



SARAL ENGINEERS LLP

BUSINESS DEVELOPMENT CONSULTANT

MECHANICAL VAPOR RECOMPRESSION (MVR)

VAPOFLEX -

ENGINEERED-TO-ORDER

We introduce centrifugal blower systems for Mechanical Vapor Recompression (MVR) – initially exclusively for the dairy industry.

VapoFlex are high-performance blowers for vapor compression, Engineered-to-Order (ETO). The blowers are advanced design solutions with a high degree of standardization. With a variety of over 150 different high-efficiency impellers in single or multi-stage designs, VapoFlex contributes significantly to the stability, efficiency, quality and economy of the process. Customized VapoFlex solutions are the key to significant reductions in operating costs as well as a long service life and reliability of the equipment. This makes the blowers ideal for use in thermal separation processes such as crystallization, drying, and concentration. Another important application is vapor compression heat pump technology, compressing excess waste steam from thermal separation and other industrial processes to elevate the temperature for reuse in processes.

KEY FEATURES OF THE VAPOFLEX

- Performance up to 11 K temperature rise in single stage application
- Volume flows up to 200 m³/s
- System pressure for full vacuum to up to 8 bara, depending on the process and blower size
- Efficiency up to 87 % (BHP)

Design Features

- Impeller speed up to 330 m/s, depending to the impeller type
- Impeller material: Duplex 1.4462, Super Duplex 1.4501
- Various shaft seal concepts:
- Process operates in a high vacuum
- Process operates above ambient condition
- Inlet water injection keeps steam at saturation temperature (de-superheating) and ensures cleaning of the impeller
- Multiple blowers in series: For higher temperature rises currently up to eight MVR blowers
- Simple monitoring of critical operating conditions guarantees reliable performance and early warnings
- Long lifetime; more than 25 years
- Use in potentially hazardous areas



VapoFlex - Engineered-to-Order (ETO)

The Drive Concept

- Our patented squeeze-oil-damping combines the simplicity of anti-friction bearings with the performance of hydrodynamic bearings
- VFD (Variable Frequency Drive) or D.O.L (Direct on Line, with inlet guide vane operation)
- Electric motors or steam turbines, according to customer specifications and technical requirements
- Motor capacity up to 6 MW

The correct sizing of an MVR blower depends on various process conditions that must be considered:

- Mass Flow
- Inlet Saturation Temperature
- Saturation Temperature Rise
- Fluid: Additional components in the steam, solids, chlorides, mixture of other gases

Blower Performance	
Fluid	Steam
Volume flows	up to 200 m ³ /s
Pressure ratio	up to 1.45 per stage
Temperature increase	up to 11 K
Performance	up to 6 MW
Impeller sizes	560–2800 mm

PERFORMANCE RANGE

