Leistritz

OIL- & GAS INDUSTRY

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Machine tools solutions for demanding products

Leistritz supplies machine tools for high precision wet, dry and hard-machining. In a perpetual dialog with our customers we build trendsetting machines with innovative tools and technologies. Our aim is to continuously improve accuracy, availability, safety and the overall economic efficiency or our machines. We have been doing that with great passion – for over 30 years. And this is what defines us!

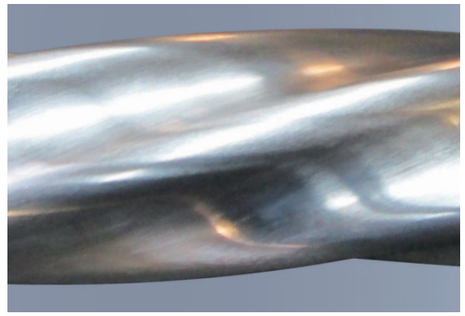
Components employed in the oil and gas industry are exposed to extreme conditions, such as activities deep beneath the earth´s surface, the processing of highly corrosive materials and working under high pressure and with extremely abrasive materials. In order to ensure reliable operation under such conditions, the components must have certain characteristics:

↗ **excellent surface finish**
↗ **excellent resistance**
↗ **excellent stability**

Our design and manufacturing specialists have developed a machine series that is tailored to meet the high requirements of the oil and gas industry. From oil drilling to oil production, we are a competent partner delivering tooling and machining solutions from a single source to meet the high demands of our customers in the oil and gas industry.

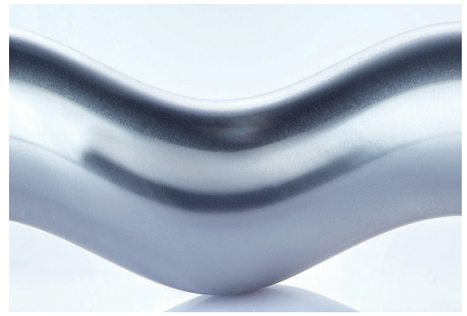
We supply machine tools for the right process to manufacture diverse parts used in the oil and gas sector:

Rotors



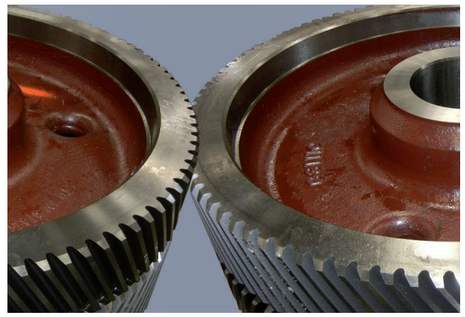
process:
milling, hobbing and polishing

Eccentric screws



process:
whirling/peeling

Internal profiles, e.g. in stators, components for downhole pumps

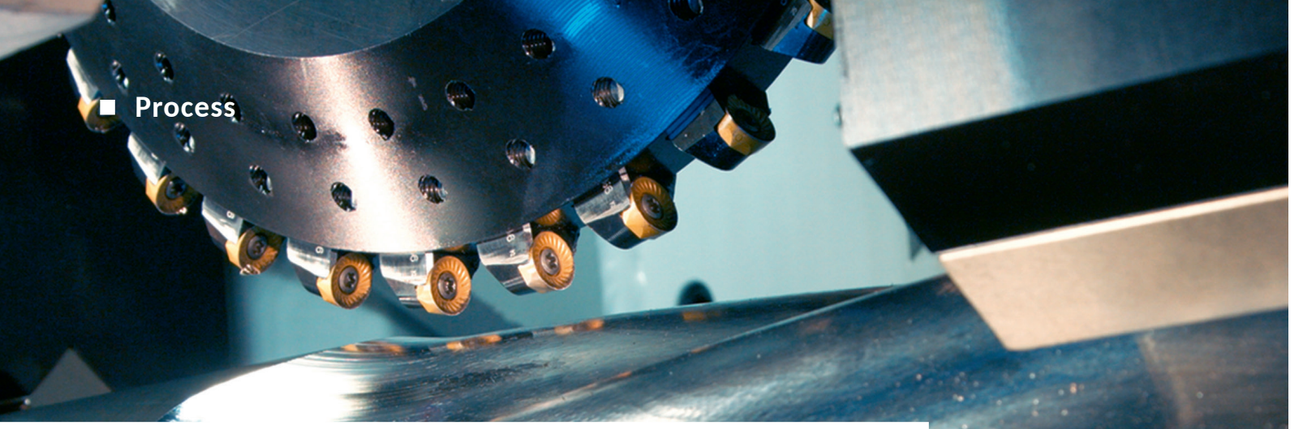


process:
keyseating

Programming and quality control

process:
software

Leistritz a strong partner to the oil and gas industry.



MILLING & HOBBING

One machine for both process steps

If the task is processing materials that are difficult to machine, such as those used for rotors in the oil and gas industry, then precision milling is of the utmost importance. Here, high-quality surfaces and profile accuracy are what counts.

Leistritz offers with its LWN 300 PM (Power Mill) a solution for side milling and hobbing on one machine. The milling cutters are arbor mounted to a Ø 50 mm spindle with an outboard support by a counter bearing, to achieve the high rigidity. This superior support produces best surface finishes and a high tool life.
This insures rigidity while maintaining fast tool change-over times. Furthermore, the Power Mill
has a continuous diagonal hob shift, which utilizes the entire hob face during the cutting of a rotor to evenly distribute tool wear. A complete rotor can be hobbed without the frequent stops for measuring or the exchange of inserts.

BENEFITS OF LWN 300 PM:

- milling and hobbing on one machine
- unmanned machining of one rotor is possible regardless of work piece length
- easy conversion of existing programs to the coordinate system of the LWN 300 PM
- all machine axis are CNC controlled (e.g. automatic determination of machining height of steady rests)

LWN 300 PM

Work piece diameter	25 – 220 mm
Work piece length	max. 8,000 mm

POLISHING PROCESS

Highest possible surface quality

An abrasive belt is applied to the workpiece in order to smooth its surface and prepare it for further processing or for finish it after coating. This finishing process achieves the highest possible surface quality and ensures the perfect interaction between the rotor, stator and housing.

These challenges are made for the Leistritz polishing machine LWN 250 PL, which is designed for the high demands on profile geometry.

BENEFITS OF LWN 250 PL

- single and multi-lobe polishing on one machine
- auto shutdown in case of belt breakage
- user-friendly operator interface
- belt speed of up to 40 meters/second
- high positioning accuracy
- in-cycle adjustment of belt pressure
- facilitates polishing of tungsten carbide coated material

LWN 250 PL

Work piece diameter	25 – 220 mm
Work piece length	max. 8,000 mm

WHIRLING & PEELING

High cutting productivity and easy operation

The whirling/peeling unit consists of a ring with inward facing inserts. The work piece is located in the center of the whirling/peeling ring. While the ring rotates, the whirling/peeling unit is fed along the work piece length. The profile is created by the interpolation of the whirler feed in combination with workpiece rotation.

Leistritz provides high-quality machine tools for whirling/peeling.

LWN 300 HP

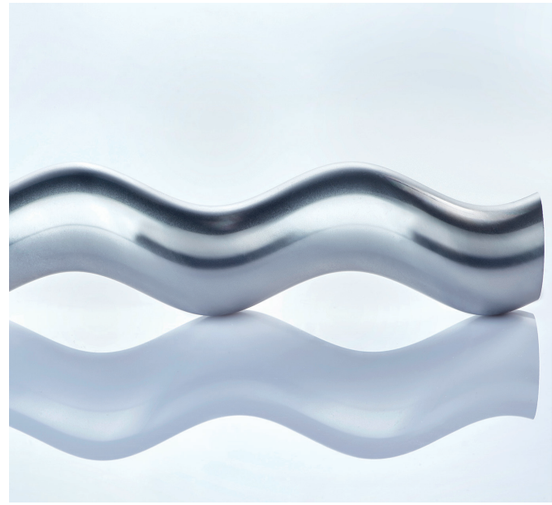
	LWN 300 HP	LWN 190 HP
Work piece diameter	40 – 200 mm	20 – 125 mm
Work piece length	8,000 mm	6,000 mm

LWN 160

Work piece diameter	10 – 80 mm
Work piece length	6,000 mm

MACHINE BENEFITS:

- high rpm
- centering steady rests with adjustable clamping force for different work piece Ø
- rigid and low vibration clamping of work piece
- pre-adjustment of cutters and holders with adjusting device, accuracy ~ 0.01mm
- user-friendly operation and interactive programming
- comprehensive protection of all guideways and drive units

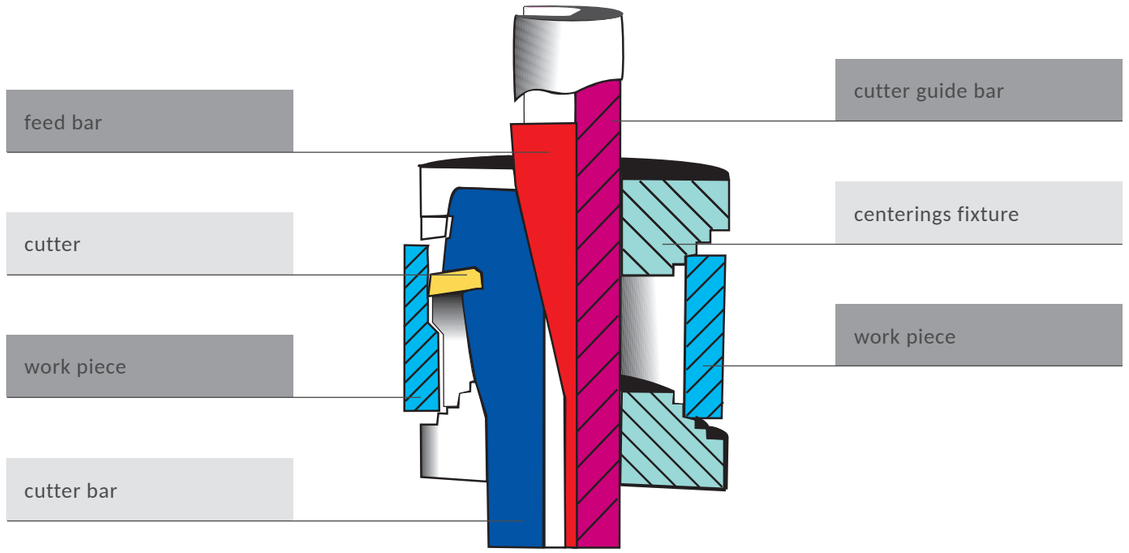


KEYSEATING PROCESS

Economic and efficient solution

For the production of internal profiles such as in stators, components for downhole pumps, etc. keyseating machines are used. The keyseating process cuts a keyway in stepwise manner. A cutter is pulled vertically with a continual stroke movement along the bore, combined with a horizontal thrust motion. The thrust is delivered after each stroke by a feed bar that thrusts the cutter in steps between the cutter guide bar and cutter bar.

Basic function: keyseating



Leistritz offers several keyseating machines: the Polymat and Polyjet series. In order to further improve efficiency, the machines can be equipped with automatic loading and indexing devices for unmanned production.

POLYMAT CNC

	70 CNC	100 CNC	125 CNC
Work piece diameter	10 – 330 mm	10 – 500 mm	10 – 750 mm
Groove width	70 mm	100 mm	125 mm

POLYJET 50

Work piece diameter	100 - 300 mm
Work piece length	400 mm
Groove width	50 mm

MACHINE BENEFITS:

- workpiece and tool are clamped into a single unit, resulting in long tool life and optimized high process efficiency
- very wide and long keyways can be cut (length up to 2,000 mm and width up to 150 mm)
- low machine space requirement, even for large keyway lengths or widths
- highest precision as tool is guided over entire keyway length
- gentle cutting for workpiece (no warp)

SOFTWARE

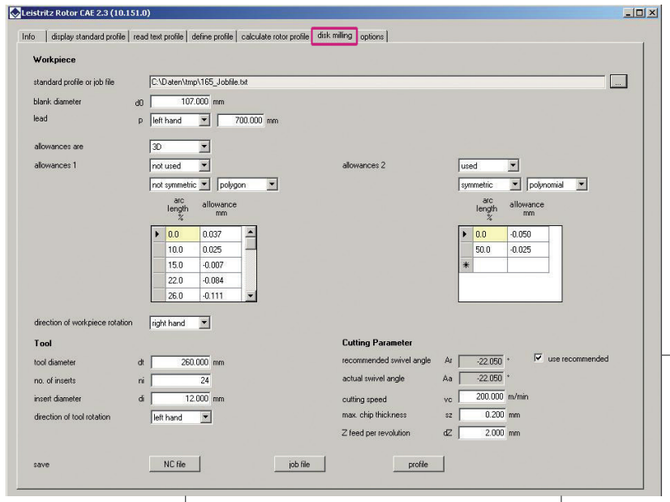
User-friendly programming and quality control

To round up the Leistritz turnkey solution the customer is supported by the unique Leistritz Rotor CAE. This software enables our customers to run the machine with high flexibility for a demanding market.

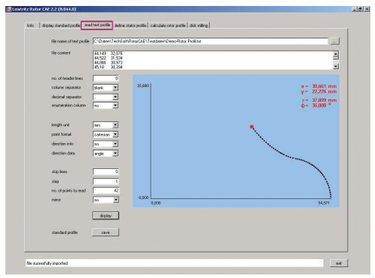
LEISTRITZ ROTOR CAE:

- stand-alone software solution
- easy programming of rotor profile
- guided programming
- generating of CNC program
- easy transfer to CNC control
- graphic data display

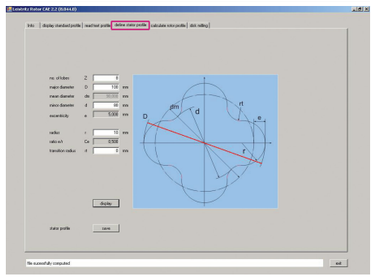
Data input screen



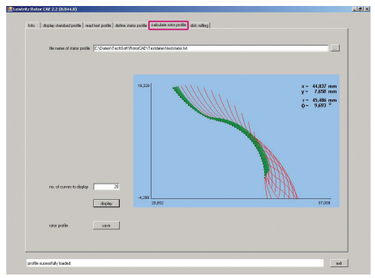
1. Transfer of existing data to Leistritz CAE

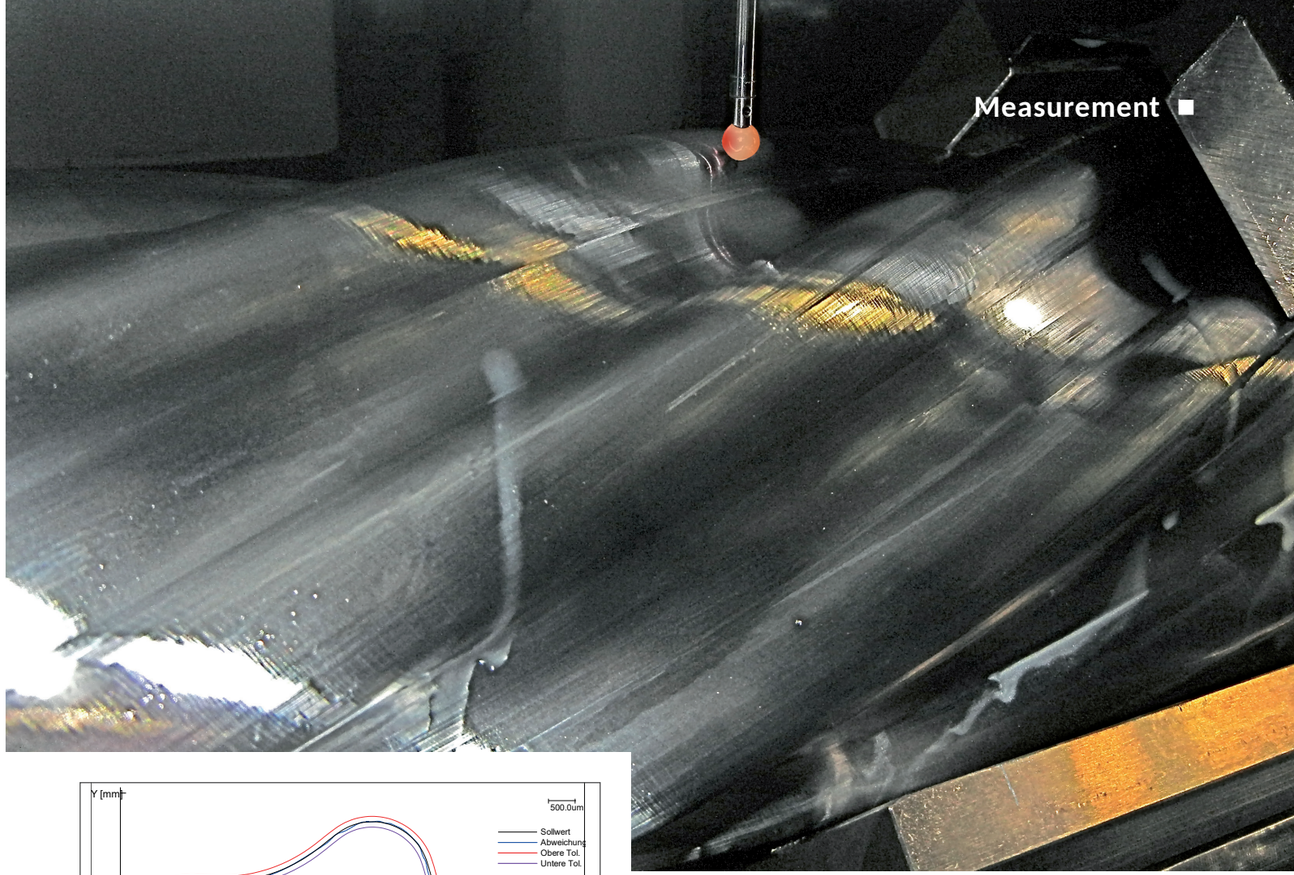


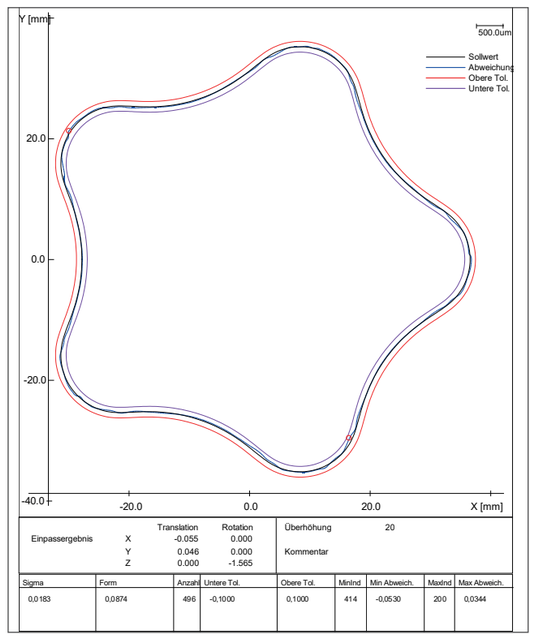
2. Parametric profile definition



3. Rotor and stator roll-off







		Translation	Rotation		
Einpassergebnis	X	-0.055	0.000	Überhöhung	20
	Y	0.046	0.000	Kommentar	
	Z	0.000	-1.565		

Sigma	Form	Anzahl	Untere Tol.	Obere Tol.	MinInd	Min Abweich.	MaxInd	Max Abweich.
0,0183	0,0874	496	-0,1000	0,1000	414	-0,0530	200	0,0344

CUSTOMERS BENEFIT FROM:

- integrated measuring device
- measurement directly after machining or between machining steps
- no need to remove workpiece from machine for measurement
- fast measurement (result within 3 minutes)
- corrected profile can easily be transferred to machining process (at the push of a button)
- highest profile accuracy

Leistritz

LEISTRITZ Production Technology

Headquarters

Leistritz Produktionstechnik GmbH
Leistritzstr. 1-11
92714 Pleystein
Germany
T: +49 9654 89-0
F: +49 9654 89-812
E: produktionstechnik@leistritz.com

Technology & Service locations

Leistritz Advanced Technologies Corp.
Allendale, USA

Leistritz Machinery (Taicang) Co., Ltd.
Shanghai, China

Leistritz Machinery (Taicang) Co., Ltd.
Jiangsu, China

Leistritz SEA Pte. Ltd.
Singapur

production.leistritz.com