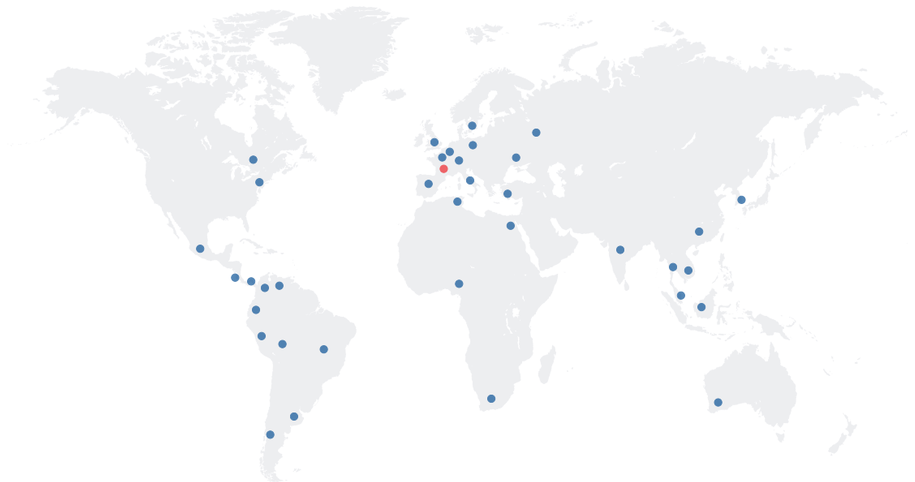
CONTINENTAL INDUSTRIE
CENTRIFUGAL BLOWERS & EXHAUSTERS



WE TURN AIR INTO A TOOL

Head Office France
CONTINENTAL INDUSTRIE S.A.S
Route de Baneins
01990 St Trivier sur Moignans
Tel.: +33 4 74 55 88 77
www.continental-industrie.com
export@continental-industrie.com

Germany
CONTINENTAL INDUSTRIE GmbH
Emdener Strasse 10
D-41540 Dormagen
Tel.: +49 (0) 2133 25 98 30
www.continental-industrie.de
info@continental-industrie.de

United Arab Emirates
CONTINENTAL INDUSTRIE MIDDLE EAST
P.O. BOX 17648
Jebel Ali Free Zone, Dubaï
Tel.: +971 4 88 11 979
www.cimefzco.com
cime@emirates.net.ae

Italy
CONTINENTAL INDUSTRIE S.R.L
Via Frua 15
20 146 Milano
Tel.: + 39 (02) 48006827
www.continental.it
info@continental.it

Australia & South Africa
CONTINENTAL ENGINEERING SERVICES
10 Downing Street Carlisle - Perth
Western Australia 6101 Australia
Tel. : +61 (0) 8 9361 2292
www.continental-eng.com
Tariq.Ayoub@continental-engineering.com.au

USA
CONTINENTAL BLOWER L.L.C.
23 Corporate Circle,
East syracuse - NY 13057
Tel.: +1 315 451 5410
www.continentalblower.com
sales@continentalblower.com

Latin America
CONTINENTAL INDUSTRIE ARMORIC INC.
2555 Collins Ave, C6
Miami Beach, FL 33140
USA
Tel.: +1 7 86 282 5394
www.continental-industrie.com
a.deredec@continental-industrie.com

Russia and CIS countries:
KEYWAYS INDUSTRIES
Rambla de Catalunya 85 pral 1ª
08008 Barcelona
SPAIN
Tel. : +34 93 496 10 83
www.continental-industrie.com
tatjana@keyways-int.com

China
CONTINENTAL BLOWER
ENGINEERING (TAICANG) CO., Ltd.
Building 3, Area 1 Taisheng Industry
Zone,No.11 Xingye South Road, Economy
Development Area, Taicang, Jiangsu (215400)
Tel: +86 (0) 512 33337166
www.continental-industrie.cn / info@cblower.com.cn

Spain
CONTINENTAL INDUSTRIE S.L.
P.I. Errota Nave 5E
20.270 Anoeta
Tel.: +34 943 65 54 86
www.continentalindustrie.es
contindus@contindus.com

Keyways Industries
INTERNATIONAL DEPARTMENT
Rambla de Catalunya 85 pral 1ª
08008 Barcelona - SPAIN
Tel. : + 34 93 496 10 83
www.continental-industrie.com
info@keyways-int.com

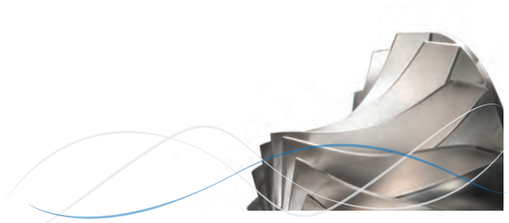
Turbo Global
SALES DEPARTMENT
Route de Baneins
01990 St Trivier sur Moignans
Tel.: +33 4 74 55 88 77
www.continental-industrie.com
turbo@continental-industrie.com

CONTINENTAL INDUSTRIE
CENTRIFUGAL BLOWERS & EXHAUSTERS

SINGLE STAGE TURBOCOMPRESSORS

We turn air into a tool

The best equipment for air & gas applications



Continental Industrie centrifugal blowers and turbocompressors are a benchmark in reliability and efficiency in air and gas applications. With more than 45 years of experience in research, development and manufacturing of centrifugal blowers and exhausters and more than forty thousand machines installed, Continental Industrie is a symbol of reliability and confidence for continuous duty and extremely rugged service, 24 hours a day, 7 days a week.

Our factory, located in the Ain department, fifty kilometers from Lyon, benefits from its exceptional location in centre of Europe. Over the years, Continental Industrie has set up an experienced and dynamic team and created a structure that brings together engineers, technicians and sales engineers. Its sole objective: to provide industry with the best equipment for air and gas handling.

45	25	80.000	45.000
Years of experience	Worlwide offices	Satisfied customers	Machines installed

Research and development

New blower designs for various applications, featuring higher compression ratios and capacities, are being engineered at the Mechanical Equipment Factory R & D Department, using modern design methods.

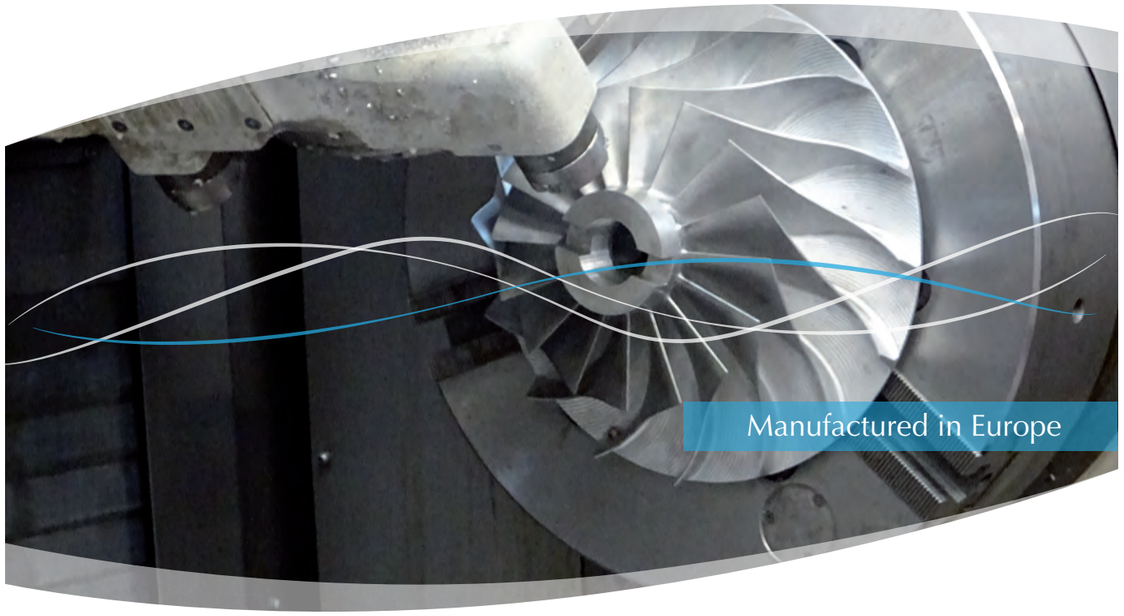
Products are tested at the factory laboratory to ensure good performance, projects are followed by the Mechanical Equipment Factory.

Easy operation microprocessor-based control system together with sensors control the blower operation and quickly respond to any anomalies and requirements.

The control program can be made according to the customer requirements. The whole process may be sent to the display system or to the central monitoring room.

The minimised number of rotating parts and high standards of workmanship guarantee a high performance reliability.

- ORIGINAL SPARE PARTS
- WORLD WIDE PRESENCE
- CUSTOM MADE SOLUTIONS
- 24H MAINTENANCE SERVICE



An efficient production facility

As a result of our constant interest in improving our performance and of investing a large part of our resources in research, we have adapted and modernized our plant to meet a wider variety of demands. Our machining area is now operated by computerised digital control.

Greater flexibility

Thanks to this modernization, we have better control over production, and can now ensure our customers even greater flexibility and even shorter delivery times. In addition, spare parts and accessories can be dispatched within 24 hours.

A new generation

The Continental Industrie TC type radial turbo compressors are modern flow machines for compression of large quantities of air or gas from 1,500 to 60,000 m³/h with pressure up to 2.5 barg.

Thanks to the minimisation of the parts in contact and continuous control of working parameters, our compressors have high reliability during operation.

The application of new techniques coming from spatial technology machining of the impeller blades ensures high compression efficiency (over 85%) and high general efficiency.

The turbocompressor is a monolithic unit consisting of the centrifugal turbo compressor, transmission unit, main drive electric motor, frame, oil installation and control cabinet.

Fields of application

- WATER & WASTE WATER TREATMENT
- FLUE GAS DESULPHURIZATION
- PULP & PAPER
- FERMENTATION
- DESALINATION
- CARBON BLACK
- COMBUSTION
- SULPHUR RECOVERY
- FLUIDIZATION
- FLOTATION
- SULPHURIC ACID PLANTS
- OIL & GAS DOWNSTREAM REFINERY
- OIL & GAS DOWNSTREAM PETROCHEMICAL

API 617/672 STANDARD QUALIFICATION

ISO 9001 2015 CERTIFIED

TCH Turbo

Hydrodynamic journal bearings
Flow range from 4,000 to 60,000 Nm³/h
Pressure up to 250 kPa g

TCB Turbo

Ceramic angular ball bearing technology
Flow range from 1,500 to 15,000 Nm³/h
Pressure up to 100 kPa g

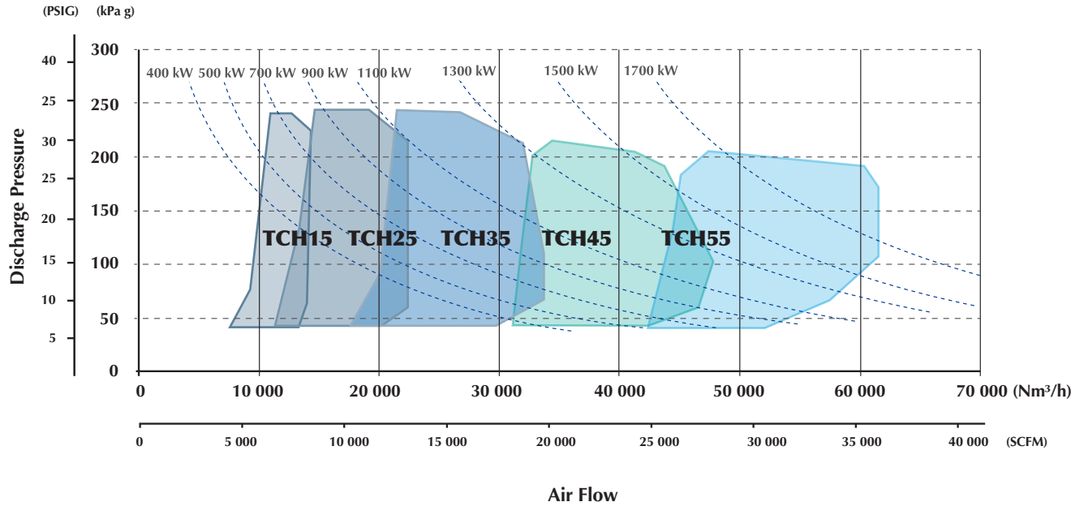
Advantages

- Reliable
- Energy saving
- Low vibrations
- Low noise emission
- Simple and precise design
- Stable performance

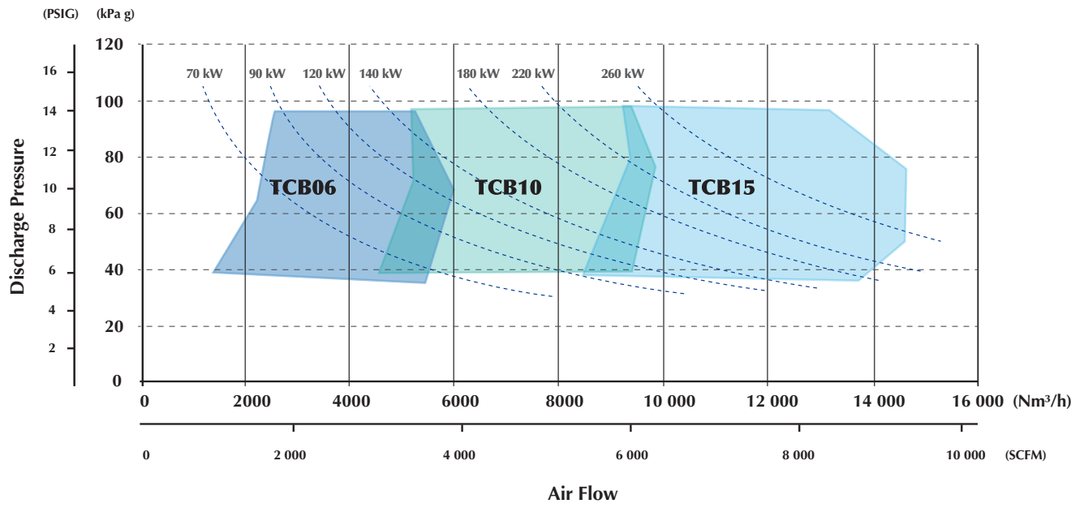
Turbo compressor range

The extremely simple design of our machines guarantees maximum reliability, which is absolutely necessary in all fields of industry in which production depends on the distribution of clean and dry air at a constant pressure.

TCH Turbo

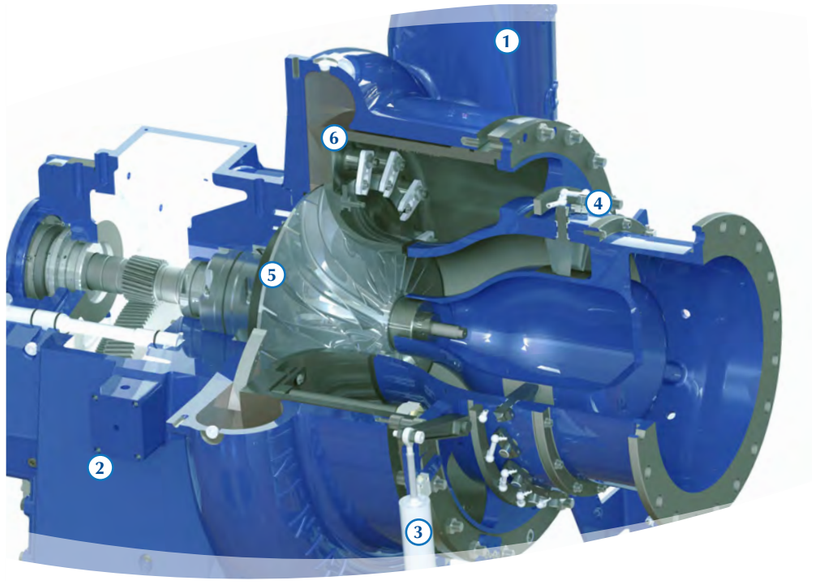


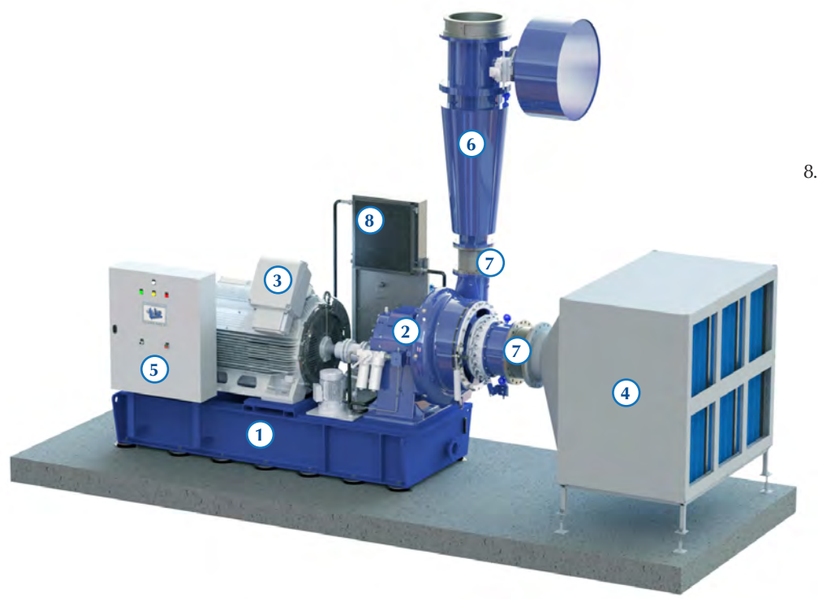
TCB Turbo



TCH Turbo Elements

1. Volute
2. Gearbox
3. Actuator VDV
4. Inlet guide vanes (IGV)
5. Impeller in overhung design
6. Variable diffuser vanes (VDV)





1. Base Frame
2. Turbocompressor
3. Compressor Drive
4. Inlet Filter/Silencer
5. Local Control Panel
6. Cone Diffuser/Silencer
7. Stainless steel compensator
8. Air Cooling (Water cooling optional)

API 617/672 STANDARD QUALIFICATION

ISO 9001 2015 CERTIFIED

Material specification

Volute Casing	Cast iron EN GJL-250
Casing	Cast iron EN GJL-250
Impeller	Aluminium alloy (2618A) or stainless steel
Vanes	Aluminium alloy, Stainless steel, Bronze
Gear / Wheels	High tensile 18CrNiMo7
Fast Shaft	High tensile 18CrNiMo7
Drive Shaft	High tensile 34CrNiMo6
Bearings	Alloy Steel with white metal film
Base Frame	Structural Steel
Coupling	Flexible disc coupling with spacer

Auxiliaries

Inlet Filter/Silencer	95% filtration as per Filter Class
	EU G4 & baffle type silencer
IGV/VDV Actuation	Electric linear actuator
Expansion Joint	DN450/250 steel flanges with
	Stainless Steel or EPDM Bellows
Cone Diffuser	Inlet DN250/300 – Oulet DN400/600
Blow-off-valve	DN 125/150, Electric actuated
Check valve	DN500/600, dual flap wafer type
Oil for Gearbox	Approx 330 liters (ISO VG68/46)
Lube oil cooling	Air or external liquid to oil
Cooling Fan	IP55 50/60Hz

Compressor Drive

Drive	Electrical motor, 2-Pole
Motor Voltage	Low-medium - high voltage
Input frequency	50/60 Hz
Motor speed	3000 rpm or 3600 rpm
Protection class	IP55

Standard Qualification

Test Procedure	ISO 5389 & ASME PTC10
Mechanical Test	Internal Standard
Quality	ISO 9001:2015
Optional	API 617/672

Performance data

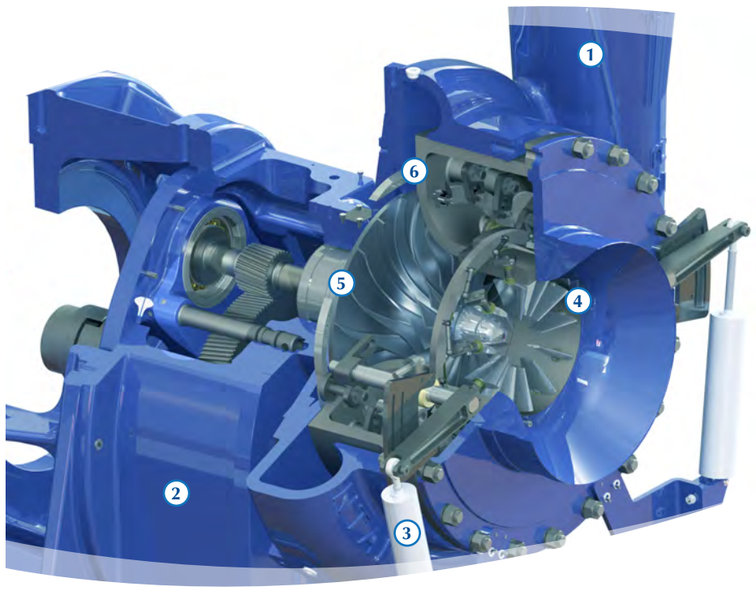
Flow Range	See Performance chart
Flow Regulation	100% - 45% of rated flow with Combined control
Pressure Range	0.4 to 2.4 bar (g)
Power Range	200 – 1,700 kW
Discharge Velocity	Below 20m/s after Cone
Vibration Level	Max. 4.5mm/s per ISO 20816-1
Noise Level	91-95 dB(A) Without enclosure
	76-78 dB(A) With enclosure

Panels

Human Interface		Siemens KTP700 Basic 7″
		Allen Bradley Panel View Plus 6″
PLC		Siemens ET200 SP CPU
		Allen Bradley Compac Logixs
Instrumentation		Air Pressure transmitter 4-20 mA
		Air Temperature transmitter 4-20 mA
		Oil Temperature Switch and oil tank
		Bearing Temperature RTD
		Oil Pressure Switch
		Low Oil Level Switch
		Vibration Transmitter 4-20 mA
		Surge Switch
	Optional:	X,Y,Z Vibration Detector

TCB Turbo Elements

1. Volute
2. Gearbox
3. Actuator VDV
4. Inlet guide vanes (IGV)
5. Impeller in overhung design
6. Variable diffuser vanes (VDV)



API 617/672
STANDARD QUALIFICATION

1. Base Frame
2. Noise enclosure
3. Turbocompressor
4. Compressor Drive
5. Inlet Filter/Silencer
6. Local Control Panel
7. Cone Diffuser/Silencer
8. Stainless steel compensator
9. Air Cooling (Water cooling optional)

ISO 9001 2015 CERTIFIED

Material specification

Volute Casing	Cast iron EN GJL-250
Casing	Cast iron EN GJL-250
Impeller	Aluminium alloy (2618A) or stainless steel
Vanes	Aluminium alloy, Stainless steel, Bronze
Gear / Wheels	High tensile 18CrNiMo7
Fast Shaft	High tensile 18CrNiMo7
Drive Shaft	High tensile 34CrNiMo6
Bearings	High precision ceramic angular ball bearings
Base Frame	Structural Steel
Coupling	Flexible compat type

Auxiliaries

Inlet Filter/Silencer	95% filtration as per Filter Class
	EU G4 & baffle type silencer
IGV/VDV Actuation	Electric linear actuator
Expansion Joint	DN125/250 steel flanges with
	Stainless Steel or EPDM Bellows
Cone Diffuser	Inlet DN100/250 – Oulet DN65/100
Blow-off-valve	DN 125/150, Electric actuated
Check valve	DN150/400, dual flap wafer type
Oil for Gearbox	Up to 33 liters (ISO VG68/46)
Lube oil cooling	Air or external liquid to oil
Cooling Fan	IP55 50/60Hz

Compressor Drive

Drive	Electrical motor, 2-Pole B5
Motor Voltage	Low-medium - high voltage
Input frequency	50/60 Hz
Motor speed	3000 rpm or 3600 rpm
Protection class	IP55

Standard Qualification

Test Procedure	ISO 5389 & ASME PTC10
Mechanical Test	Internal Standard
Quality	ISO 9001:2015
Optional	API 617/672

Performance data

Flow Range	See Performance chart
Flow Regulation	100% - 45% of rated flow with Combined control
Pressure Range	0.4 to 1 bar (g)
Power Range	Up to 350 kW
Discharge Velocity	Below 20m/s after Cone
Vibration Level	Max. 4.5mm/s per ISO 20816-1
Noise Level	91-95 dB(A) Without enclosure
	76-78 dB(A) With enclosure

Panels

Human Interface		Siemens KTP700 Basic 7″
		Allen Bradley Panel View Plus 6″
PLC		Siemens ET200 SP CPU
		Allen Bradley Compac Logixs
Instrumentation		Air Pressure transmitter 4-20 mA
		Air Temperature transmitter 4-20 mA
		Oil Temperature Switch and oil tank
		Bearing Temperature RTD
		Oil Pressure Switch
		Low Oil Level Switch
		Vibration Transmitter 4-20 mA
		Surge Switch
	Optional:	X,Y,Z Vibration Detector

Made in Europe

Body of the Compressor

The body of the compressor is made of cast iron. The collector shape has been designed on the basis of many years of experience.

This design allows us to attain high compression efficiency and a low sound level.

At the request of the client, we can adapt the outlet direction to individual requirements.

Optimization

A wide operating range is ensured by a special impeller design optimised to the operating requirements, a high-efficiency transmission and a control system.

Stepless capacity control between 45% and 100% at a constant rotational speed of the impeller.

During operation, the capacity is controlled automatically by suitable turning of inlet guide vanes on the inlet and/or the vaned diffuser on the outlet.

Main components

Impeller

The impeller is made of aluminum alloy. It is a radial type impeller with deflected blades. Backseep angle of the blade allow to attain high polytropic efficiency (> 85%).

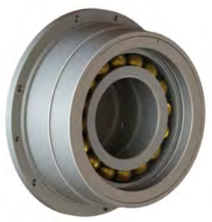
Labyrinth Seal

Labyrinth seal on the impeller's shaft effectively separates air space (impeller side) from oiled space (gears).
We can adapt the seal to the individual requirements.

Bearing technologies

TCH Hydrodynamic journal bearing

TCH gearbox uses the highest quality hydrodynamic lubricated journal bearings for longer life and minimum vibration.



TCB Ceramic angular ball bearing

TCB gearbox uses the highest quality ceramic angular ball bearings, this construction results in exceptionally long life with minimum vibration.

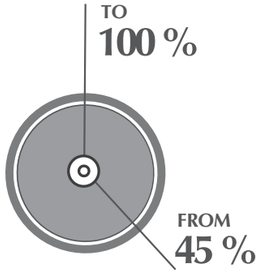
Aerodynamic features

Easy operation

The control system helps to reduce the probability of accidental operator errors to the minimum and uses a series of sensors to detect and quickly respond to anomalies.

The flexible control system can be programmed according to customer requirements.

The microprocessor-based programmable logic controller features an integrated process variable monitoring.



Control of capacity

Improving efficiency

The most significant technical change undertaken in the last decade in Turbo compressors was to combine the two regulation systems existing in the market. One was the flow regulation philosophy by means of diffuser blades on the pressure side of the compressor and the other was the pressure regulation by means of inlet guide vanes on the inlet.

The use of this combination improves the efficiency when the design point of the compressor has changed because of the flow, inlet temperature and pressure.

Aerodynamic vanes

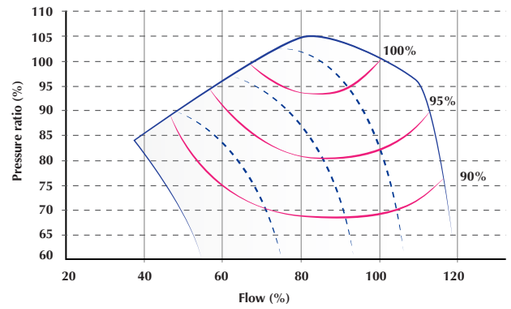
Aerodynamic design

Aerodynamic technology is based on additional aerodynamic vanes on the inlet of the compressor, which main task is to keep the air within a laminar flow towards the eye of the impeller.

That is the reason why Continental Industrie has fitted its compressor with this combination of guide vanes and diffuser vanes to guarantee the maximun efficiency.

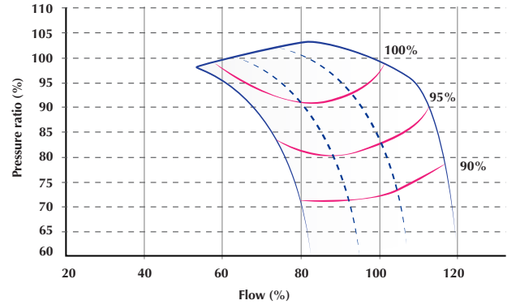
IGV Control

The Inlet Guide Vane (IGV) control optimizes the efficiency of our machines against changing operating conditions such as inlet temperature, relative humidity, outlet pressure.



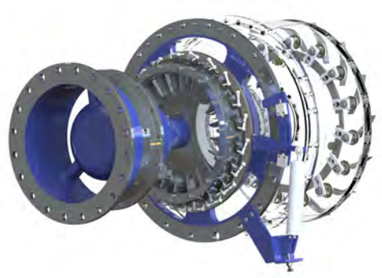
VDV Control

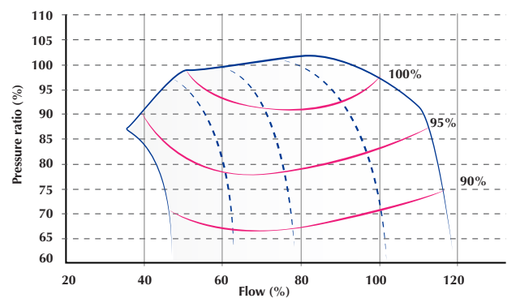
The Variable Diffuser Vane (VDV) control offers a wide operating flow range with excellent efficiency while maintaining a constant motor speed.



Combined Control

IGV & VDV control maintains 95% of design efficiency in almost the entire range of operation.





Pressure lubrication system

The pressure lubrication system provides a safe and reliable oil lubrication for the gear set and bearings as well as cooling for the bearings and gears.

This complete system is designed to comply with the API 614-5th and factory assembled and tested.

The oil lubrication system consists of the following components:

Main oil pump

The main oil pump is mechanically driven from the low speed shaft.

- Gear type
- Pump body in carbon steel

Auxiliary oil pump

The auxiliary oil pump is a pump with electrical motor, installed vertically and submerged into the oil reservoir. It has the same capacity as the main pump and is used to prime the system before start-up and acts as a standby unit in emergency and during shutdown.

- Gear type
- Pump body in carbon steel

Oil reservoir

The oil reservoir is integrated in the base frame and includes fill connection, inspection opening, gauge glass and ventilation.

- Carbon steel
- Painted with an oil resistant paint
- 3 min retention time

Oil Filter

Duplex element oil filters connected with a manual switch valve.

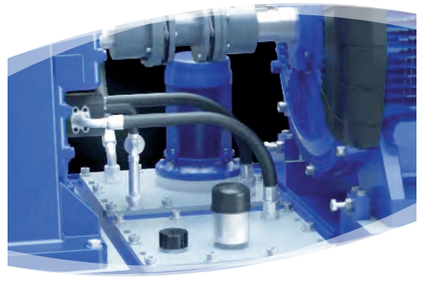
- 10 µm filtration
- Electrical & visual clogging indicator
- Casing in Aluminum

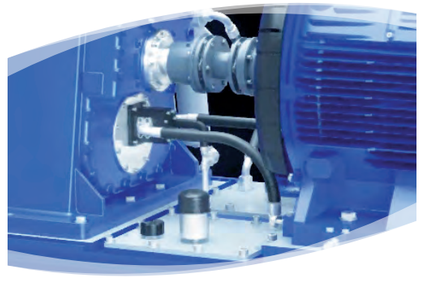
Oil cooling heat exchanger

- Air-cooled or Water-cooled

Oil heater (Optional)

The heating element will ensure that the oil maintains a minimum temperature in case of stand-still or site conditions





Control panel

The control and monitoring system shall ensure correct operating conditions at start and stop of the compressor as well as during operation.

The control system runs the start and stop functions, the compressor operation, the lubricating oil system, and the activation of the blow-off valve, the IGV and VDV.

The local control panel can be mounted on the base frame.

Panel

- Carbon steel, epoxy-polyester powder painted, protection class IP54
- Operating items at the front side
- Key switch to select operation mode “Unavailable / Remote / Local”
- Push buttons (and lamps) to start / stop the compressor
- Push button “emergency stop”
- Push button “failure acknowledgement”
- Lamps to monitor compressor status (Running / Warning / Failure)

Programmable logic controller (PLC)

- Siemens ET200SP CPU, with two Profinet sockets, I/O modules and software for fully automatic start / stop sequence and monitoring the process values

or

- Allen Bradley Compact Logix 5370, I/O modules and software for fully automatic start / stop sequence and monitoring the process values

Control

- Pressure or Flow regulation with IGV & VDV control
- Efficiency optimization through temperature and pressure reading
- Surge monitoring through turbo parameters monitoring
- Gearbox monitoring (vibration, bearing temperature, shaft displacement)
- Oil circuit monitoring including :
  - Cooling/heating control
  - Pressure and temperature safety & monitoring
  - Level indicators
  - Mechanical & electrical pump management
  - Oil filter monitoring
  - Motor monitoring (overload, winding and bearing temperature)
  - Sound enclosure fan control

Human machine interface (HMI)

Installed at the front side of the panel:

- Siemens KTP700 Basic PN, 7’’, IP65

or

- Allen Bradley PanelView Plus 600, 6’’, IP66

Communication (DSC, MCC)

Modbus TCP (the control panel is a Modbus server).