

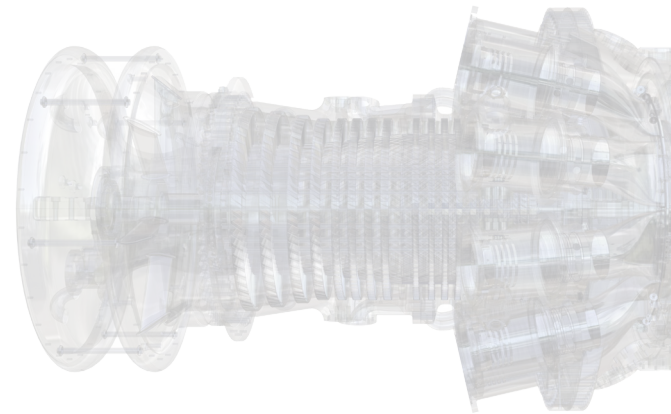
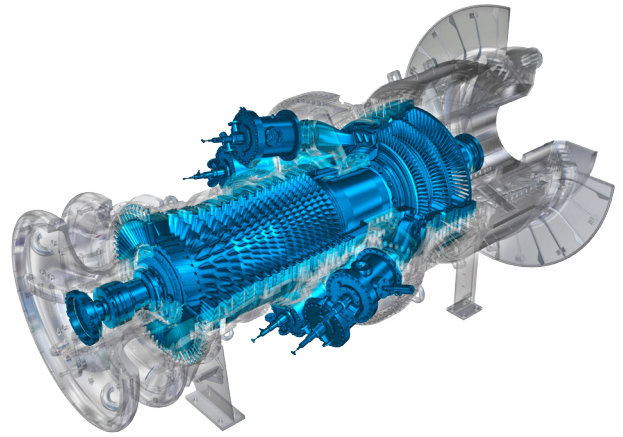
### MAPNA Power Gas Turbine

Reliability and availability are two major parameters in the oil, gas and petrochemical industry for power generation. Quality of manufacturing, long life service and specific design are among the characteristics that the MAPNA MGT-40 gas turbine can offer to tackle those challenges. Water injection in fuel nozzle mechanism results low NOx, which helps alleviate environmental concerns.

### Product Specifications\*

Frequency	50 Hz
Gross power output	42.2 MW
Gross efficiency	32.2%
Heat rate	11180 kJ/kWh
Design turbine inlet temperature	1082 °C
Exhaust temperature	548 °C
Exhaust mass flow	147.5 kg/s
Pressure ratio	12.3
Number of compressor stages	17
Number/type of combustors	10 Can/annular
NOx emission with natural gas	42 ppm (water injection)
Dimensions	6.4m × 3.3m × 3.3m (GT Body)
Weight	43 Tonnes

\* In ISO conditions with pure Methane  
Operation in Simple-Cycle  
Without Turbine Inlet and outlet pressure losses



### Advantages

- Utilized in simple or combined cycle plants
- Generator at the hot end
- Dual fuel nozzle
- Replaceable turbine side blades
- Quick installation
- Low cost maintenance
- High reliability and availability
- Rugged turbine

### Other Features

#### Rotor

The wheels and shafts of rotor are assembled to each other with mating features (male and female) for concentrated control and are held together with special bolts. Turbine blades are internally cooled by extractions from the last shaft of compressor to avoid deformation caused by thermal stresses.

#### Compressor Design

The MGT-40 Gas Turbine utilizes an axial 17-stage compressor with one IGV and two EGV. At the design point, the compressor rotates at approximately 5160 rpm, and delivers mass flow with total pressure ratio about 12.3.

#### Turbine Section

The MGT-40 Gas Turbine utilizes an axial 3-stage and the turbine blades can be replaced without disassembly of the wheel. Two first stages are internally air cooled and the first one is DS type.

#### Combustors

The combustion system is the reverse flow type which includes 10 combustion chambers having the following components: liners, transition pieces and fuel nozzles ignition and detection system. The fuel nozzles are of dual fuel type and are equipped with water injection system.

## Main Auxiliaries

### Fuel System

The main parts of the fuel gas system are strainers and stop and control valves, A hydraulic oil system provides high-pressure hydraulic oil to operate the control valves of the fuel systems.

### Air Intake

Air filtration provides a pollutant-free air with a suitable temperature at the engine inlet and basically consists of two stages of filtration, as well as silencers.

### Exhaust

The exhaust duct vacates the flue gas to the environment. The main parts are the stack and silencer.

### Lube Oil System

The system performs heat dissipation and lubrication of the turbine, gearbox and generator bearings. It consists of an oil tank, pumps, pipes, flanges, duplex filters, valves and cooler.

### Instrumentation and Control

Important features of the turbine instrumentation and control are:

- Provision of Automatic start up, closed loop acceleration control , load , temperature control and fired shut down
- Output power response to frequency variations in both droop and Isochronous mode
- Capability to operation in Island mode with isochronous mode
- Provision of all required protective systems for the gas turbine and its auxiliaries
- Provision of supervisory gas turbine instrumentation
- Provision of variable inlet guide vane for single and combined cycle operation mode
- Provision of automatic and manual rate of loading
- Provision of exhaust temperature monitoring according to allowable temperature spread

## Services Offered After Sales

Hot gas path and major inspections are normally performed at 24000 and 48000 EOH. The MAPNA power GT is indeed an easily maintained, tough and rugged machine during operation. With a proper maintenance regime, it can demonstrate a high level of reliability and availability. MAPNA Turbine Company offers the following services to clients.

### Provision of spare parts for the turbine and auxiliaries

Our own manufacture, as well as reliable network of spare parts suppliers enables us to satisfy individual client demands, including capital spares, as per order.

### Long-term supply and support agreements

We offer long-term contracts for various types of support and service.

### Training of end-user staff

We offer several training courses for new staff on site, such as general power plant knowledge, operation, maintenance.

### Performing inspections and overhauls

Our experienced maintenance personnel can perform turbine inspections and overhauls thoroughly.

### Fabrication and repair of turbine special parts

Thanks to our state-of-the-art machineries and skilled manufacturing personnel, we can provide fabrication and repair of special parts for our MGT-40 machines.