



Gas turbine power stations based on gas turbines rated at 22/25 MW



Package supply of power equipment

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JSC "REP Holding" is a leading Russian power engineering company, a manufacturer and supplier of new-generation power equipment.

It performs engineering design, manufacture and package supply of power and electrical equipment for gas, oil, metallurgical and chemical industry, power generation and integrated power grid.



T25 gas turbine

REP Holding offers manufacture and supply of packaged equipment for gas turbine power stations based on gas turbines rated at 22/25 MW*.

The main equipment is unitized to the greatest possible extent and is to be assembled from the modular units.

Gas turbine power unit rated at 22/25 MW

T25 gas turbine, simple - cycle

The heavy-duty GTU T25 are manufactured and assembled in Russia on the production site of REP Holding - "Nevsky Zavod" - under the license of Solar Turbines and in cooperation with the abovementioned company. It features high economical efficiency (40%) at a low level of harmful emissions for this power rating.

*Gradual increase in power is planned

General technical data

The main parameters of T25 gas turbine at ISO nominal conditions

Description	Unit	Value
Shaft power	MW	22.4
Turbine efficiency	%	40.0
Exhaust gas flow	kg/s	68.24
Exhaust gas temperature	°C	465
Pressure ratio	~	24
Fuel gas flow ($Q_{pH}=50000$ kJ/kg)	kg/s	1.11
Output shaft speed, nominal	rpm	6300
Emission (at 15% O ₂ in dry combustion products): - nitric oxide - carbon oxide	mg/m ³ mg/m ³	≤50 ≤50

Gas turbine parts

Compressor

- Axial, 16 stages, variable IGV and variable guide vanes assemblies of 5 stages
- Casing with a vertical split

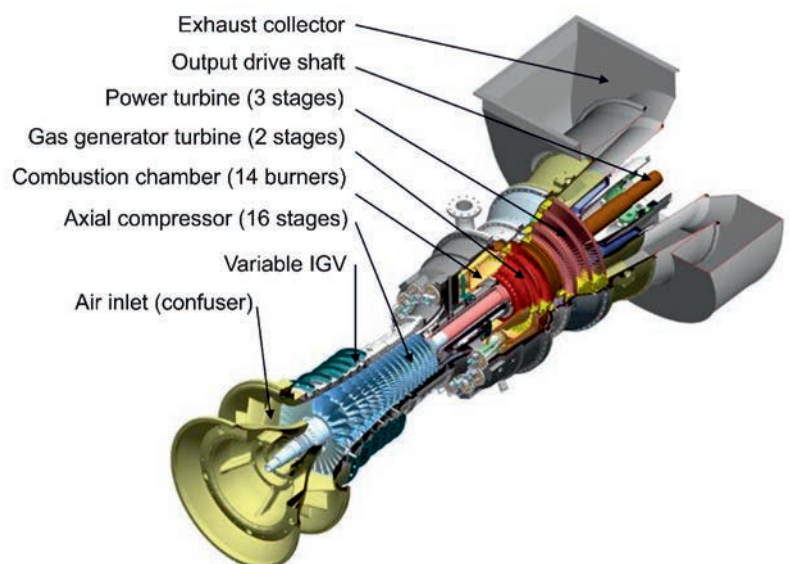
Combustion chamber

- Annular, with injection fuel burners
- Dry low emission system SoLoNO_x™

Gas generator turbine with cooled nozzles and blades with protective coating

Power turbine with nozzles and rotor blades without cooling

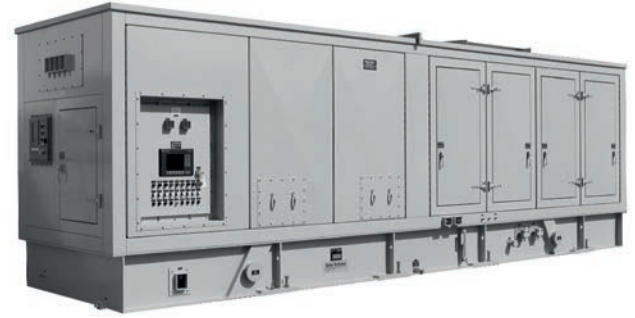
- Compact radial exhaust



Gas turbine power plant (GTP)

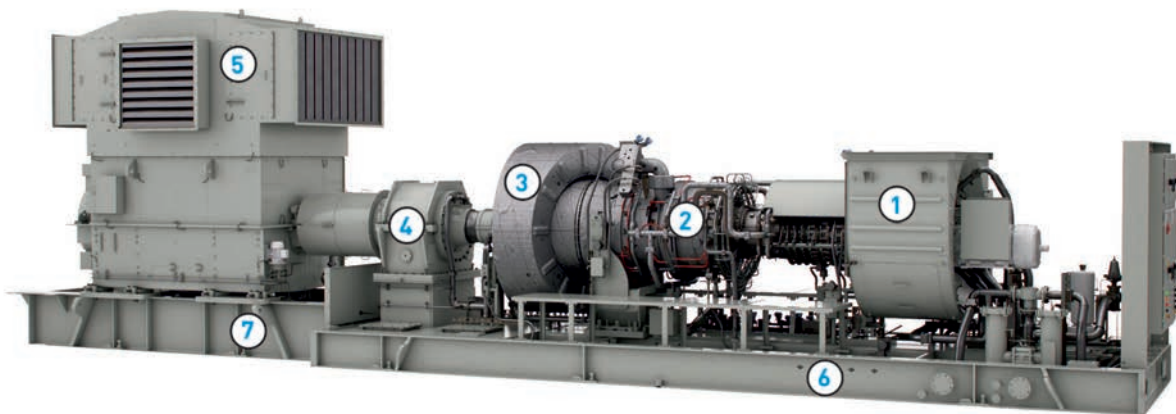
GTP scope of supply includes the following main equipment:

- Gas turbine engine on a base plate (GTE);
- Turbo-generator (TG) for GTE;
- Gear box to transmit power from the GTE to TG;
- Inlet air filter;
- Air and gas duct system;
- Heat-recovery boiler (option*);
- Automatic process control system (APCS);
- Electric equipment;
- Support systems;
- Metal structures.



External view of the power unit in the noise-proof and heat-insulating enclosure

* Is used for combined generation of electric and thermal power

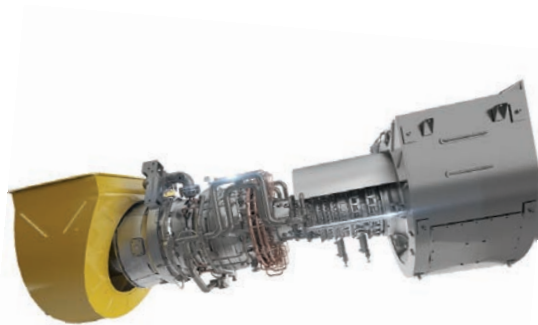


The main equipment of the power unit on the base plate (with enclosure removed):

- 1** – air inlet; **2** - engine; **3** – exhaust collector; **4** – gear box;
5 - generator; **6** – engine skid; **7** – generator and gear box skid

Advantages

- high reliability based on modern design practices and technologies applied in the design of the main element – gas turbine engine
- full service life – 200 thousand hours
- the highest electric efficiency in its class
- high economical efficiency of the plant in various operating modes
- feasibility of technical maintenance on site due to lateral roll-out of the turbo-unit



22/25 MW Gas-Turbine Engine,
3D Model

Packaged supply of the equipment by REP Holding provides:

- optimal layout solutions
- operating costs reduction
- maximum operational reliability of all the parts of the gas turbine power plant
- reduction of the equipment delivery time
- full package of service maintenance

Performance

The gas turbine power unit is operable at the ambient air temperature from -55 to +50°C.

The GTP-22/25 parameters at the ISO nominal conditions

Description	Unit	Value
Output at generator terminals	MW	21.75
Electric efficiency	%	38.9
Exhaust gas flow	kg/s	68.24
Exhaust gas temperature	°C	465
Fuel gas flow rate ($Q_{PH}=50000$ kJ/kg)	kg/s	1.11

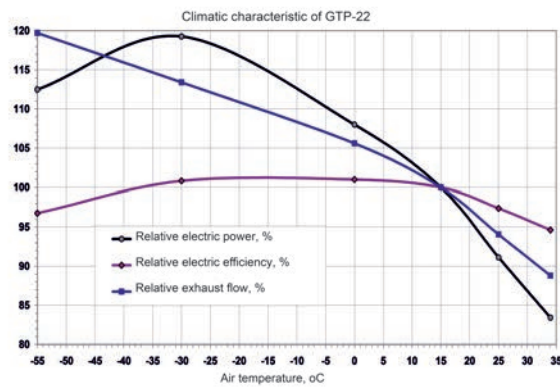


Configuration of the main equipment for GTP – CHPP (Central Heating and Power Plant)

- 1. Gas turbine power plant; 2. Generator with the air cooling system; 3. Oil air-cooler; 4. Exhaust pipe;
- 5. Air ducts for cycle air and air cooling system; 6. Filter house; 7. Waste- heat recovery boiler

Climatic characteristic of GTP-22/25

The values at 100% correspond to the nominal parameters

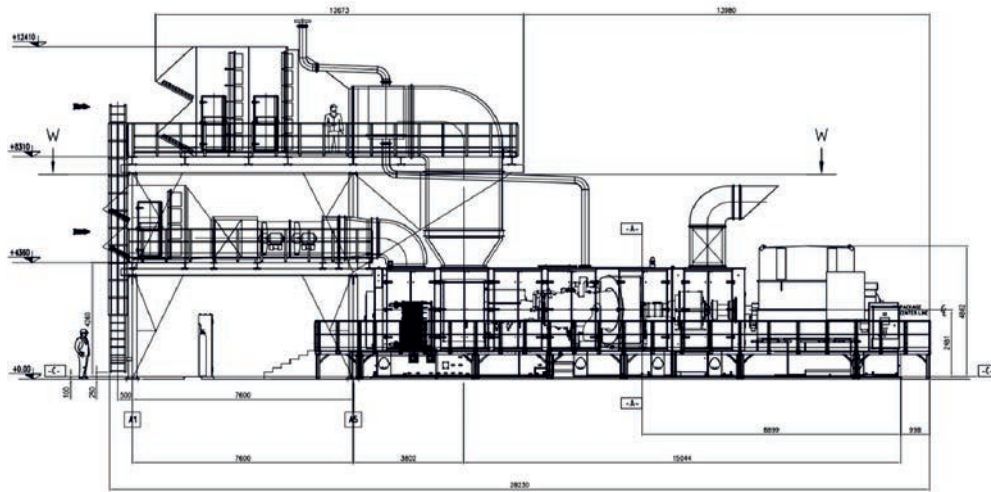


Performance characteristic of GTP-22/25

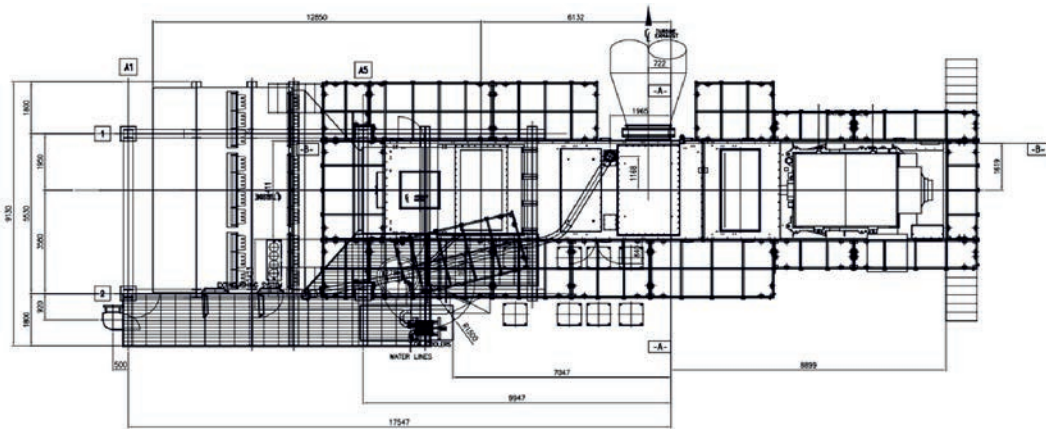
The values at 100% correspond to the nominal parameters



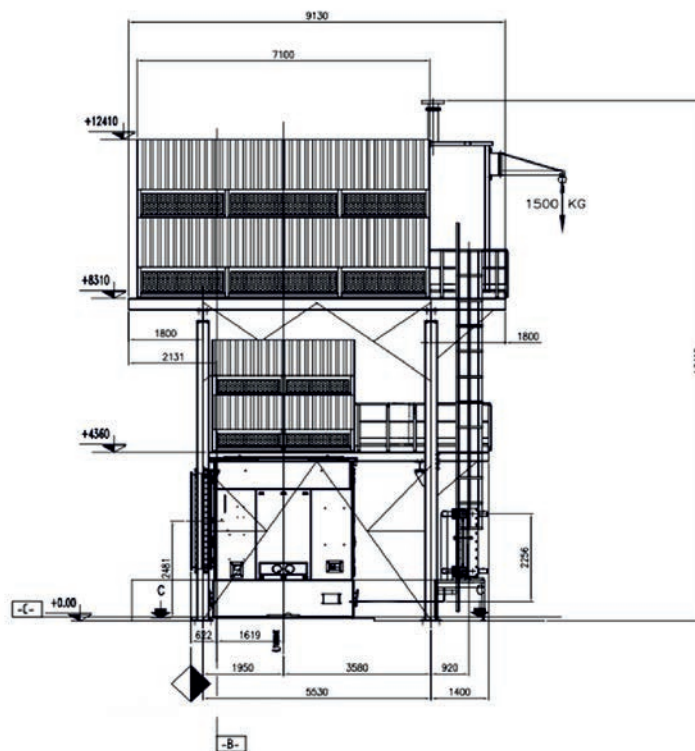
Alternate configuration of the main equipment for GTP-22/25 power unit



GTP-22/25, side view



GTP-22/25, top view



GTP-22/25, side view

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