

IGT30

Power Concept for IGT25 Gas Turbine



OTC
OIL TURBO COMPRESSOR CO.

IGT30

Power Concept for IGT25 Gas Turbine

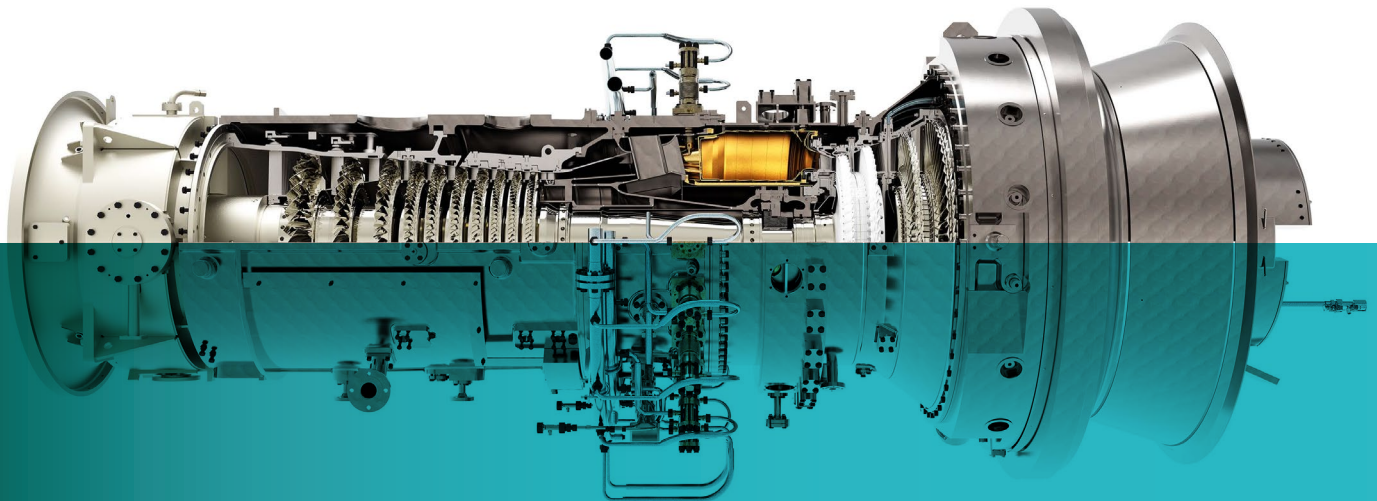


The IGT30 or Power Concept is an upgrade of IGT25 to increase engine performance and life time. This upgrade utilizes a new state of the art 3D design of compressor and reduction in turbine cooling mass flow rates by new materials choice in addition to an optimized design of the cooling and sealing systems. These modifications make it possible to increase power output by more than 2 MW. In this design the efficiency is expected to increase by 1%.

IGT30 gas turbines are suitable choices to be coupled with re-bundled gas compressors in order to increase the capacity of gas transportation lines, due to their increased power and efficiency and low added cost to improve performance.

By implementing this upgrade in some Iranian Gas Transportation stations, the capacity of IGAT III gas transportation line will increase up to 10%. Total profit due to this upgrade is comparable to the cost of a number of new GT units per year.

The main concepts to improve performance are using advanced aerodynamic design in compressor and reducing required cooling and sealing flows in turbine component.



2MW More Power and 1% More Efficiency Designed to 125,000 hr life

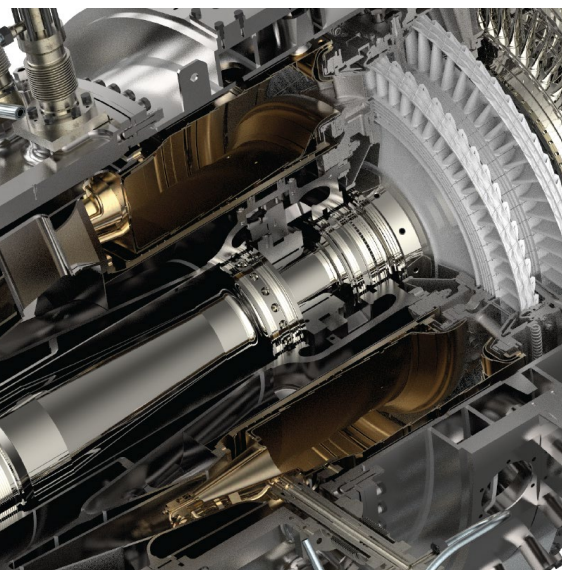
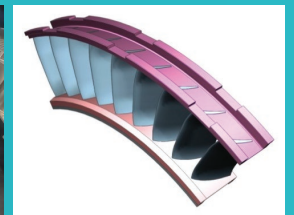
Make the most out of the engine!





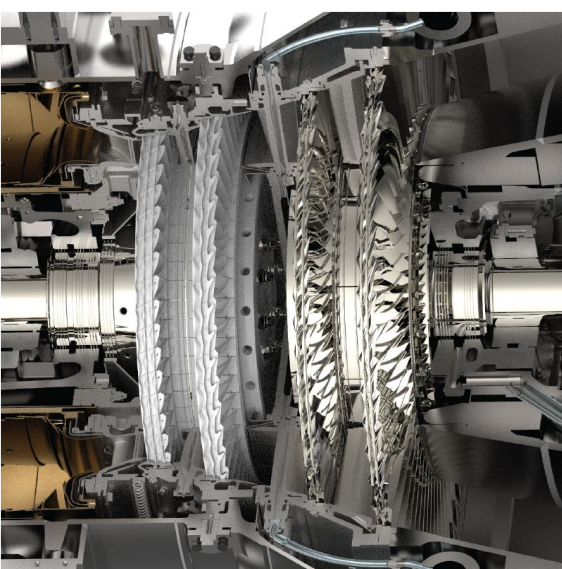
Compressor

- New design of IGV and first and second stages
- New 3D Design Stator Vanes



Combustion Chamber

- Diffuser redesign
- Improved cooling
- Improving the profile of the end of the liner
- Correction of burner fuel distribution



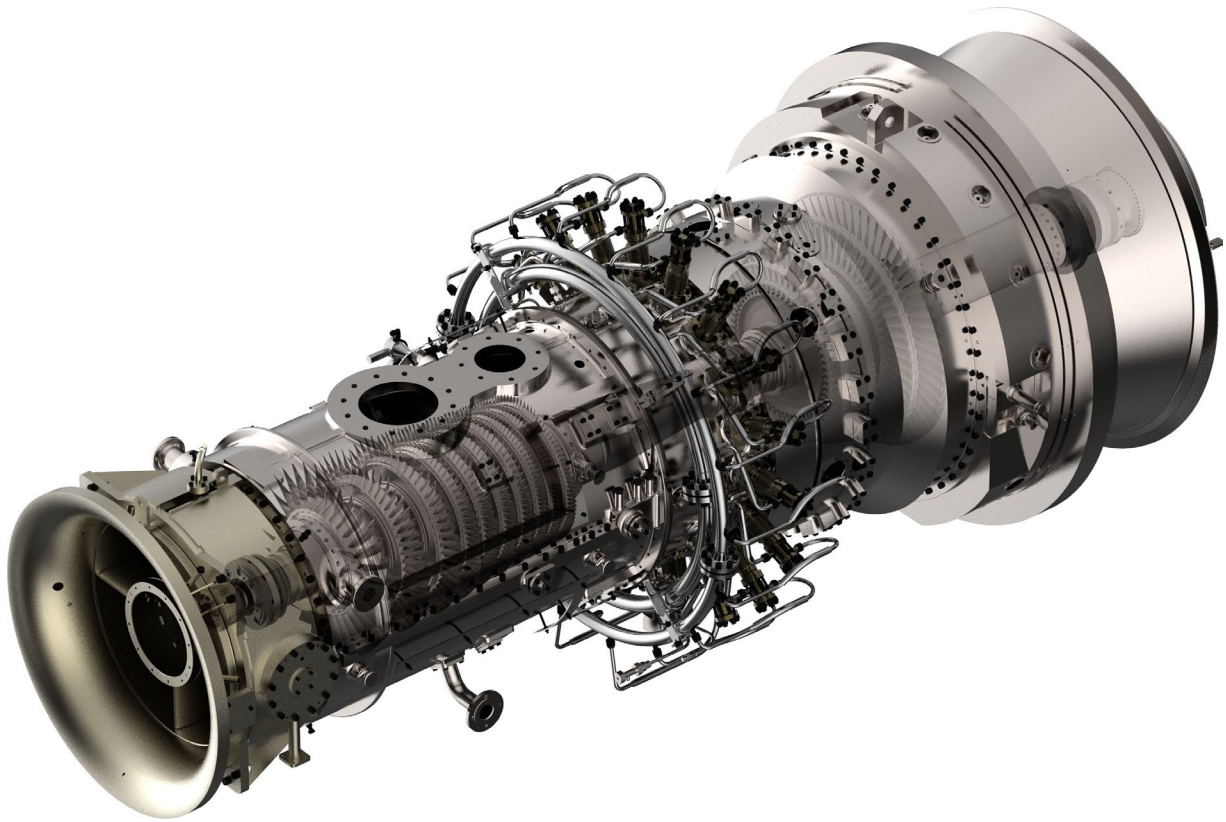
Turbine

- New materials in vanes and blades
- Cooling system optimized design
- Adjusting power turbine first NGV
- Power turbine reprofiling
- Vane1 count reduction and reprofiling



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Increase in power output more than **2MW**



Increase in efficiency more than **1%**



Upgrade Implementation
During a slightly extended level C scheduled inspection plan of IGT25



Power and Efficiency
Increase in engine power and efficiency for ambient temperature range of -10 to 50



Possibility of Capacity Enhancement
Gas transportation line



Suitable Choice
For coupling with re-bundled gas compressors



Low Ratio
Invested cost to performance improvement



Mechanical drive
27.6 MW



Turbine Speed
7,700 rpm



Exhaust gas Temp.
554.11° C



Efficiency
35.9 %



Pressure Ratio
15:1



Heat Rate
10,039 kJ/kWh



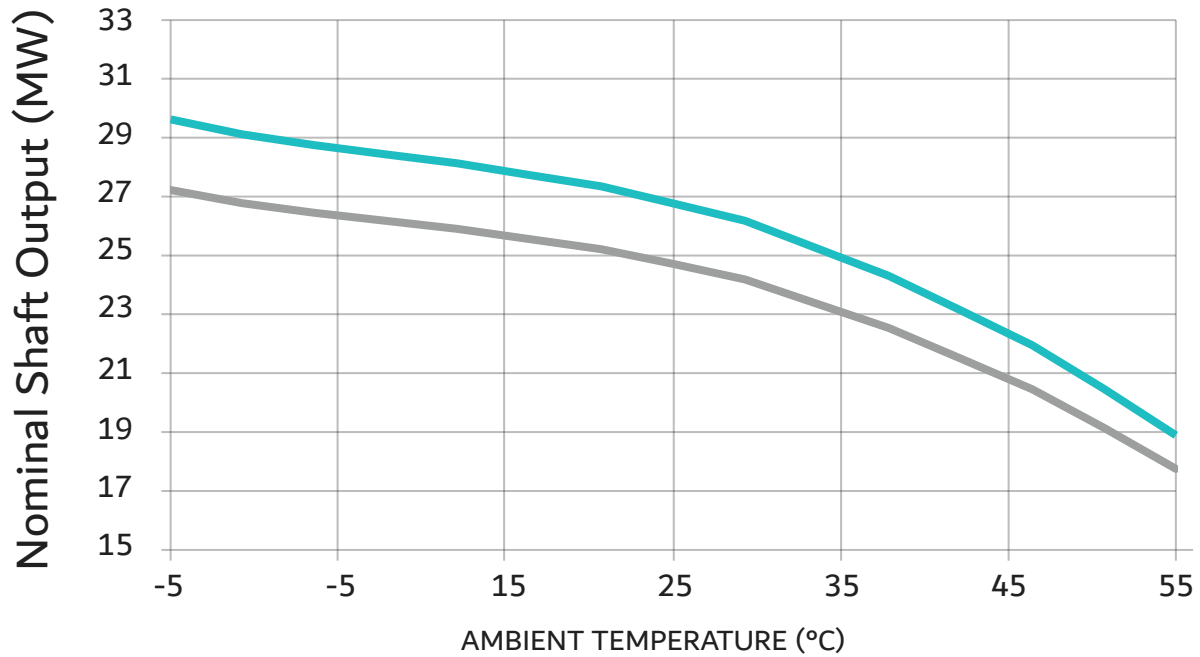
Exhaust Gas Flow
83.90 kg/s



≤ **20 ppmV** Natural Gas
≤ **42 ppmV** Liquid Fuel

Comparison of IGT30 version with IGT25

The variation of gas turbine output power and efficiency with ambient temperature are shown in figures below.



IGT25 IGT30

