

MOPICO®

Compact compression system for gas transport



Engineering the Future – since 1758.

MAN Diesel & Turbo



MOPICO®

Gas pipeline compression systems

The MOPICO® is a unique state-of-the-art integrated motor-driven pipeline compression system. The simple, compact and cost-effective design concept results in a highly reliable and largely maintenance-free system with the highest efficiencies over the complete operating range.

Design characteristics

The MOPICO® compression systems are available in various frame sizes, determined by the required motor rating. The product range can accommodate flow rates of between 190,000 Nm³/h to 1,890,000 Nm³/h and pressure ratios of approximately 2.

- **Basic design:** the ultimate in conceptual simplicity – single rotating element, two radial and one axial bearing, no couplings, no gear box, no lube oil, no shaft seals to atmosphere.
- **Motor:** high-frequency variable-speed induction motor. The rotor shaft is extended on both sides with a single, overhung impeller mounted on each end.
- **Bearings:** the rotor shaft is suspended by two radial magnetic bearings and positioned by a single axial magnetic bearing.
- **Cooling:** the motor and magnetic bearings are cooled by process gas, bled after the first compression stage and subsequently recycled into the suction system.

- **Hermetically-sealed pressurized system:** dictated by the motor cooling, the complete system operates at a pressure approximately equal to the system intake pressure. The three-piece vertically-split outer casing is designed for operation at pressures of up to 150 bar.

- **Drive system:** the motor is driven by a solid state, variable frequency drive system (VSDS), remotely located from the compressor building.

Product range

The MOPICO® is available with motor powers ranging from approximately 3 MW (4,000 HP) to 18 MW (24,000 HP) based on three motor frame sizes. The motor and compressor components are standardized to maintain the external geometry of the units. This results in standardized dimensions. A wide selection of impeller types with varying widths and diameters ensures optimal thermodynamic efficiencies.

Principal features

The MOPICO® is a hermetically-sealed, integrated electric motor-compressor system designed especially for gas pipeline applications. The unique concept of the system results in the lowest capital, operating and maintenance costs.

Main features

- High-frequency, squirrel-cage induction motor directly connected to two separate compression stages at each end of the motor shaft. The motor is cooled by process gas at a pressure approximately equal to the pipeline suction pressure.
- Two separate compression stages which can be connected in both series and/or parallel, which together with the motor speed variation provides the widest possible operating range.
- The rotating assembly is a stiff shaft design with a margin greater than 25 % to the first lateral bending mode.
- The hermetically-sealed design and the elimination of oil systems result in an environmentally neutral system,

having no effect on the local environment with respect to pollutive emissions.

- Contact-free magnetic bearings, together with the elimination of couplings, gears and shaft seals to atmosphere result in a largely wear- and maintenance-free system.

System concept

The MOPICO® is an integrated, engineered system comprising of the motor compressor unit, the variable frequency drive and the unit/station control system. By means of a dedicated pipe/valve system, the two compression stages can be connected either in series and/or in parallel with changeover from one mode to the other.

Control and safety systems

The control system performs unit and overall station control functions, such as valve sequencing and surge control. The system connects with the SCADA pipeline system for remote operation and monitoring. Key process data are trended and recorded and can be called up remotely through a standard computer link.

Station design

The compactness and low weight of the MOPICO® allow for simple and cost-effective installations in functional industrial buildings. The use of magnetic bearings virtually eliminates the transmission of vibrations from the unit, resulting in substantially reduced found-



Compressor casing

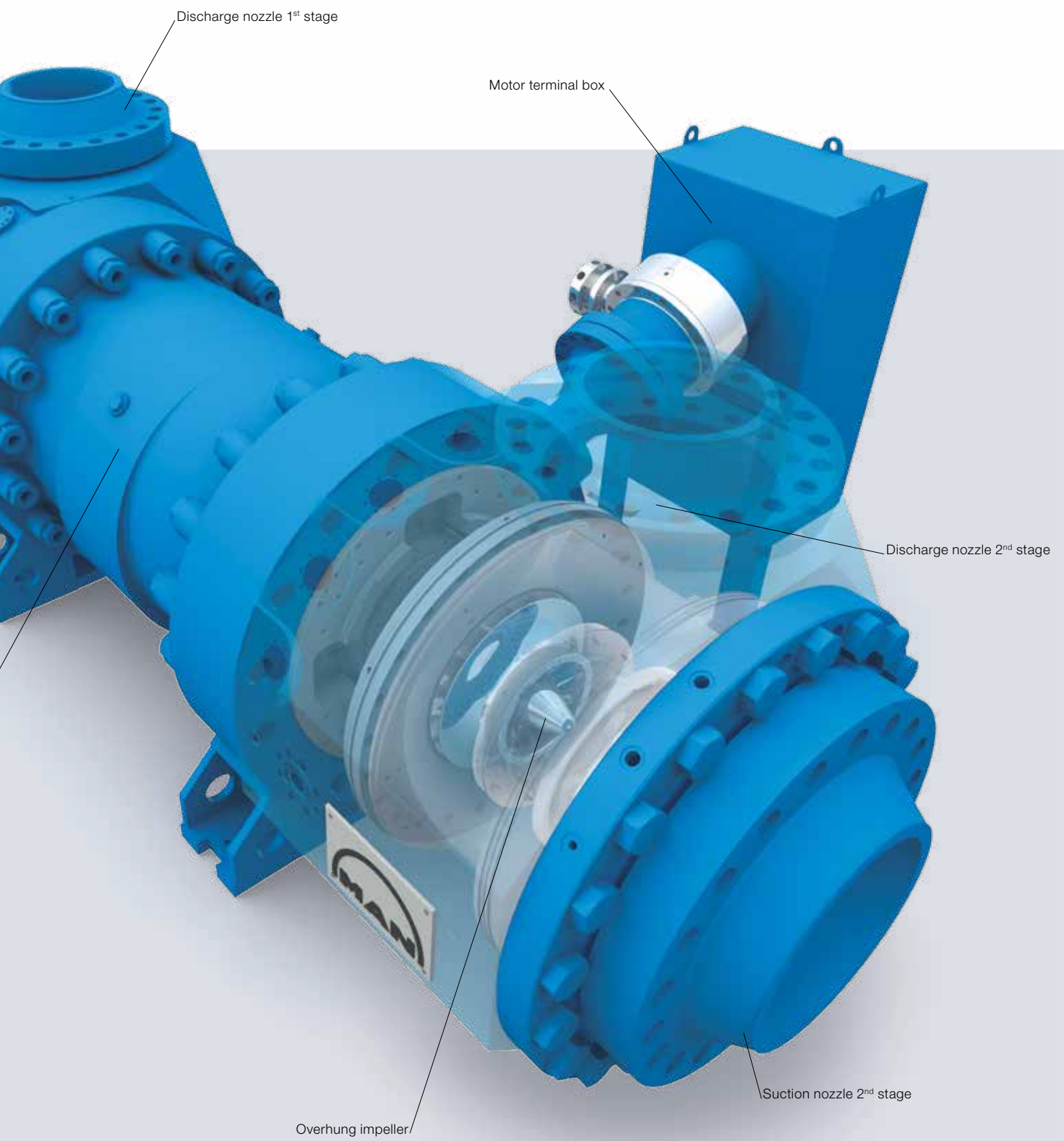
High-speed electric motor

1 Booster station with three MOPICO® units

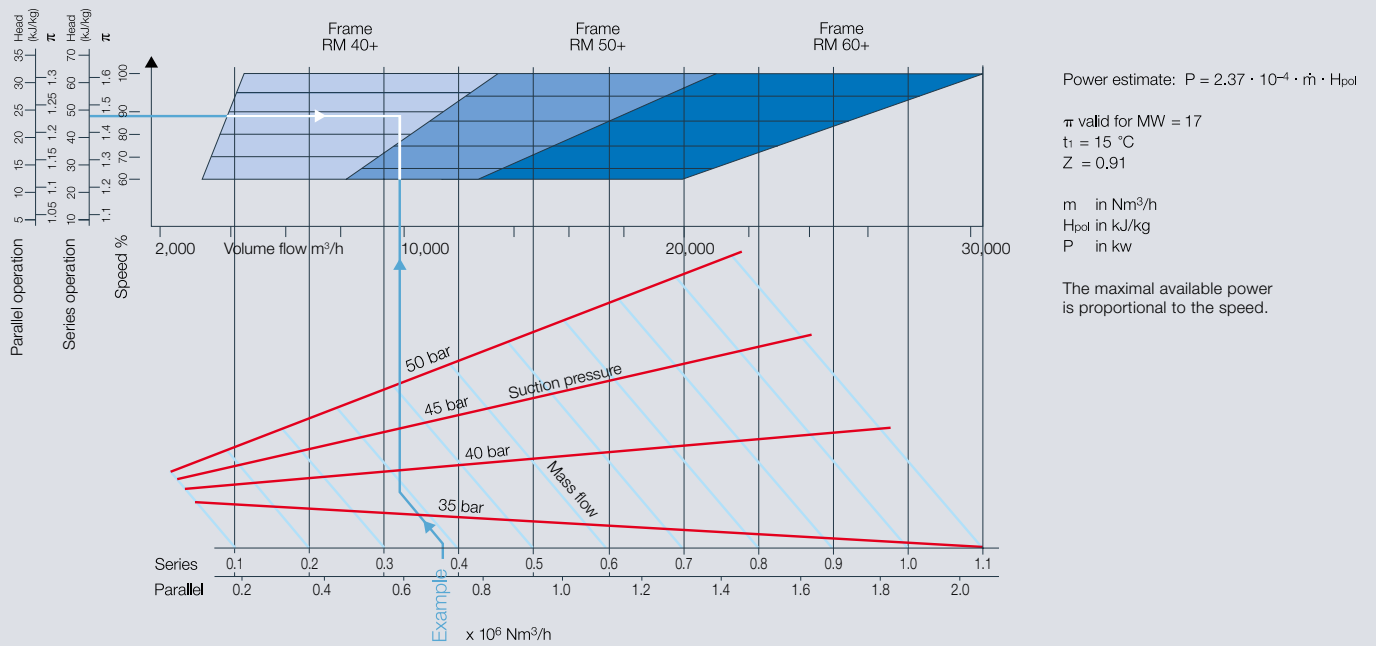
2 One of the three identical MOPICO® units

3 MOPICO® in series operation mode

ation costs. Thanks to the magnetic bearings and the thickness of the high-pressure motor casing, the MOPICO® noise emission levels are extremely low. For most applications, no additional noise attenuation is required.



Compressor Selection Map



Fully assembled pipeline package



Shop test of a MOPICO® unit

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