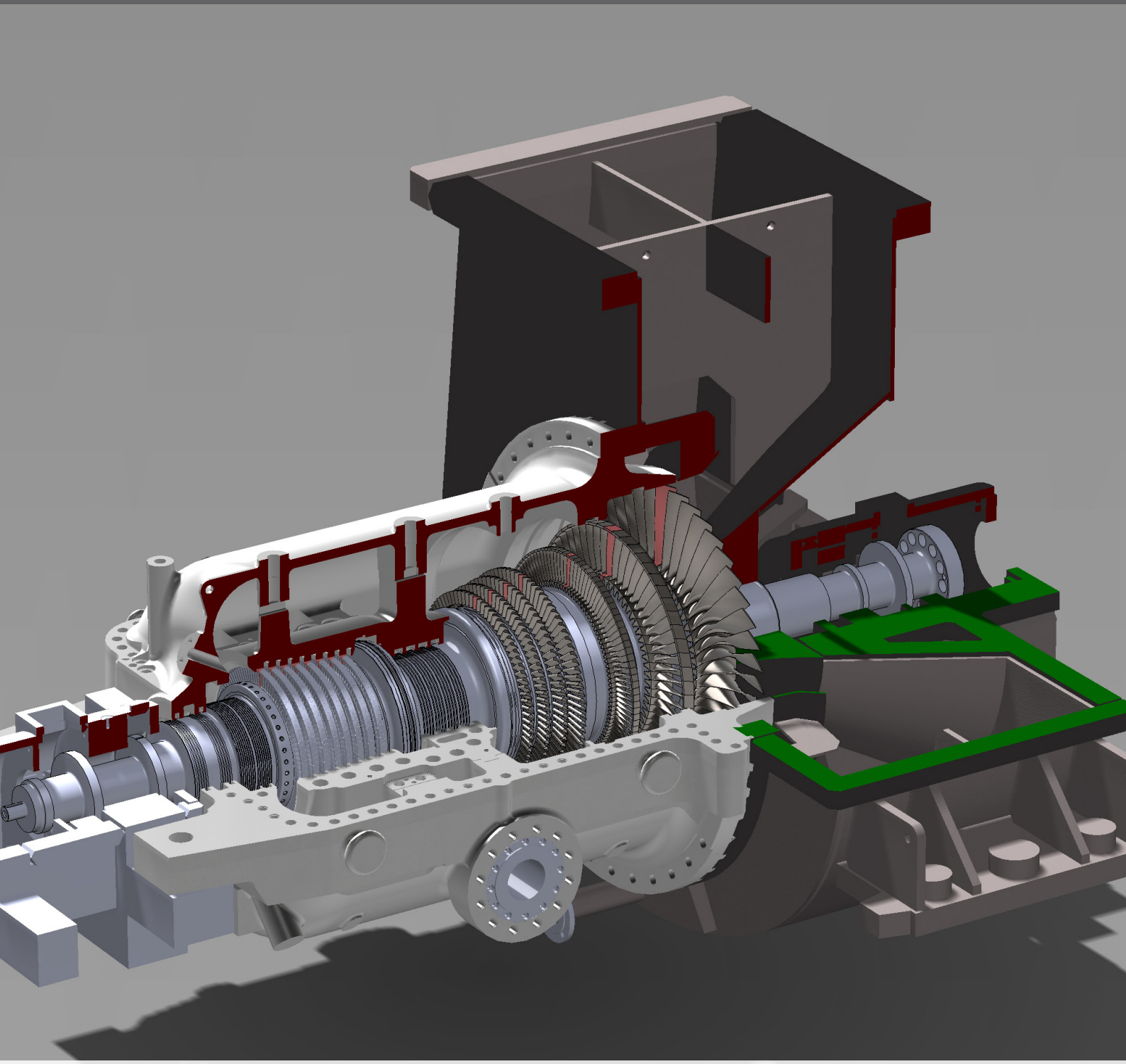

MAPNA GROUP

TUGA

MAPNA Turbine Engineering and Manufacturing Company

MST-30 Steam Turbines

Introduction

The MST-30 small to medium scale steam turbines, with up to 50 MW capacity, can be used for two main applications:

Power generation

- Combined cycle of small to medium scale gas turbines
- Simple steam cycle to provide power and steam for refineries, petrochemicals, paper and sugarcane industries, etc.
- Power generation in heat recovery cycles for industrial furnaces
- Power generation from excess steam of petrochemicals and refineries

Mechanical drive

- The drive of centrifugal compressors with high consumption power

These turbines can be designed as back pressure or condensing, and can have several steam bleedings to satisfy process conditions.

Specifications of MST-30/0100, as an example of turbines designed and manufactured in this range, are as follows:

MST-30/0100 Steam turbine

The 10 MW "MST-30/0100" steam turbine is intended for small combined cycles utilizing an MGT-30 gas turbine. This turbine is developed to increase efficiency up to 48.5% and reduce fuel consumption.

This reaction type turbine has a main steam inlet and an intermediate inlet called "Admission".

The main and intermediary steam valves are Plug type and Butterfly type, respectively.

Product Specifications

No.	Parameters	Unit	Value
1	Gross Power Output*	MW	10.9
2	CCPP Efficiency*	%	48.3 (with 2 x MGT-30)
3	Shaft Speed	rpm	8000
4	Main Steam Flow	kg/s	9.58
5	Main Steam Pressure	bara	40
6	Main Steam Temperature	°C	470
7	Supply Steam Flow	kg/s	1.87
8	Supply Steam Pressure	bara	8
9	Supply Steam Temperature	°C	228
10	Back Pressure	bara	0.09
11	Max. Allowable Back Pressure (Trip Value)	bara	0.5
12	Application	-	Combined Cycle Power Plant
13	Frequency	Hz	50
14	Weight (Core Engine)	tonnes	50
15	Dimensions (Length×Width×Height)	m	3.9 x 3.4 x 2.5

* Standard ISO Conditions

Competitive advantages

- Short start-up and fast loading
- Counter-flow arrangement in the steam path
- Eliminating the need for lifting by using tilting pad bearings
- Reducing output power loss by optimizing the steam output path
- Facilitated repair of bearings by placing them outside the turbine shell
- Ease of assembly and disassembly of the Free standing blades in the last stage
- Easy access to the turbine, gearbox and generator by installing the turbine on the ground
- Resistant vanes withstanding high condenser pressures, suitable for sites in tropical regions
- Increasing efficiency by designing the Rateau stage before the first reactive stage
- No need to create a high platform to install the turbine due to upwards steam exiting
- Preventing the separation of hardening materials on the leading edge of the final stage blades by performing Stellite brazing

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