

Gearing solutions for Turbocompressors

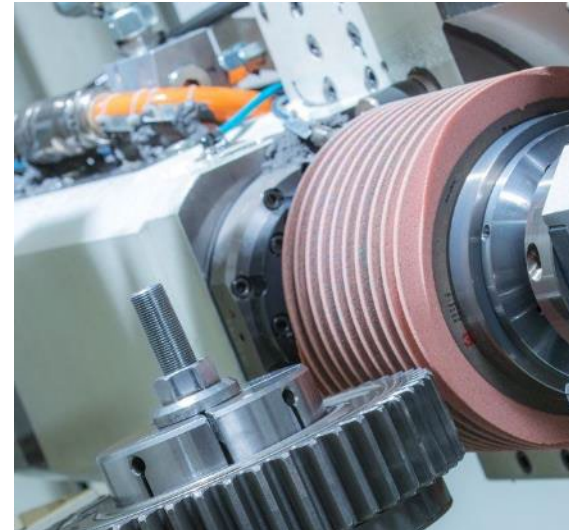


WIKOV AT THE FIRST SIGHT

Independent
and **self-**
sufficient.



1000+
employees



6
manufacturing
plants



10+
industrial sectors

WIKOV AT THE FIRST SIGHT

From single
gear to
complete
drive.



\$120

mil. USD
turnover



120 t

150 kg -120 tons
gearbox weight



2.8 m

profile ground
gears

WIKOV AT THE FIRST SIGHT

Markets 2021

80+

countries

5

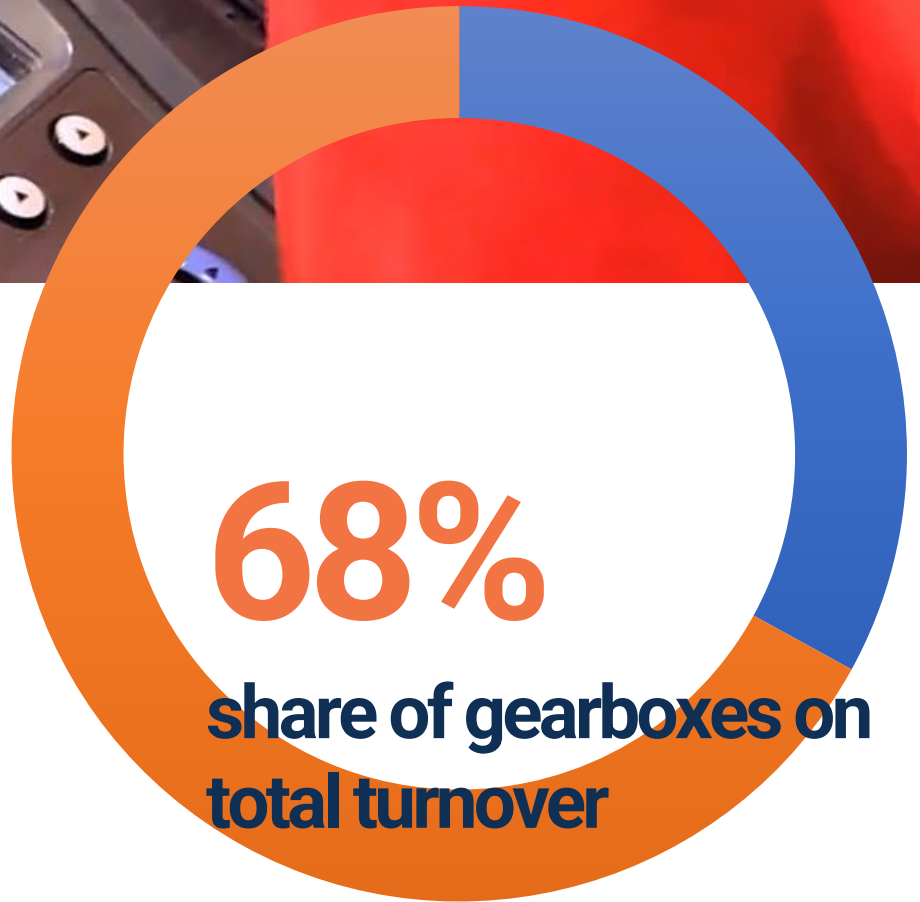
continents

81%

export

68%

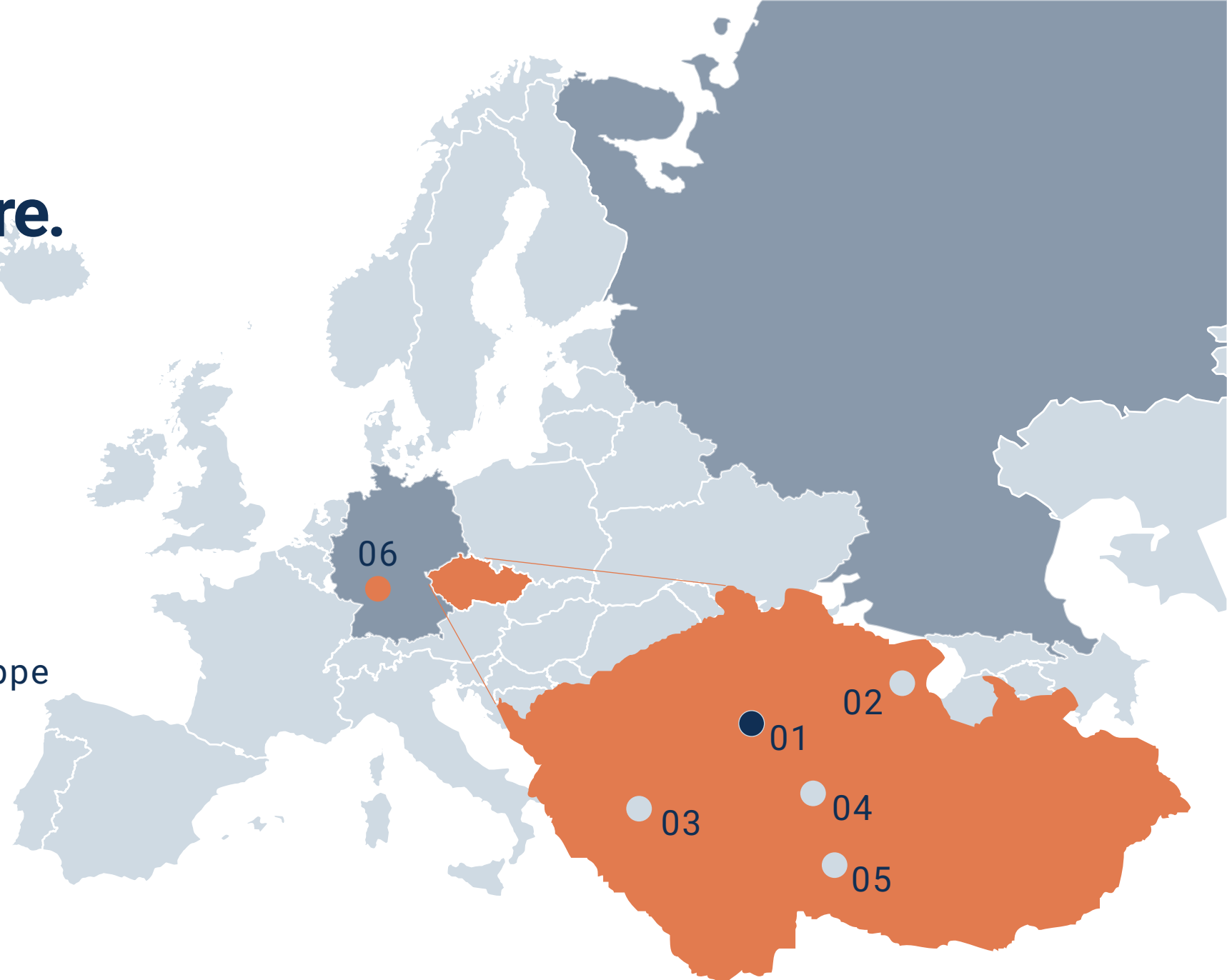
**share of gearboxes on
total turnover**



WIKOV INDUSTRY

Company structure.

- 01 Wikov Industry a.s.
- 02 Wikov MGI a.s.
- 03 Wikov Gear s.r.o.
- 04 Wikov Sázavan s.r.o.
- 05 Detail CZ
- 06 Gmeinder Getriebe Gruppe



COMPANY MOTTO

The essence of
engineering.

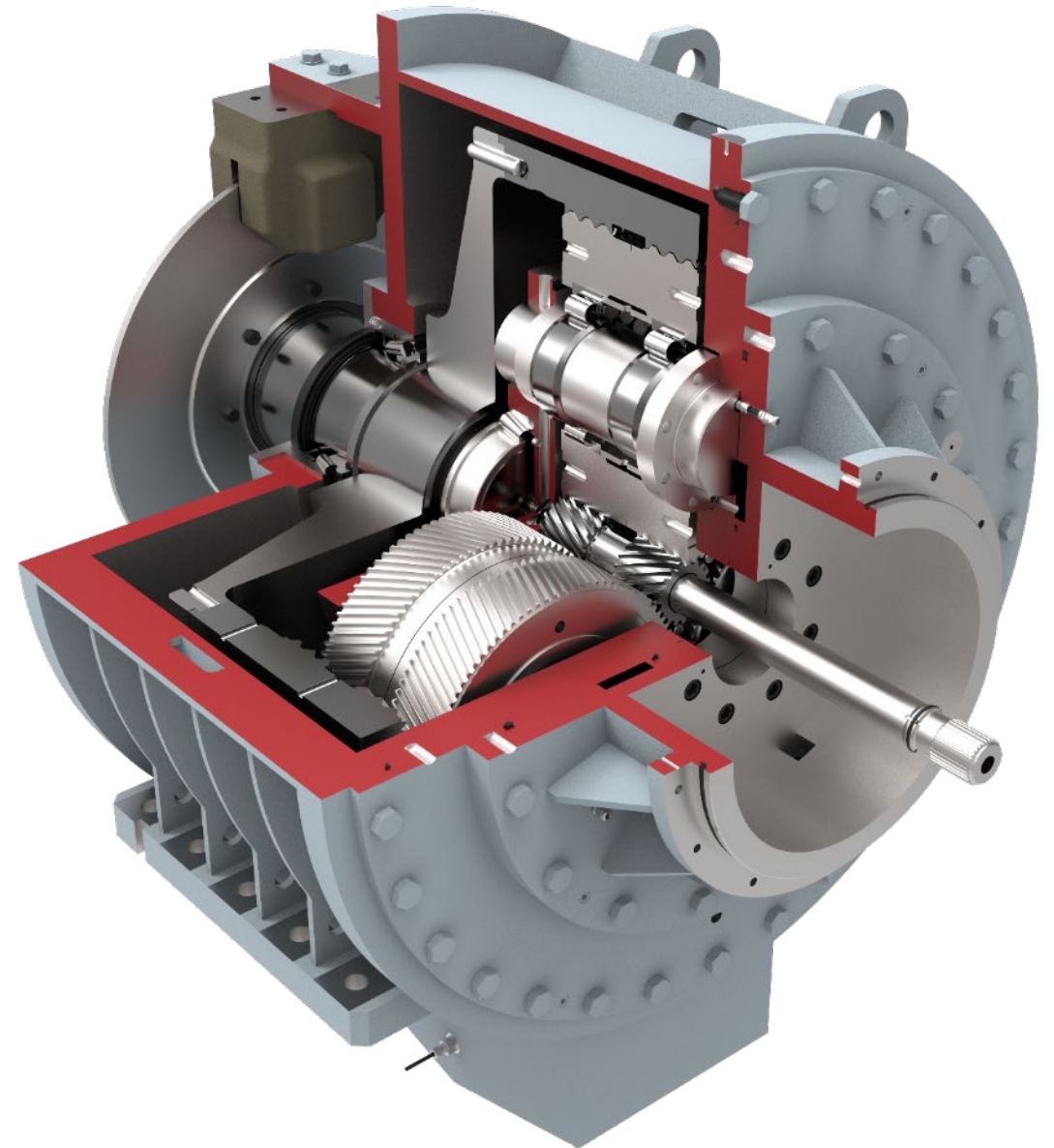


Quality

Service

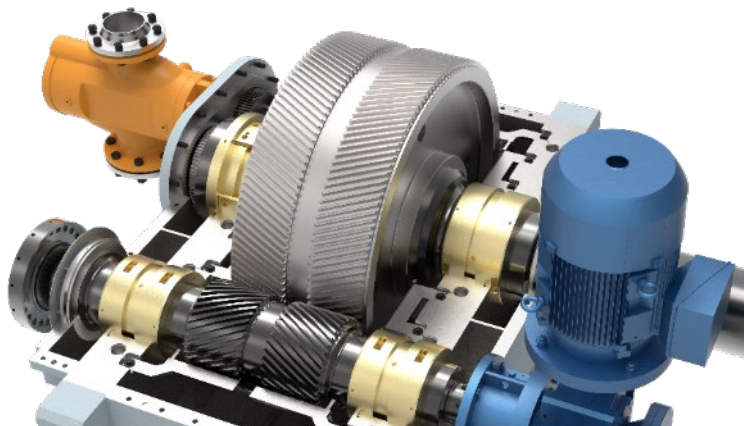
R&D, Innovation

Manufacturing

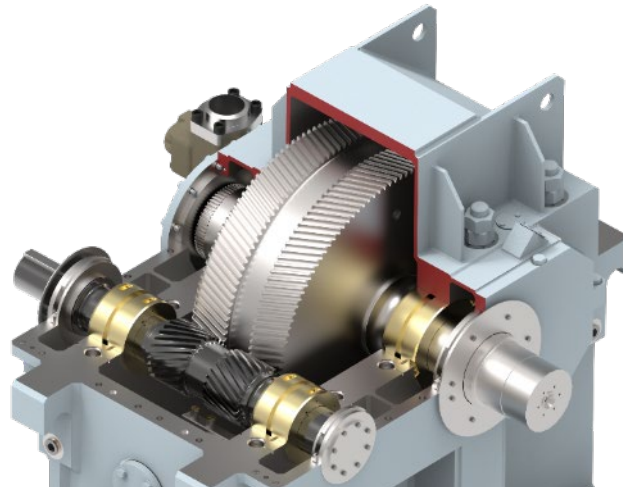


TURBO

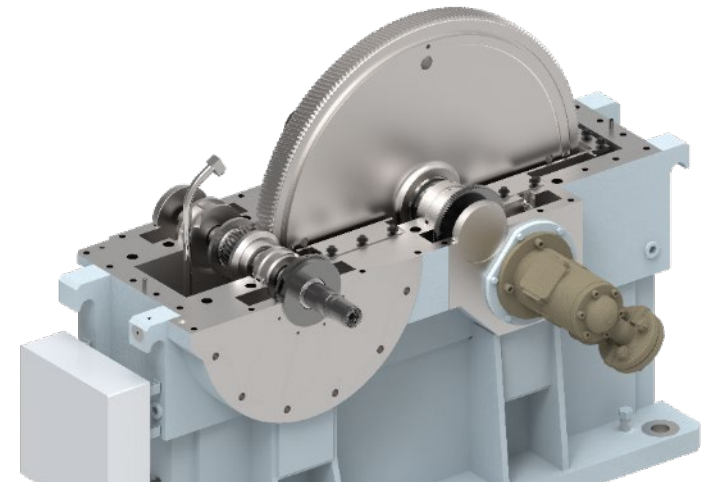
High speed products.



RS Series



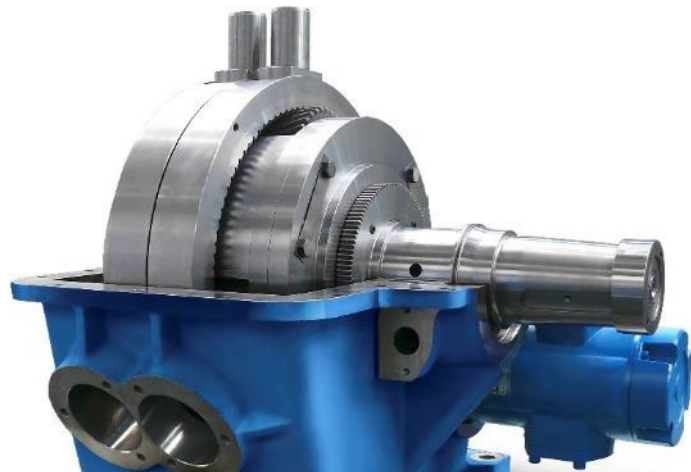
RU Series



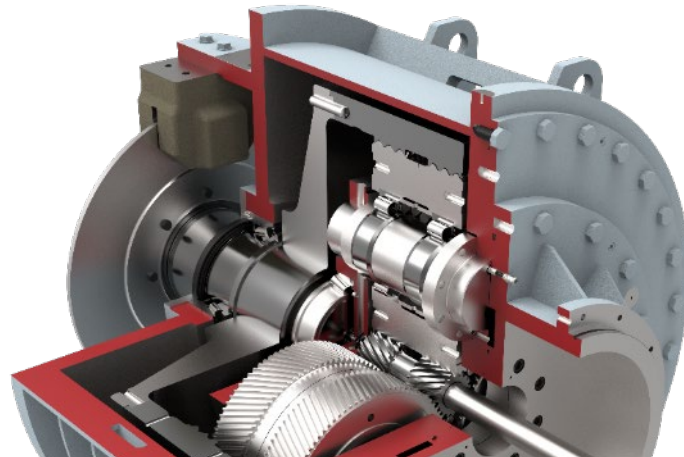
RT Series

TURBO

High speed products.



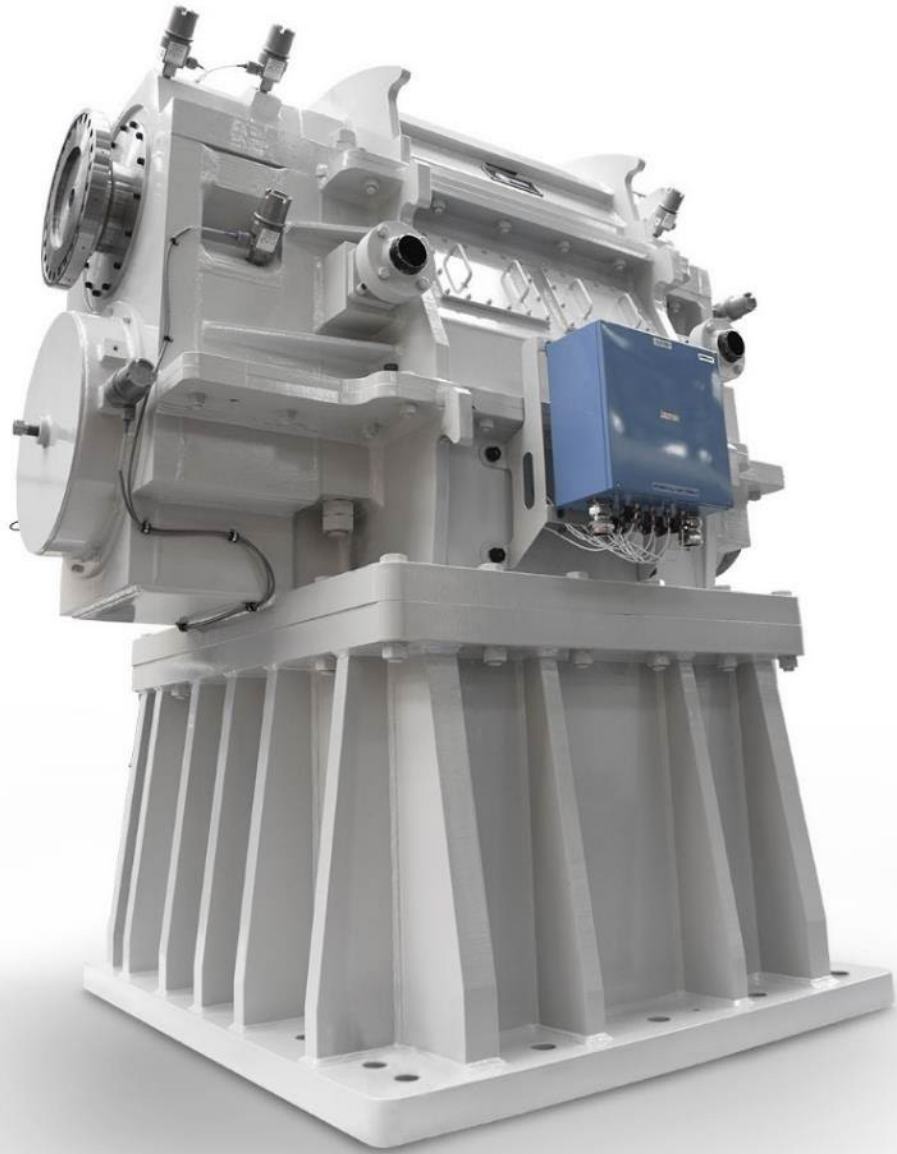
PRn Series



PP Series



Special design



TURBO **Ultimate Parameters.**

- Maximum power of **60 MW**
- Maximum speed of **45.000 rpm**
- Maximum tangential velocity of **190 m/s**
- Maximum output torque $M2 \leq 300 \text{ kNm}$
- Efficiency up to **99,5%**
- Lowest possible oil consumption

54 MW load gearbox RSB 660

TURBO

WIKOV Added Value.

- **Tailor-made** with standardized modular parts
- **Designed, manufactured, load tested in-house**
- Gears manufactured on latest and most accurate machine tools:
 - **Gleason-PFAUTER**
 - **Niles**
- **European suppliers** of components and raw material
- **Competitive pricing through sophisticated QCD**
(Quality-Cost-Delivery)





TURBO

Engineering and R&D.

Bearings

- Hydrodynamic tilting-pad bearings
- Development with bearing producer
- Testing stand

Efficiency

- Mostly for generator drives
- Bearings & Ventilation guards

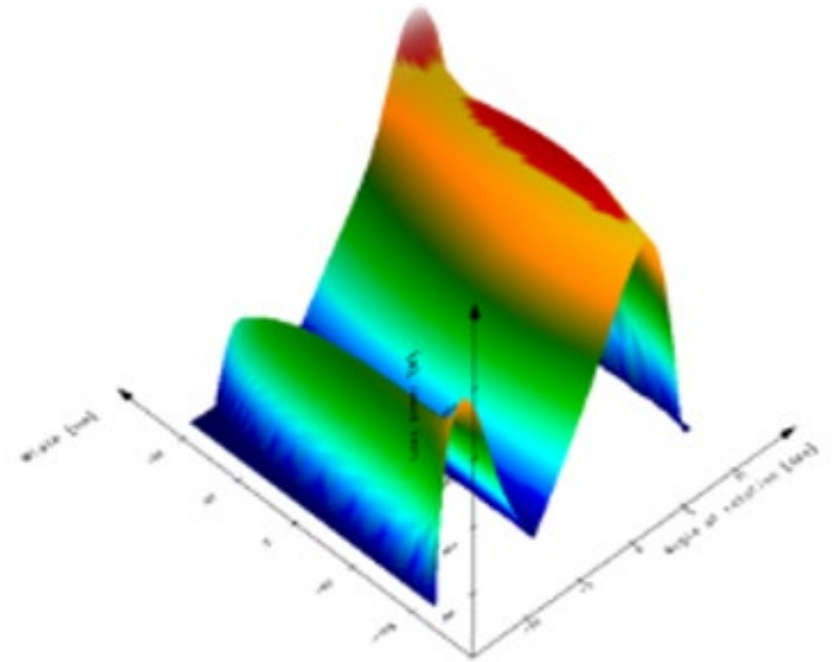
Thrust rings

- Turbine & compressors drives
- Power loss reduction
- Geometry, hardness, lubrication

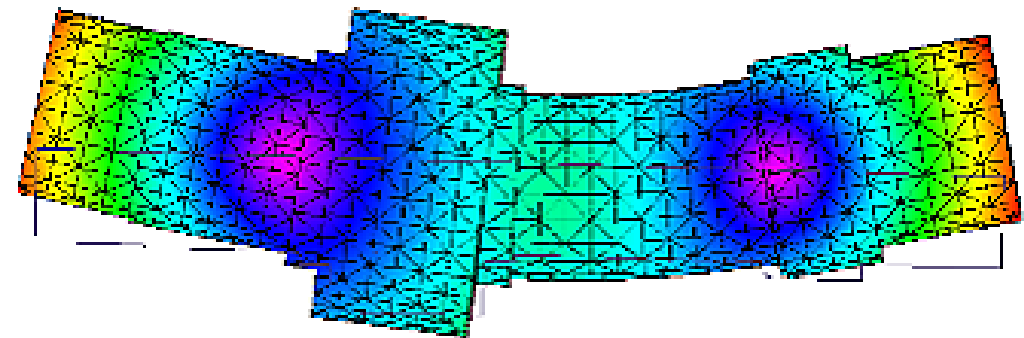
TURBO

Engineering: Design and Analysis.

- **KISS SOFT:**
gear calculation and analysis
- **Solid Edge ST4:**
most powerful modeling system for the advanced designer
- **FEMAP with NX Nastran:**
FEM Analysis
 - Rotor dynamic analysis
 - Optimization of mesh contact
- **Ultimate efficiency**
- **Noise reduction**
- **Load testing**



Gear Mesh Loss Optimization



Rotor Dynamics

SPECIALIZED TESTING LAB

Dynamic Test Bench.

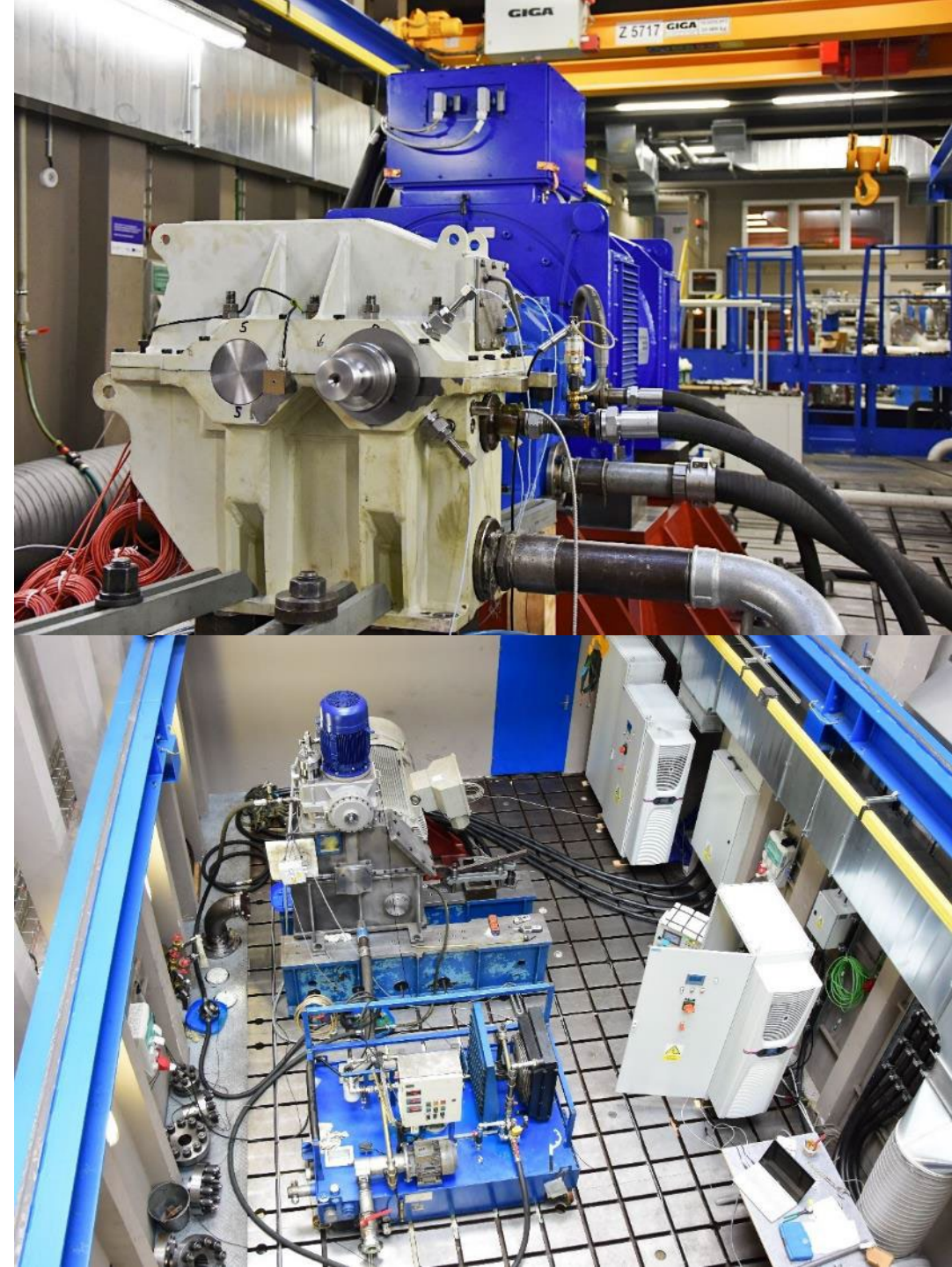
Certified Testing Lab

Load Testing

- Controllable load up to **710 kW**
- Speeds up to **35.000 rpm**
- Automatic test recording and camera monitoring


Back-to-Back


- Acceptance of Wikov gearboxes by independent certification bodies:
BV, DNV, LRS, GL, ABS, KR, RMR, CCS



TURBO

Bearings Know-How.

Axial Bearings			
Type	Peripheral Speed	Surface Pressure	
Fixed Geometry Bearings	0–70 m/s	0.0–4.0 MPa	
Tilting Pad Bearings	0–100 m/s	0.0–7.0 MPa	

Radial Bearings			
Type	Peripheral Speed	Surface Pressure	
Fixed Geometry Bearings	0–70 m/s	0.0–4.0 MPa	
Tilting Pad Bearings	0–100 m/s	0.0–7.0 MPa	
Lemon Bored Bearings	25–70 m/s	0.2–3.5 MPa	
Offset Bored Bearings	20–90 m/s	0.2–3.5 MPa	
Tilting Journal Pad Bearings	30–100 m/s	0.0–3.0 MPa	

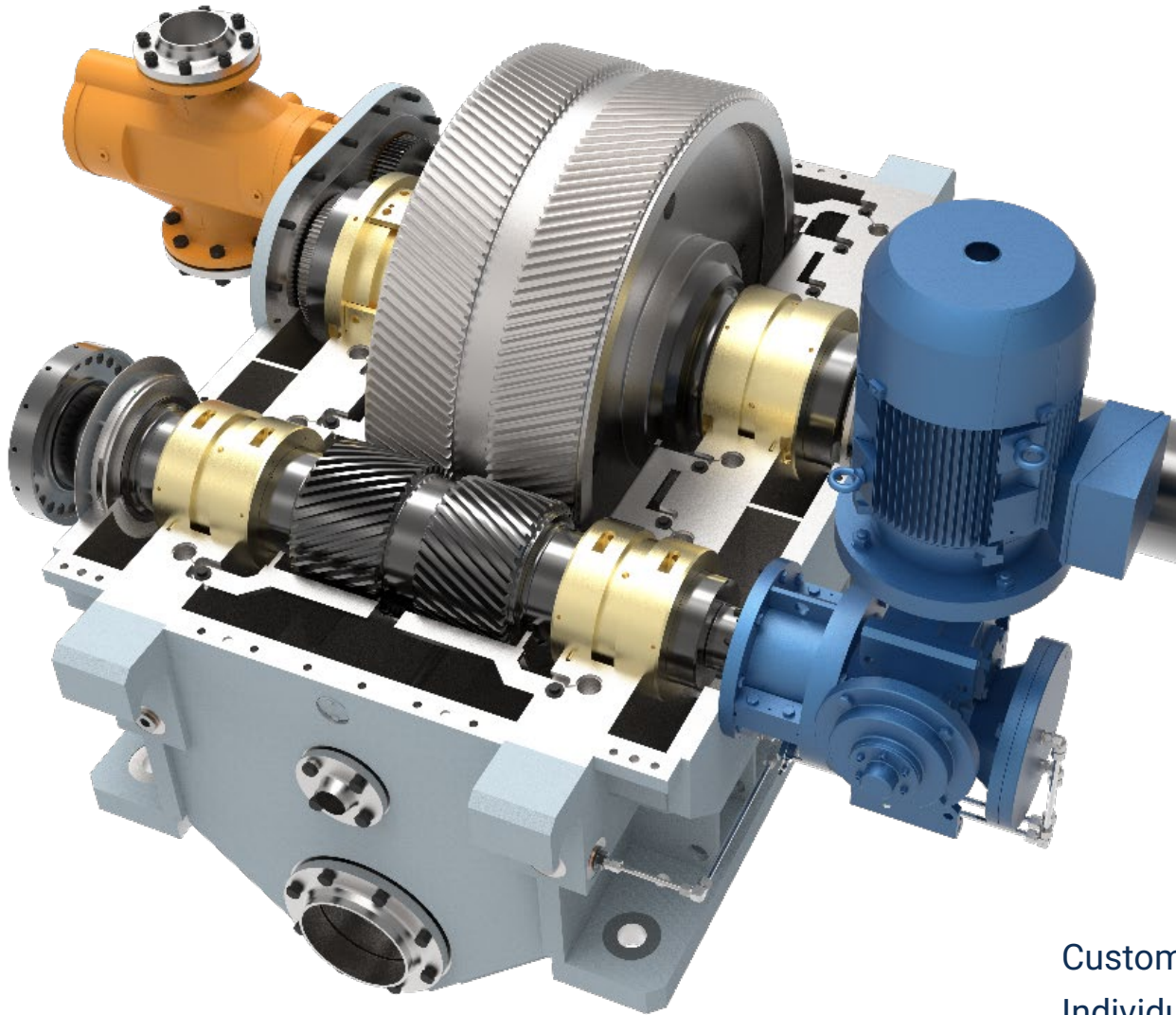
WIKOV SERVICE

Lifetime Support.

- Regular preventive inspections, monitoring of gearboxes and audits
- Overhauls and inspections directly in the factory including test certificate
- Service of Wikov/ŠKODA gearboxes as well as other brands
- Installation, adjustment and commissioning of repaired or brand-new gearboxes
- Original spare parts or parts according to customer's drawing
- Guarantee of service engineer arrival within 12 hours*
- **WiGuard®** remote condition monitoring

* guarantee of arrival time depends on conditions of the service contract





TURBO

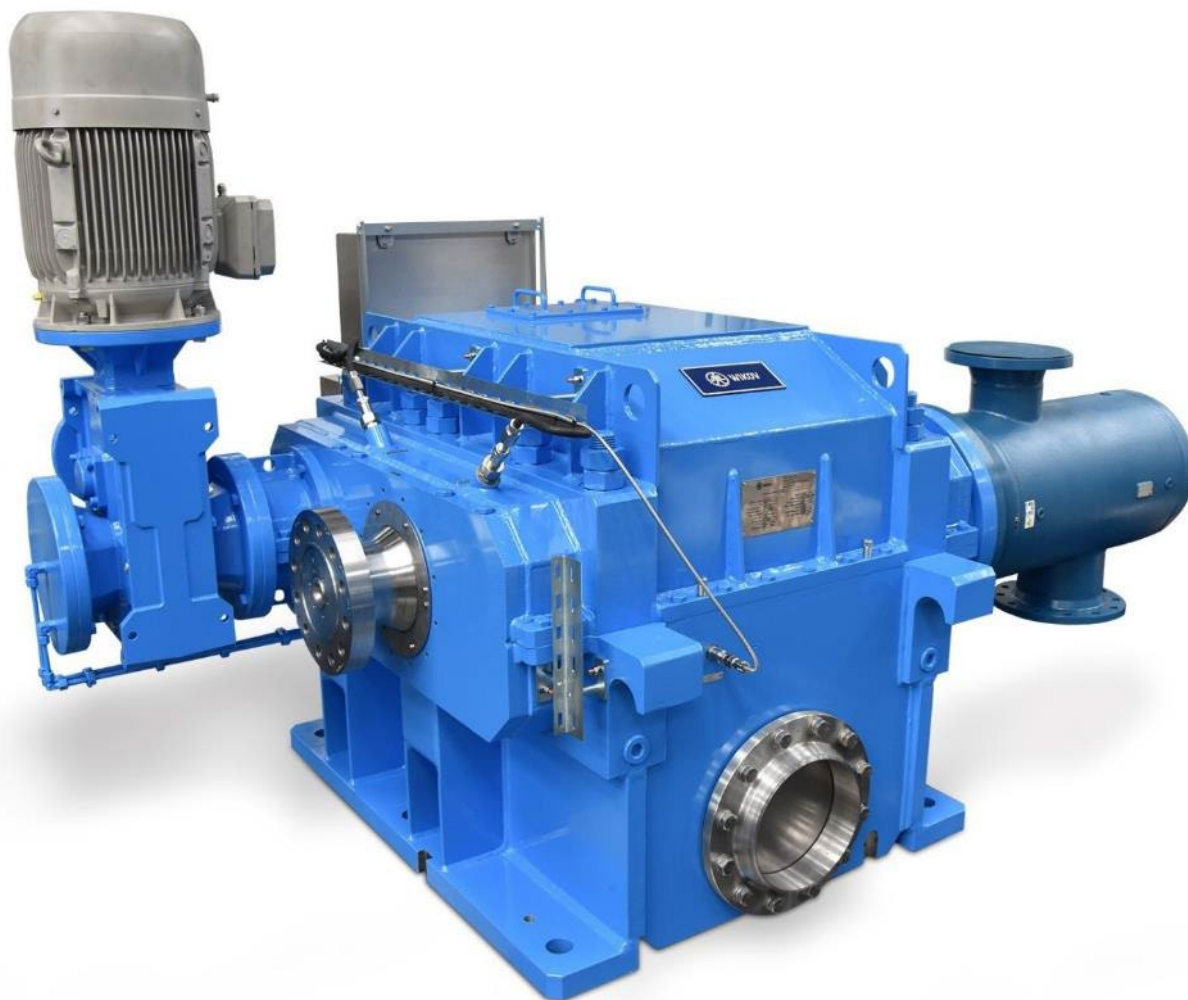
Wikov Gearbox Types.

Standardized types for compressor turbo gears:

- **RS** double helical large face width
- **RU** double helical narrow face width
- **R1T** single helical with one pinion
- **R2T** single helical with two pinions

- **Special** design

Custom made design available given by the center distance of 200 to 2000 mm.
Individual requirements best to be clarified with Wikov engineering.



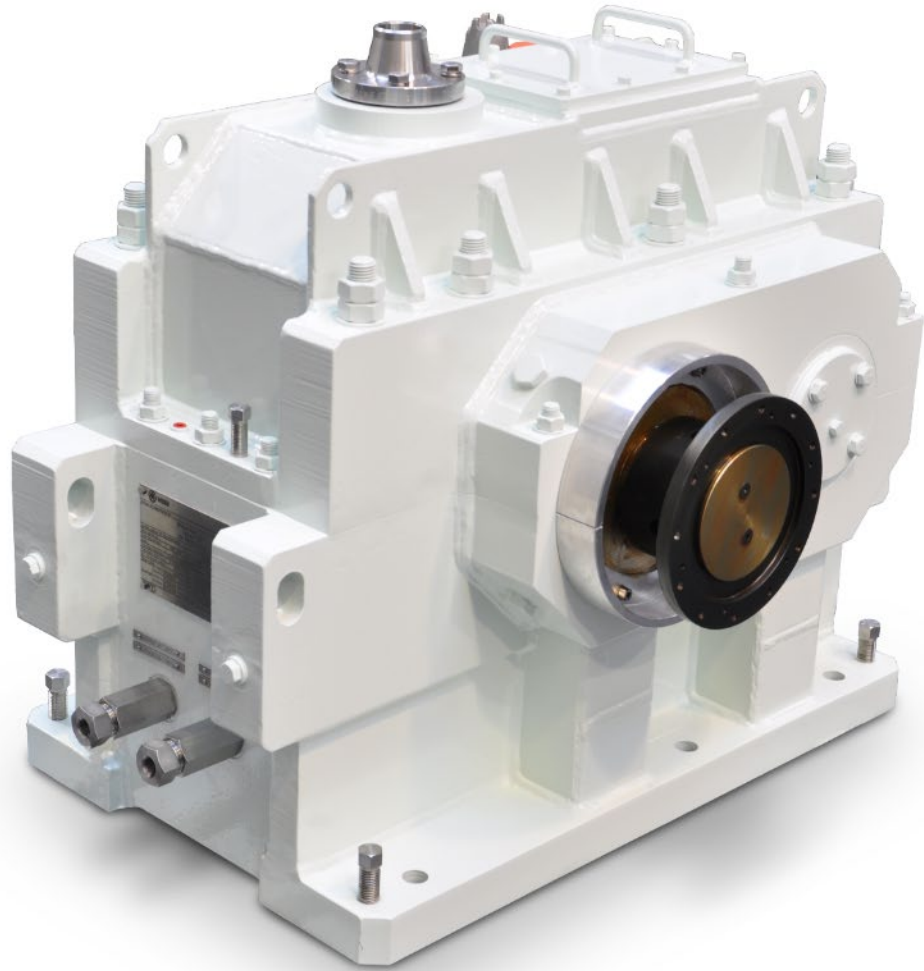
TURBO **RS Series.**

One-stage double helical gearboxes

- One double helical gear and pinion

or

- Two single helical gears shrink fitted on the shaft and pinion
- Pinion and shaft are in journal bearings with surface from tin alloy
- This gearbox can be equipped on request with thrust bearing eliminating the thrust forces from driving or driven machine



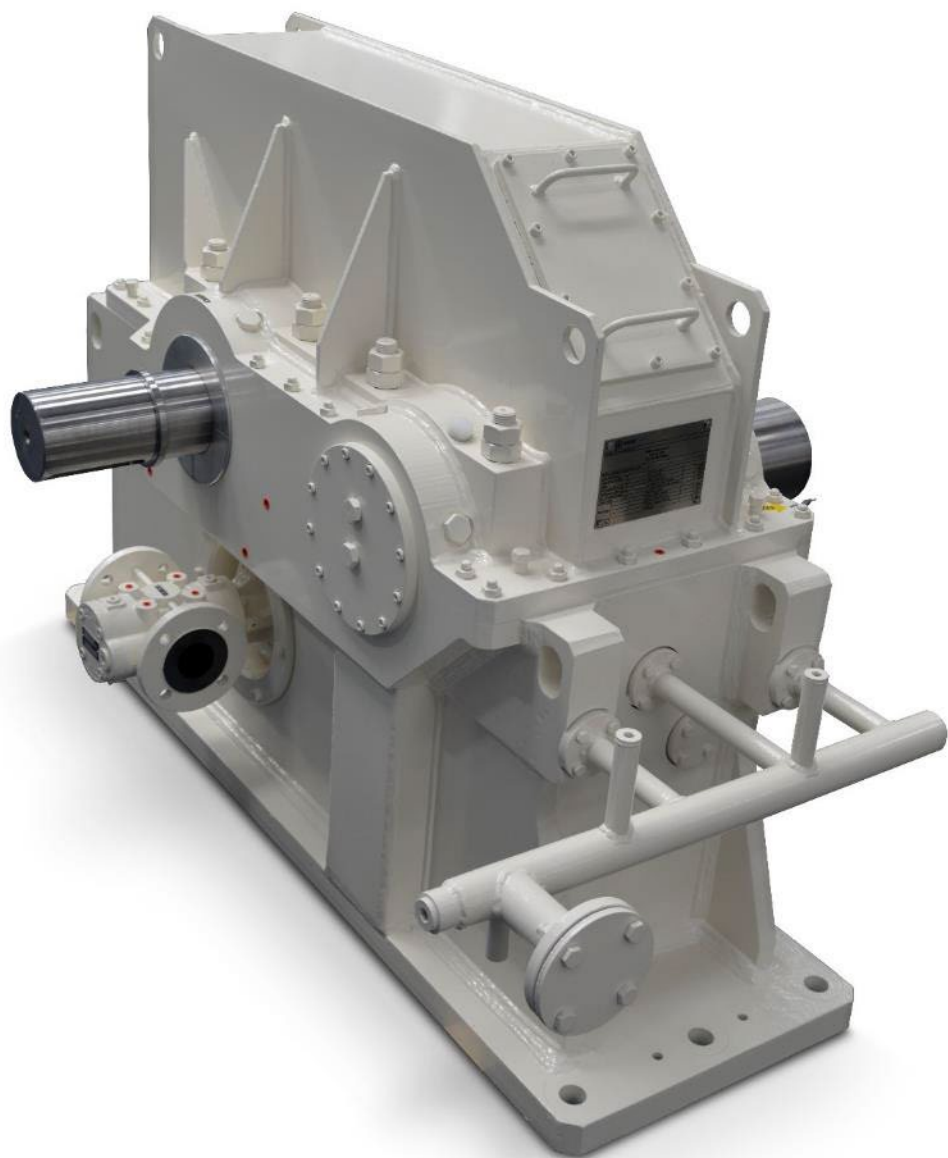
TURBO **RU Series.**

One-stage double helical gearboxes

- One double helical gear and pinion

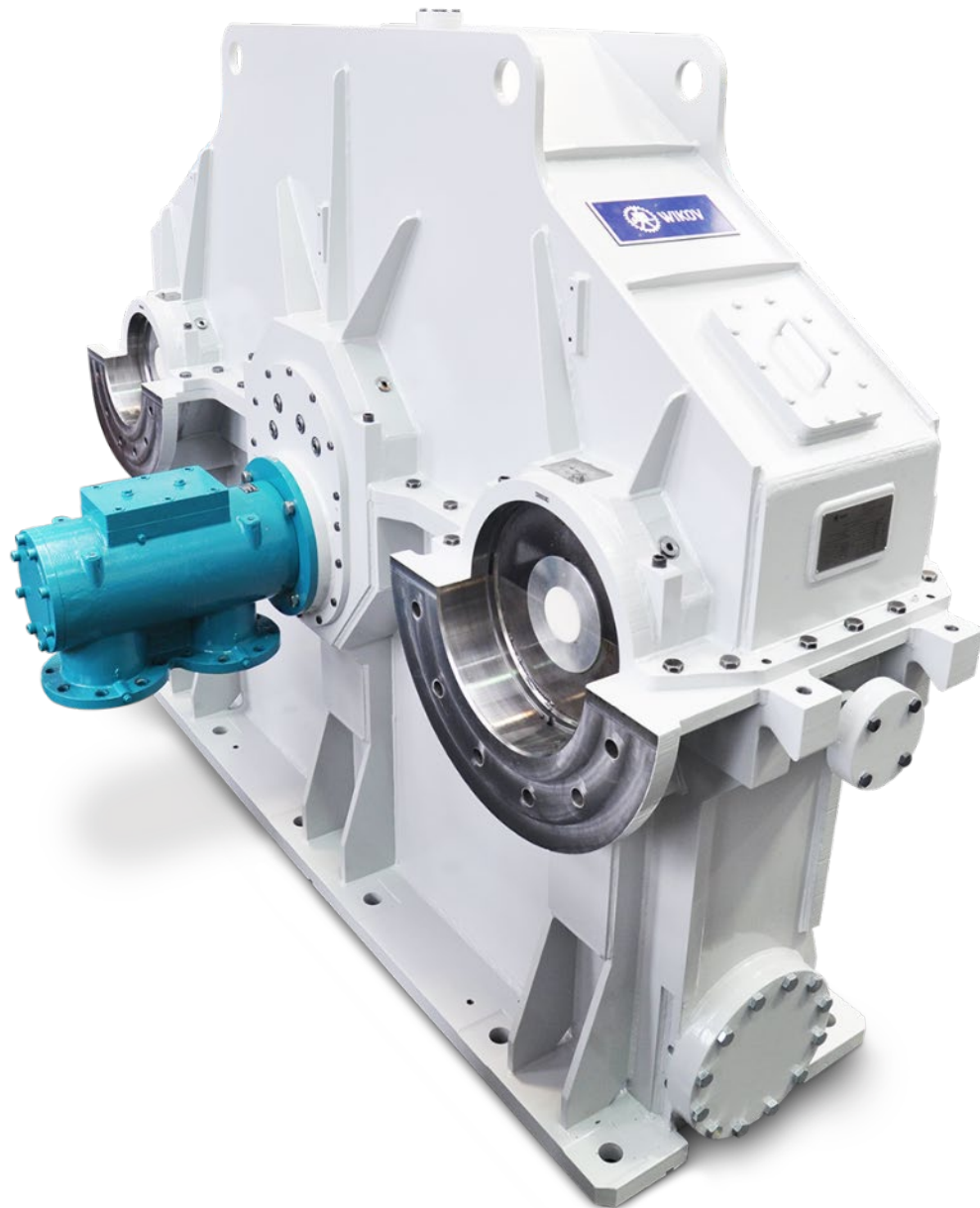
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- Two single helical gears shrink fitted on the shaft and pinion
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- This gearbox can be equipped on request with thrust bearing eliminating the thrust forces from driving or driven machine



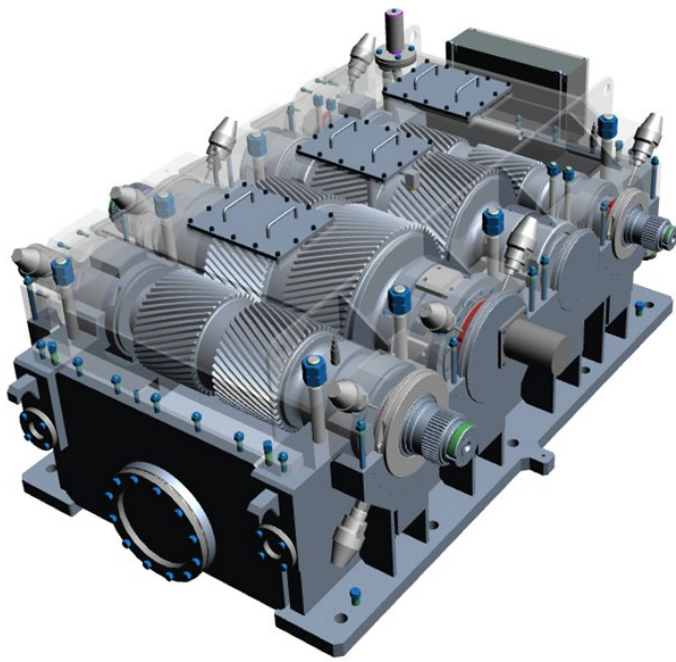
TURBO R1T Series.

- One single helical gear and one (R1T) or two (R2T) pinions
- Gear casing allows connection of one or two turbine cases
- Gears are shrink fitted on the low speed shaft
- Pinion and shaft lays in journal bearings with white metal surface
- The pinion has thrust rings that transfer the thrust force from pinion to low speed shaft
- These gearboxes absorb the external axial forces generated by turbine or compressor by means of thrust bearing located on low speed shaft



TURBO R2T Series.

- One single helical gear and one (R1T) or two (R2T) pinions
- Gear casing allows connection of one or two turbine cases
- Gears are shrink fitted on the low speed shaft
- Pinion and shaft lays in journal bearings with white metal surface
- The pinion has thrust rings that transfer the thrust force from pinion to low speed shaft
- These gearboxes absorb the external axial forces generated by turbine or compressor by means of thrust bearing located on low speed shaft

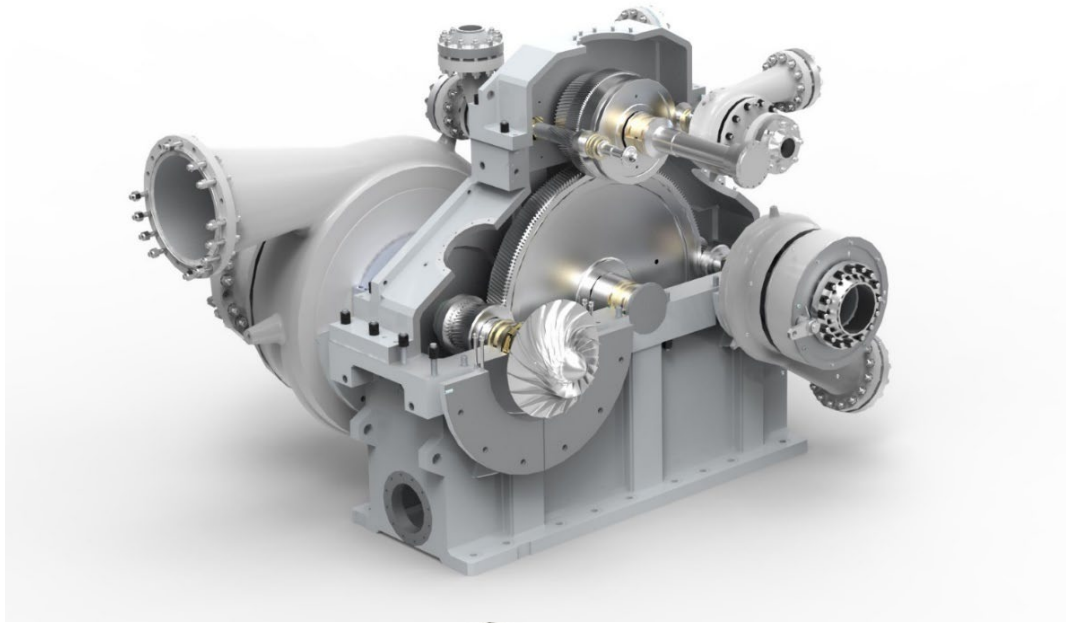


TURBO

Customized Compressor gearbox solutions.

- Customized to the operator's requirements
- Focus on high **efficiency, low oil consumption and low maintenance**
- Meet all relevant industrial standards including DIN, ISO, AGMA, API
- **In-house load testing** before dispatch
- **Accessory equipment:**
pumps, couplings etc.
- **Special Wikov Designs:**
 - gearbox drives 2 compressors

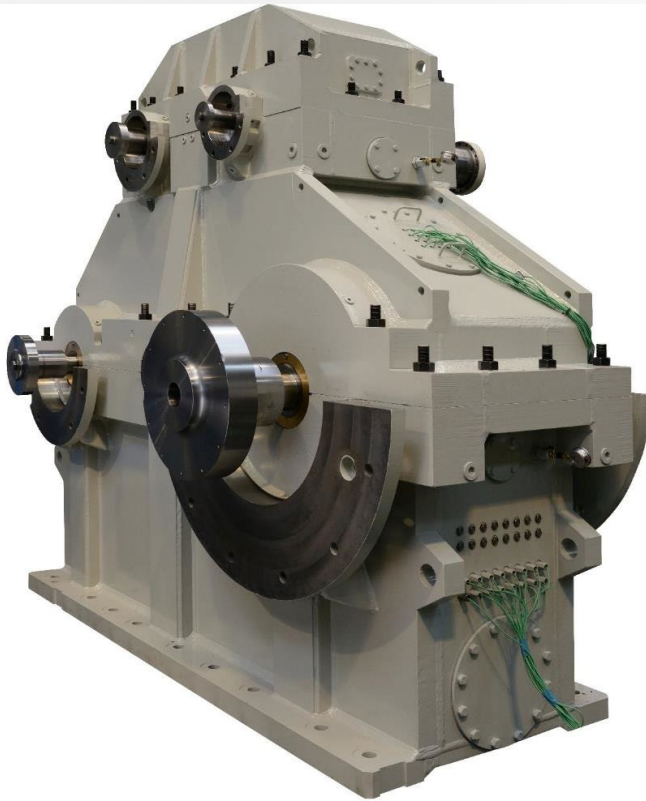




TURBO

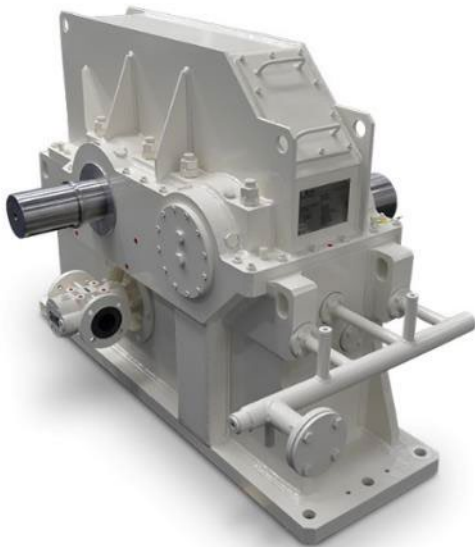
Gearboxes for Integrally Geared Compressors.

- Single helical type gearing
- 2 bull gears, 4 pinions driving 8 compressors
- Gear strength according to API 613
- Application factor: 1.6
- Tooth modifications for optimal gear performance and durability



TURBO

Sample Reference of Customized Gear Units.



Gearbox type	R1T 450
Ratio	7,2424
Output speed	10.791 rpm
Rated power	1.600 kW
Weight	1.840 kg

Application	Paper Industry Turbair® Vaccum System
Location	Primarily: Western Europe Worldwide



TURBO

Sample Reference of the R1T/R2T type.

Gearbox type	R2T 1500
Ratio	1,973/1,905
Output speed	1792 rpm
Rated power	3.168/3.082 kW
Weight	5.700 kg

Application	FPSO Compressor
Location	Brazil Worldwide



TURBO

Sample Reference of the Customized Gear Units.

Gearbox type	PP 355
Ratio	6,535
Output speed	19.719 rpm
Rated power	600 kW
Weight	650 kg

Application	FLNG/FSRU Compressor, Expander
Location	Worldwide



TURBO

Sample Reference of the RSB/RUB type.

Gearbox type	RUB 630
Ratio	4,592
Output speed	1500 rpm
Rated power	13.800 kW
Weight	7.400 kg

Application	Air separation Compressor
Location	India Worldwide



REFERENCES

Turbocompressors.



Contacts



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