

# Steam Turbines

1-160 MW



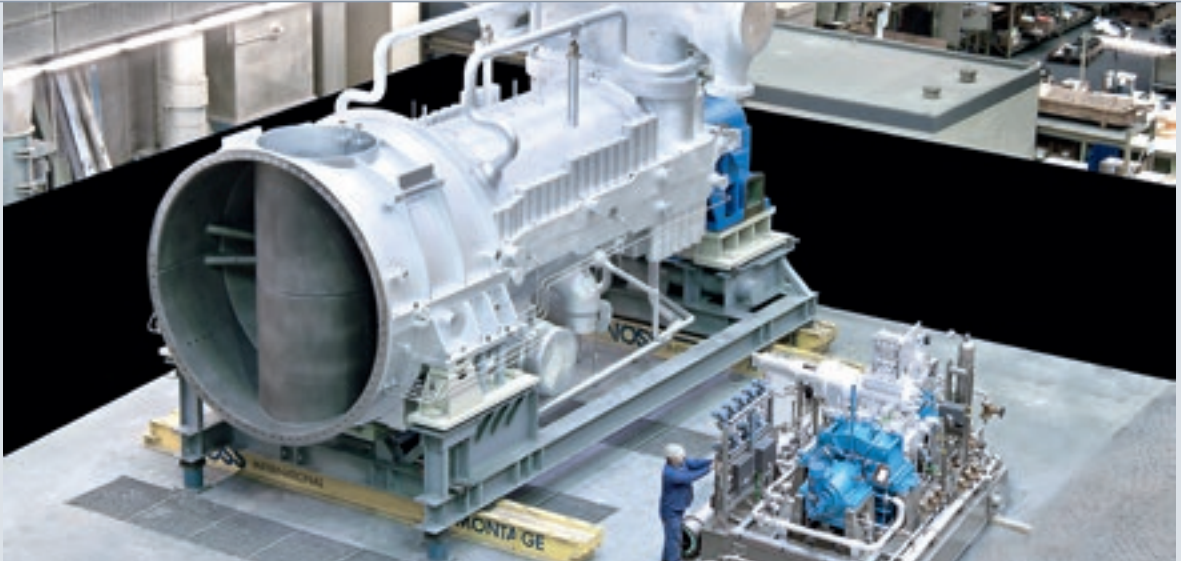
Engineering the Future – since 1758.

**MAN Diesel & Turbo**



# MAN Diesel & Turbo Steam Turbines

## Experience, reliability and innovation



*Two steam turbines assembled at MAN Diesel & Turbo workshop*

MAN Diesel & Turbo is among the leading turbomachinery suppliers and service providers worldwide. The comprehensive range of services and products including various types of compressors and turbines is based upon experience in more than a century, state-of-the-art manufacturing facilities, extensive R&D efforts as well as experienced professionals all around the world.

The wide range of multi-stage reaction type steam turbines offered by MAN Diesel & Turbo is applicable for both power generation as well as mechanical drive applications up unto 160 MW. The steam turbine is characterized by a variety of design features for an optimized turbine configuration to meet the challenging process conditions and/or specific customer needs. The modular design concept keeps delivery time and cost at minimum levels.

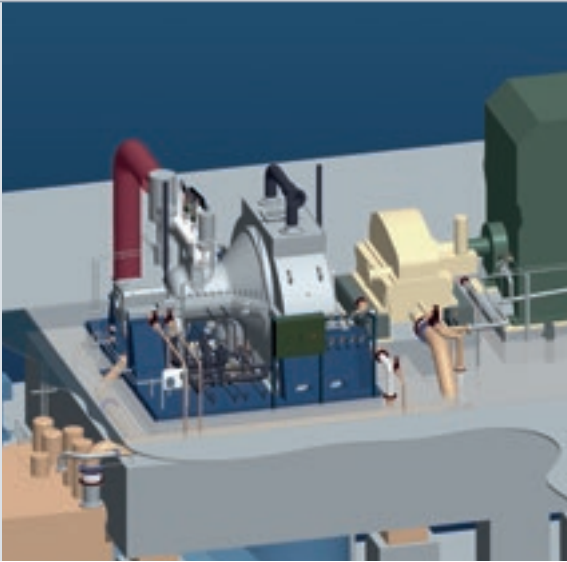
Turbine solutions supplied by MAN Diesel & Turbo combine proven technology with convincing operating profitability.

MAN Diesel & Turbo steam turbines cover the full spectrum of mechanical drive and power generation applications including:

- Combined cycle, combined heat and power, waste heat recovery, concentrated solar power, pulp & paper, biomass, waste-to-energy, diesel combined cycle
- Refining, chemicals/petrochemicals, fertilizer, air separation, PTA, iron, steel & mining



# MARC<sup>®</sup> Steam Turbine Series



The MARC<sup>®</sup> (**M**odular **A**rrangement **C**oncept) steam turbine series covers the complete turbine generator sets, ranging from 2 MW up unto 40 MW.

The equipment is highly suitable for a broad range of power generation applications including combined heat and power, waste-to-energy, concentrated solar power, biomass as well as waste-heat-recovery and can be selected from four distinguished turbine models. Depending on the customer demands, the robust and highly efficient steam turbines are supplied both as backpressure and condensing turbines. Optional controlled extractions allow a sophisticated steam supply at multiple pressures.

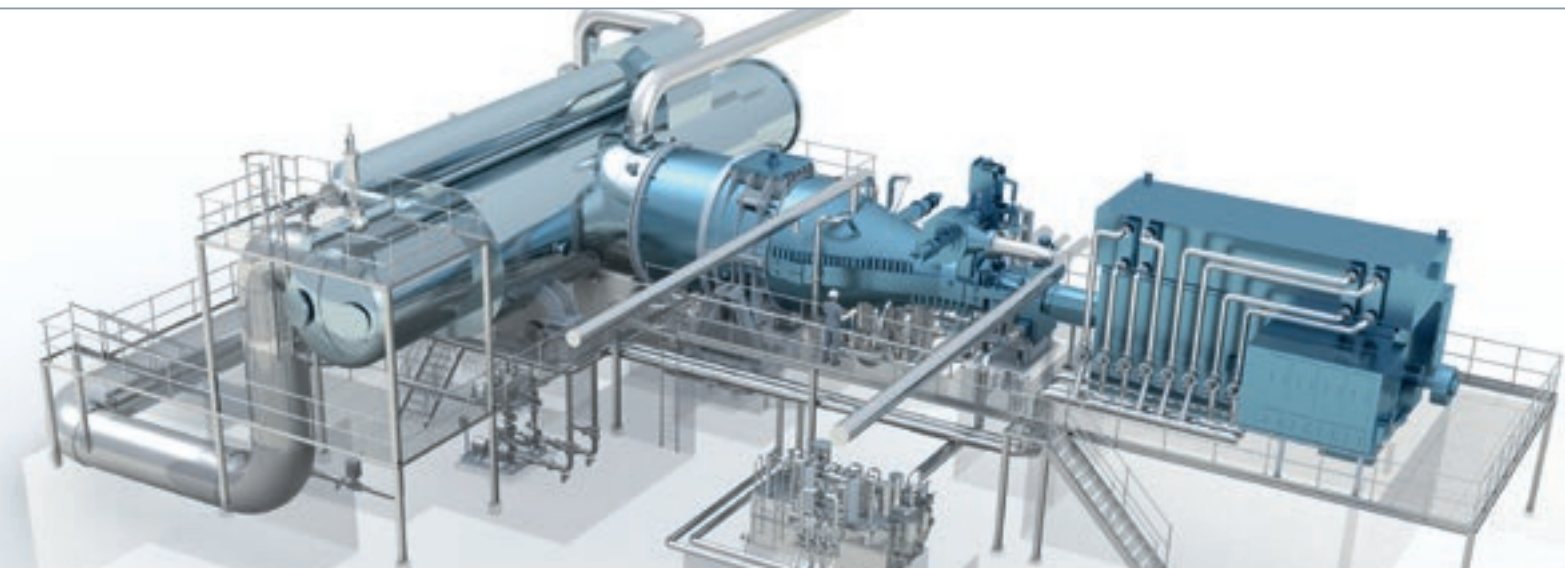
With significant references in numerous facilities, MAN Diesel & Turbo steam turbines verify impressive performances on a daily basis.

The shipped turbo generator units include six core modules:

- Steam turbine
- Gearbox
- Generator
- Lubrication oil module
- Control oil module
- Control cabinet

MAN Diesel & Turbo furnish the complete package for easy and rapid installation at site, reducing manpower, time and cost.

# Special Purpose Steam Turbines



Special purpose steam turbines include an array of sizes and design features for both mechanical drives and power generation applications up unto 160 MW. If required, the package will be designed according to API 612 standards and/or customer specifications.

Delivered as condensing or backpressure turbine, the modular design concept encompasses standardized bleed extraction and/or admission sections, reheating, housings and inlet/exhaust casings.

Turbines for the power generation market, especially fast growing environmentally responsible applications such as concentrated solar power plants or combined heat and power, require reliable equipment and the highest availability. MAN Diesel & Turbo's portfolio of single and dual casing turbines exceed the specific demands and accomplish the highest cycle efficiency in the market place.

Additionally, mechanical drive steam turbines, either with single or double end drives, are part of MAN Diesel & Turbo's product range. With the proven high quality and design flexibility, MAN Diesel & Turbo provides top of the class mechanical drives for nearly all industrial applications.

# Technical Data



## Special purpose steam turbines for mechanical drives and power generation (1-160 MW)

	Power range	Max. steam inlet
Standard	1-160 MW	140 bar (2,031 psi), 540 °C (1,004 °F)
Low pressure turbines	5-90 MW	1-20 bar (max. 290 psi), saturated steam
Air turbines (CAES)	25-90 MW	130 bar (1,885 psi), 540 °C (1,004 °F)

## MARC® steam turbines for power generation (2-40 MW, non-API)

	Power range	Max. steam inlet
MARC® 1	2-3.5 MW	60 bar (870 psi), 450 °C (842 °F)
MARC® 2	4-10 MW	90 bar (1,305 psi), 520 °C (968 °F)
MARC® 4	10-20 MW	110 bar (1,595 psi), 520 °C (968 °F)
MARC® 6	15-40 MW	120 bar (1,740 psi), 530 °C (986 °F)

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