meter.

4.2 LUBRICATING OIL SYSTEM

- . Engine driven lube oil pump
- . Lube oil thermostatic valve, wax type
- . Electric motor driven prelubricating pump
- . Lube oil automatic backflushing filter (34 micron)
- . Lube oil centrifugal by-pass filter
- (*) . Lube oil pre-heating unit
- (*) . Crank case lube oil mist separator
- (*) . Plate type lube oil cooler

4.3 COOLING WATER SYSTEM

- . Engine driven HT-cooling water pump
- . Engine driven LT-cooling water pump
- (*) . HT-cooling water temperature control valve, MOV type
- (*) . LT-cooling water temperature control valve, MOV type
- (*) . Jacket water pre-heating unit

4.4 AIR INTAKE AND COMPRESSED AIR SYSTEM

- . Turbocharger equipped with intake casing for outdoor
- . Air starting motor starter for engine starting
- . Electric motor driven turning device
- (*) . A adapter for intake air duct with flexible joint

4.5 COMBUSTION AIR AND EXHAUST SYSTEM

- . 2-stage charge air cooler with water mist catcher
- . Exhaust gas turbocharger equipped with intake casing
- . Water cleaning device for turbocharger compressor
- (*) . Expansion joint for turbocharger outlet

4.6 CONTROL AND MONITORING SYSTEM

- . Pressure & temperature sensor
- . Exhaust gas temperature sensor
- . Main bearing temperature sensor
- . Oil mist detector
- . Knock detection sensor
- (*) . ECS (Engine Control System) cabinet.
- (*) . Turning gear starter

4.7 MISCELLANEOUS

- . Resilient mounting with conical rubber elements
- . Engine gallery with ladder
- . Flexible coupling between engine and alternator
- (*) . Flexible hoses for external pipe connections.
- (*) . Holding down bolts, nuts, shim plates, base plates etc.
- (*) . Counter flange, bolts and nuts for external pipe connections
- (*) . Counter flange, bolts and nuts for T/C exhaust outlet & air intake