

» Uniturbo® 33 – Centrifugal Compressor for large scale refrigeration plants and heat pumps

Main features

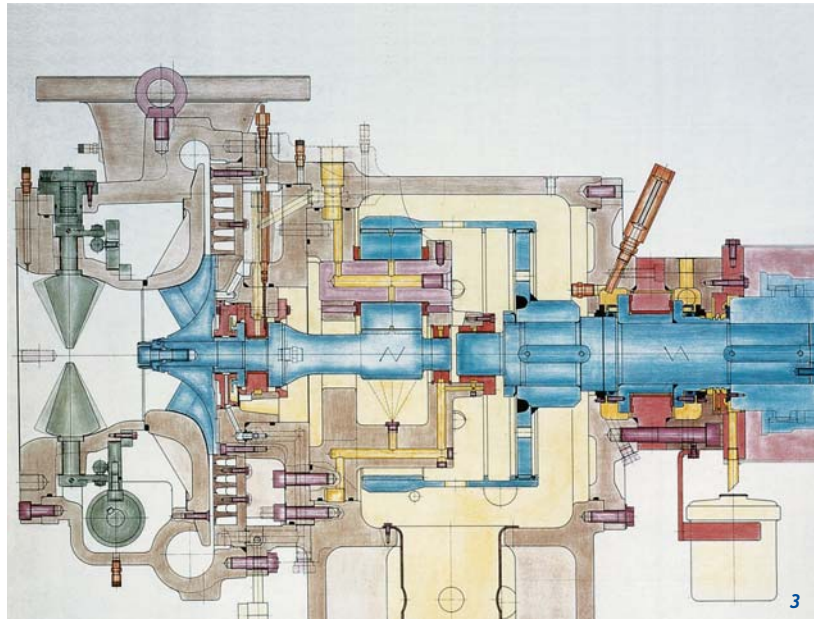
- Open-type single stage compressor for halocarbon and hydrocarbon refrigerants
- Integrated planetary type gears
- Very robust design with vertically split casing for easy maintenance
- Suited for all drive systems (electric motor, diesel or gas engine, steam or gas turbine)
- High efficiency (COP) over the entire performance range
- Operating range $-40^{\circ}\text{C}/+80^{\circ}\text{C}$
- Multiple compressor units available with operation either in series or in parallel
- Large cooling capacity and/or heating capacity with small space requirement

General

The Uniturbo® 33 is the result of extensive research and development combined with the experience gained in engineering and manufacturing refrigeration plants and heat pumps with turbo-compressors for over 70 years.

Design

Compressor and gear casings are made of nodular cast-iron and incorporate the impeller and the planetary type gear. They are of the vertically split type which is beneficial with respect to optimal stress distribution in the material during operation. It further facilitates easy inspection and maintenance.



The compressor is directly coupled with the motor by means a flexible coupling.

The impeller is of the open type. It is milled from high-alloy steel and mounted on a chromium-nickel steel drive shaft. The force lubricated bearings are easy accessible.

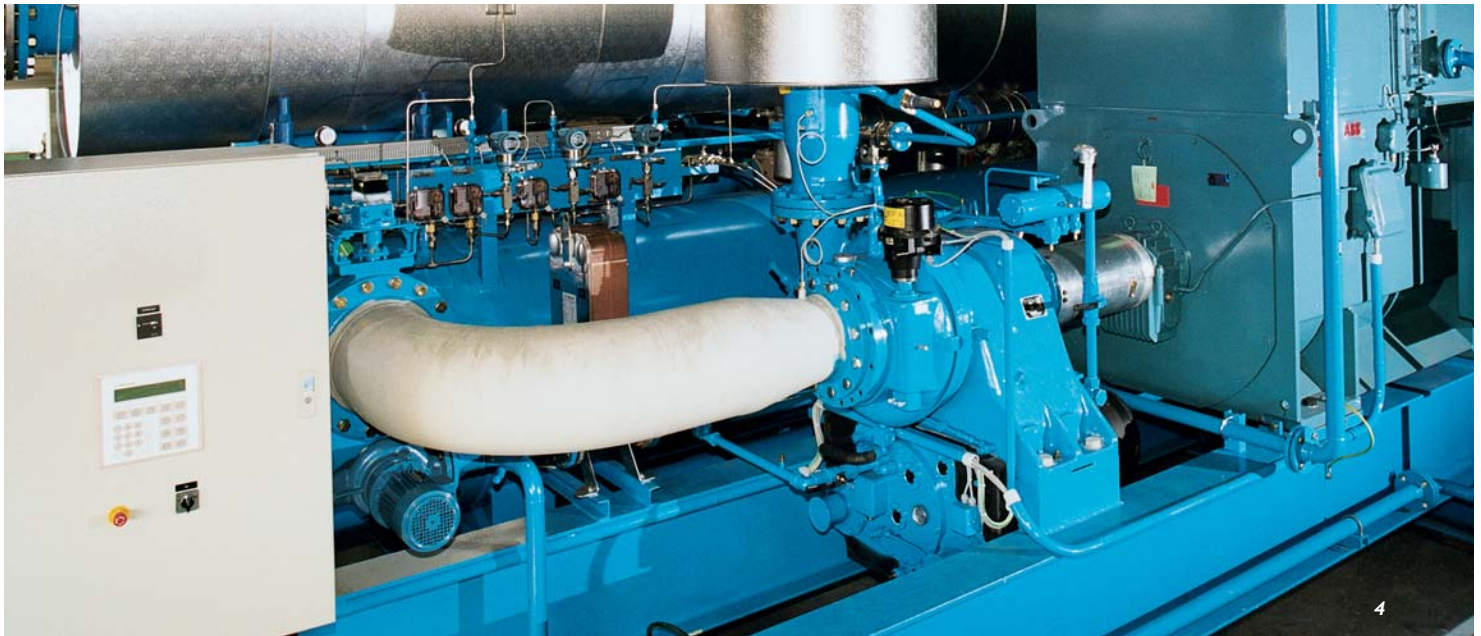
A sealing gas system prevents the lube oil from entering the refrigerant circuit. During operation and standstill of the

compressor, reliable separation of the refrigerant from the atmosphere is guaranteed by a specially designed drive shaft bearing.

Axial orientation of the suction inlet results in undisturbed flow, thus increasing overall efficiency of the compressor.

The capacity is adjusted over a wide range by a row of guide vanes preceding the impeller.





Applications

Uniturbo® 33 compressors are the ideal solution for applications with high demands regarding reliability and efficiency, especially for:

- industrial applications, with brine temperatures down to -40°C
- cold water production, with very high condensing temperatures
- heat pumps with hot water supply temperatures up to 80°C
- production of cold and/or hot water in large district cooling and heating systems
- air conditioning for large complexes of buildings and other applications

Legend

- 1 Uniturbo® 33 compressor with flexible coupling and drive motor. Partly visible are the oilsystem, the open guide vanes and the actuator for capacity control.
- 2 Finite element analysis of stress deformation at design conditions.
- 3 Cross sectional view of Uniturbo® 33 compressor.
- 4 Compact type heat pump unit with Uniturbo® 33 compressor and watercooled motor. On the left the electrical control panel.

Performance

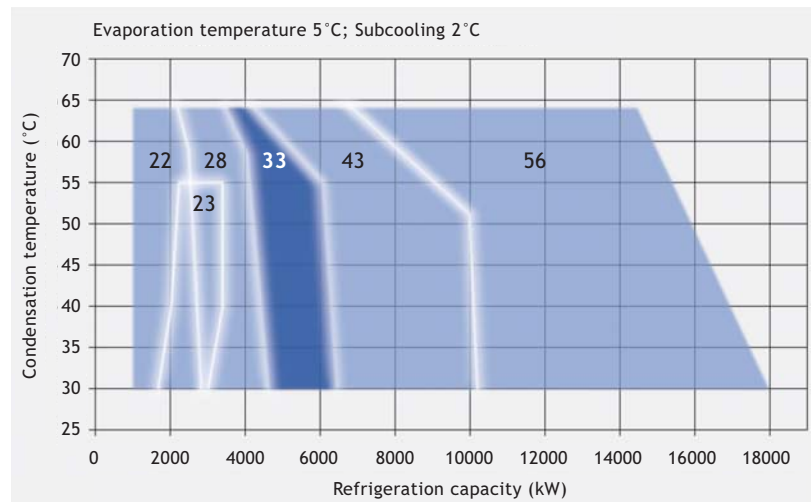
To facilitate economical operation, each Uniturbo® 33 compressor is adapted to the specific client requirements.

Using the refrigerant R134a, the following temperature and capacity ranges can be covered:

Temperature and capacity ranges

Refrigeration plant / Heat pump		Refrigeration capacity kW	Heating capacity kW
Evaporation -15°C	Condensation 35°C	2150 - 3000	-
5°C	40°C	4500 - 6400	-
5°C	64°C	-	5200 - 5800
30°C	80°C	-	5500 - 9200

Uniturbo® range of compressors, marked in dark blue the data for Uniturbo® 33



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