RIKT – Isothermal Turbocompressors

With integrated cooling

Engineering the Future – since 1758.

MAN Diesel & Turbo

RIKT – Isothermal Turbocompressors
With integrated coolers

MAN Diesel & Turbo's isothermal compressors have been built since 1915 and more than 1,400 units have been sold. This unique design has proven its reliability in various industries where large amounts of air need to be compressed.

The RIKT is available in eight frame sizes from 71 to 160 seamlessly covering an actual inlet volume range between 100,000 and 750,000 m^3/h. Depending on the discharge pressure and the energy evaluation, the RIKT will be designed with 2 to 4 intercoolers and 3 to 6 impellers, thus adapting the compressor to deliver gas at a pressure ratio ranging between 4.5 and 20 in a single, compact casing. The integrated coolers not only reduce the overall dimensions to the smallest possible footprint, but also avoid interconnecting process piping. Noise emanating from high velocity gas in the impellers is also significantly reduced by the plate fin coolers and casing.

Applications
- Air separation industry
- Iron and steel industry
- Fertilizer industry
- Nitric acid
- Enhanced Oil Recovery (EOR)
- Compressed Air Energy Storage (CAES)
- Any industry where a large amount of compressed air is required

Standardized configuration
The RIKT frame sizes are based on geometrical scaling of most components, leading to a high degree of standardization and reliable performance. If necessary, major components such as impellers and diffusors may be tailored to fit process requirements.

Characteristics
- In accordance with API 617
- Inlet flow range from 100,000 to 750,000 m^3/h
- Selection of rotors for a given frame size
- Integrated intercoolers with water separators
- Up to 6 impellers and 2 to 4 intercoolers
- Axial inlet with 1st stage open impeller
- Subsequent impellers closed type
- Casing welded in carbon steel plate

Inlet Guide Vanes (IGV)
Inlet guide vanes ensure for best efficiency over a wide range and allow a precise control of the process by:
- Pressure or flow control
- Power limitation

Intercoolers
The intercoolers are integrated in the casing. The gas is guided through an optimized flow path thus leading to very low interstage pressure losses.

Bearings
- Tilting pad journal and Kingsbury type axial bearings
- Accessible without removing the upper casing half

Couplings
- Maintenance-free, flexible disc-type couplings for the low- and high-speed shafts.

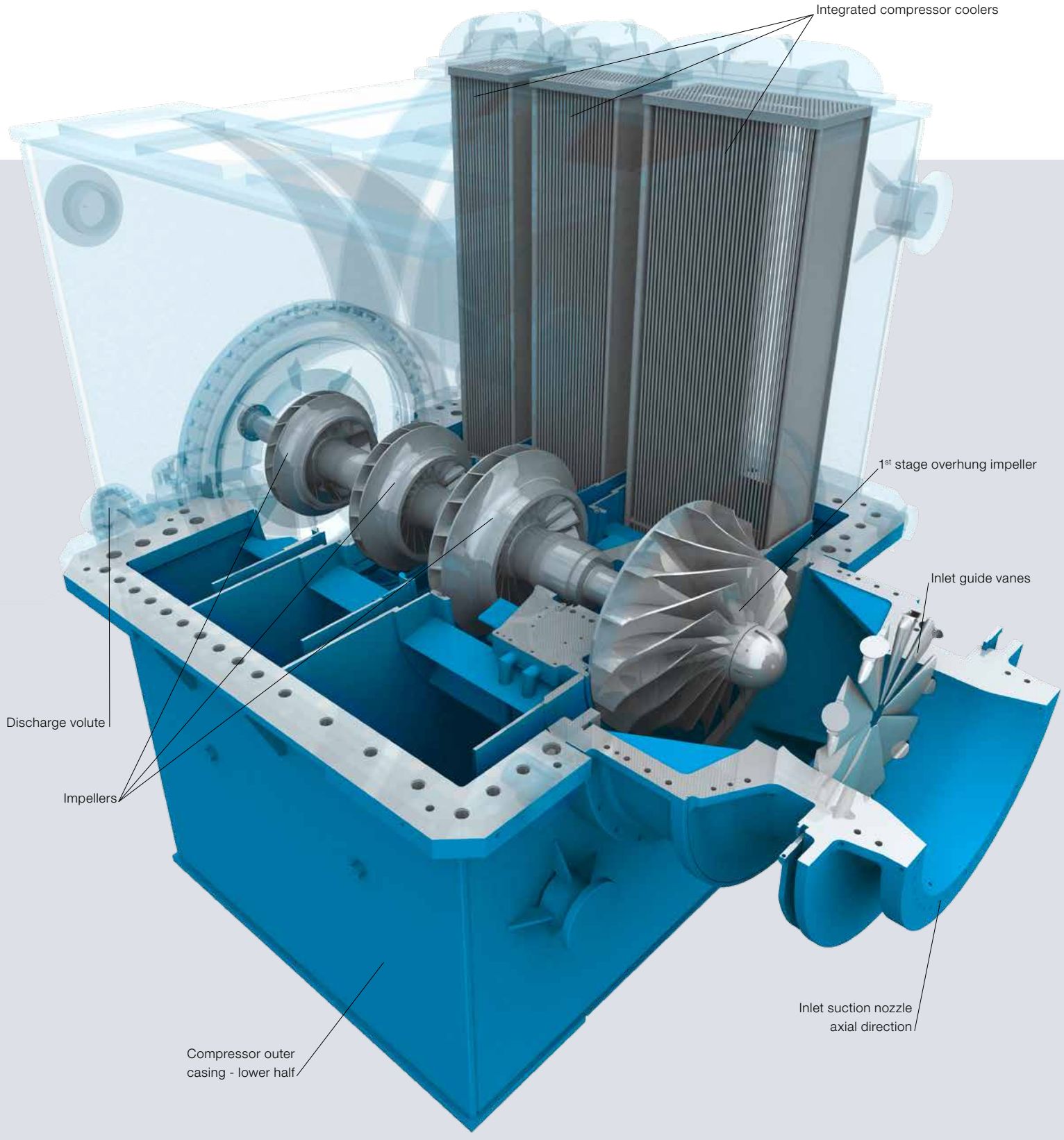
Gear
- Double helical gear
- Axial bearing on low-speed shaft
- Shaft-driven main oil pump

Driver
- Direct-driven by steam or gas turbine
- Electric motor with gear (set)

Control system
- Anti-surge control system
- Reverse flow protection

Reliability & availability / Service
- The RIKT series has a track record with over 3 Mio. operating hours
- Designed for highest reliability
- After sales services are available worldwide by MAN PrimeServ and cover the entire product life cycle: spare parts, overhauls, repairs, revamps/modernization and training.

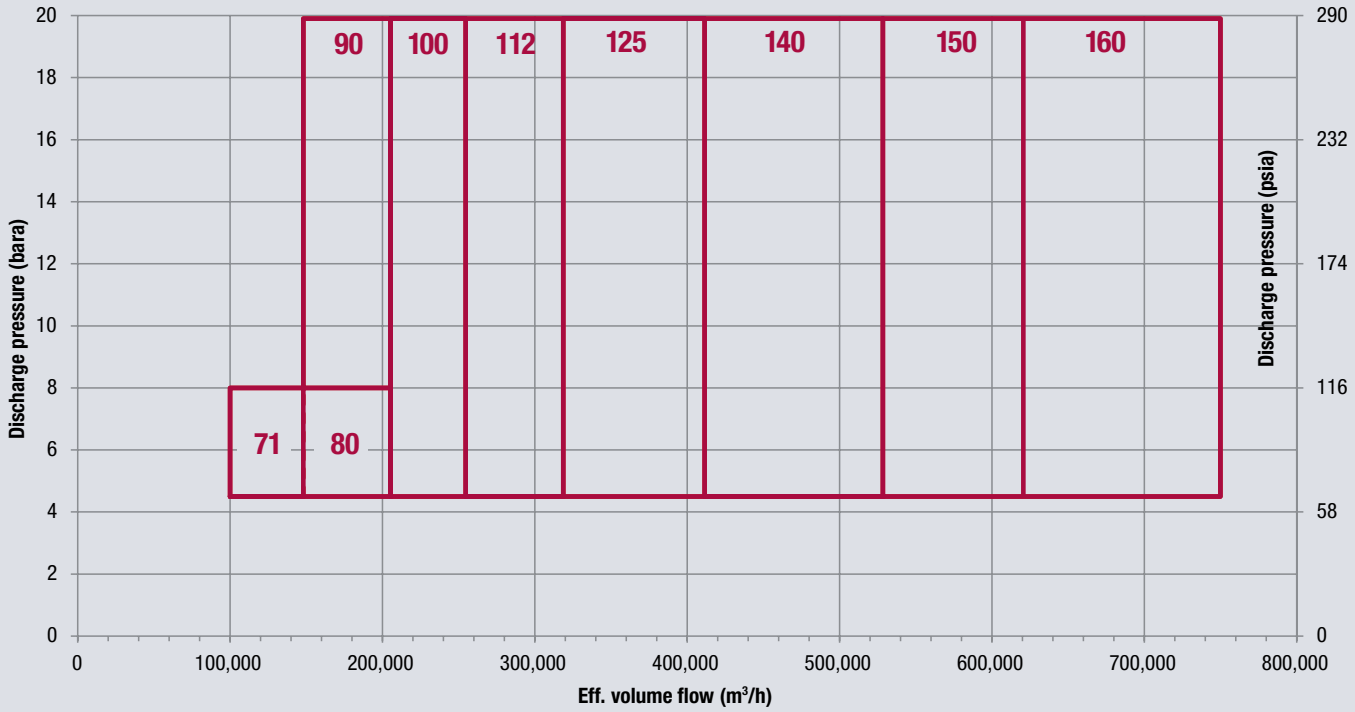
Features	Benefits
Widely referenced isothermal compressors with more than 1,400 units built since 1915	Highest reliability
Standardized core units and modularly built trains	Referenced, many identical machines in operation
Standardized rotors built with referenced impellers	Performance predictability Rotor exchangeability
Pressure ratio up to 20	For all air separation processes and other applications where large amounts of air have to be compressed
Abraidable seals with negative clearance	Minimum seal losses
Adjustable Inlet Guide Vanes (IGV)	Wide operating range High efficiency at part load operation Constant speed operation
No external piping and intercoolers	Short installation time, low interstage pressure losses leading to higher efficiency, significantly lower noise emission
Integrated intercoolers (IC) (2 to 4 IC's per casing)	Low pressure losses between the stages High efficiency → lower energy consumption Compact design → smallest footprint → reduced building costs
Intercoolers with various material combinations	Wide range of cooling water qualities, incl. seawater cooling
Proven 2-stage water separator with coalescing mesh and fin collector firmly attached to the IC's	High degree of condensate removal
Vertical removal of intercooler bundles with an overhead crane	No separate cooler bundle extraction device required
Direct drive by steam or gas turbine	Simple train arrangement with a minimum number of rotating parts
Electric motor drive	Gearing-up with standardized double helical gear, use of the most economical 4-pole standard electric motors
Flexible disc type couplings for the low and high-speed shaft	Maintenance free
Lube oil system and gear	
RIKT 71 to 90: oil system integrated into base frame	Shorter erection time, smaller footprint
RIKT 100 and larger: separate oil system	To reduce dimensions for transportation


Integrated compressor coolers
1st stage overhung impeller
Inlet guide vanes
Discharge volute
Impellers
Inlet suction nozzle
axial direction
Compressor outer
casing - lower half

Technical Data

Driver	Electric motor, steam or gas turbine
Suction pressure	ambient pressure
Discharge pressure [bara]	up to 20 bara
Flow rate [m³/h]	Max. 750,000 m³/h
Power range [MW]	Approx. 60 MW
Number of impeller stages	3-6
Number of intercoolers	2-4

RIKT Compressor
Frame Size Selection Diagram



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