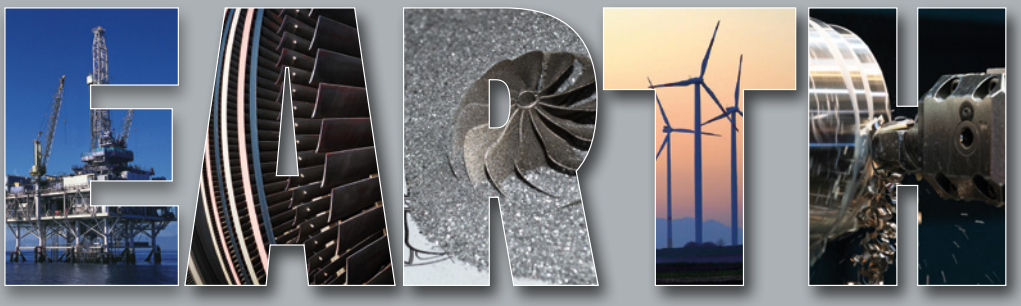
SCHOELLER BLECKMANN OILFIELD TECHNOLOGY

FROM



TO

SBOT AT TERNITZ / AUSTRIA

Schoeller-Bleckmann Oilfield Technology (SBOT) is a fully owned subsidiary of Schoeller-Bleckmann Oilfield Equipment AG.

SCHOELLER BLECKMANN OILFIELD EQUIPMENT

SCHOELLER BLECKMANN OILFIELD TECHNOLOGY

Headquaters in Austria

- Located in 10 countries worldwide
- 18 operating sites
- 1 400+ employees
- 400+ CNC-machines
- 350+ employees
- More than 120 CNC-machines
- Production area 40 000 m²

Published in May, 2023

OUR THREE CENTERS OF COMPETENCE IN AUSTRIA

SCHOELLER BLECKMANN ADDITIVE MANUFACTURING

We are part of the Velo3D contract manufacturing network. We offer a wide range of engineering solutions from most complex print designs to finish machined products. (Details page 12)

SCHOELLER BLECKMANN AEROSPACE TECHNOLOGY

Contract manufacturers of high precision hard metal machining with focus on Inconel and Titanium products.

SCHOELLER BLECKMANN PRECISION TECHNOLOGY

Precision machining contract manufacturer for flexible machining capacity for complex tubular components.

We provide leading edge technology!

General Product Dimensions

- **Diameter**
  outside: 50-450 mm
  inside: 3-250 mm
- **Length**
  0-10 m

NON-MAGNETIC HIGH PERFORMANCE ALLOYS

Schoeller-Bleckmann Oilfield Technology is the global market leader in the production of non-magnetic, high-strength and corrosion-resistant steels.

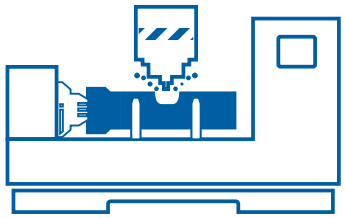
Key Features

- Nonmagnetic properties (μ_r~1)
- Static mechanical strength ($R_{p0.2}$)
- Dynamic mechanical strength (fatigue endurance)
- Pitting corrosion resistance
- Wear resistance
- Galling resistance
- Weldability
- Stress corrosion cracking resistance

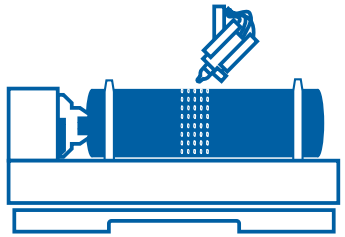
SPECIAL PRODUCTION PROCESSES

We are a ONE STOP SHOP with high volume production capabilities.

Complete Machining

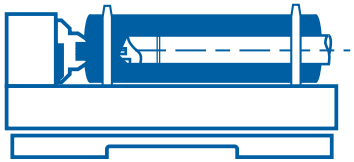


(Laser)Welding Processes

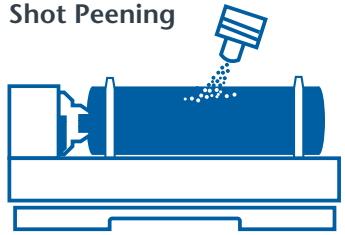


Gundrilling

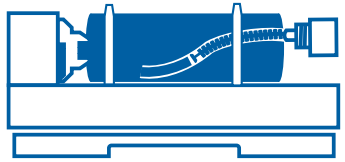
BTA Deep Drilling



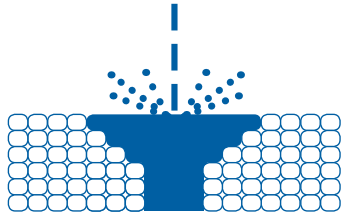
Shot Peening



Goose Neck Drilling



Additive Manufacturing

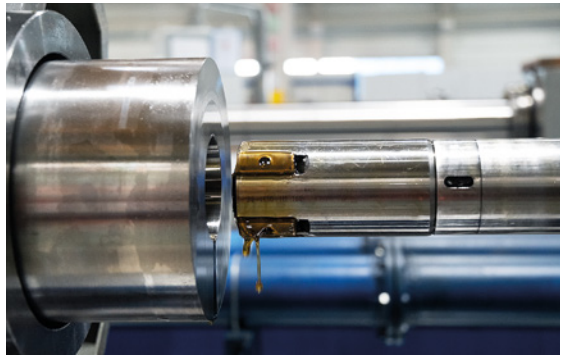


Prototyping

BTA Deep Drilling / Honing

With this method, we drill centric and eccentric holes with maximum precision up to a drilling depth of 10 m on special deep drilling machines and we also are able to control deviation of the bore.

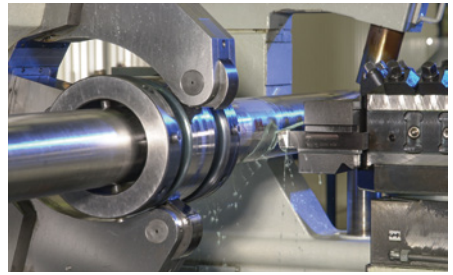
- Step drilling
- Contour drilling
- Peeling
- Reaming and roller burnishing
- Bottle-boring along the entire drilling depth

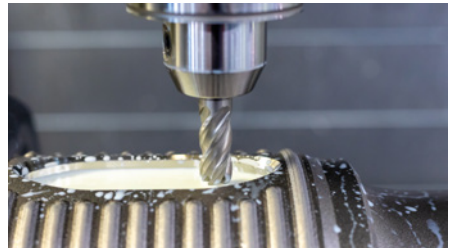


Complete Machining (Turning/Milling in one operation)

With our state of the art 5-axis machining centers, highly complex workpieces are machined precisely in one setup.

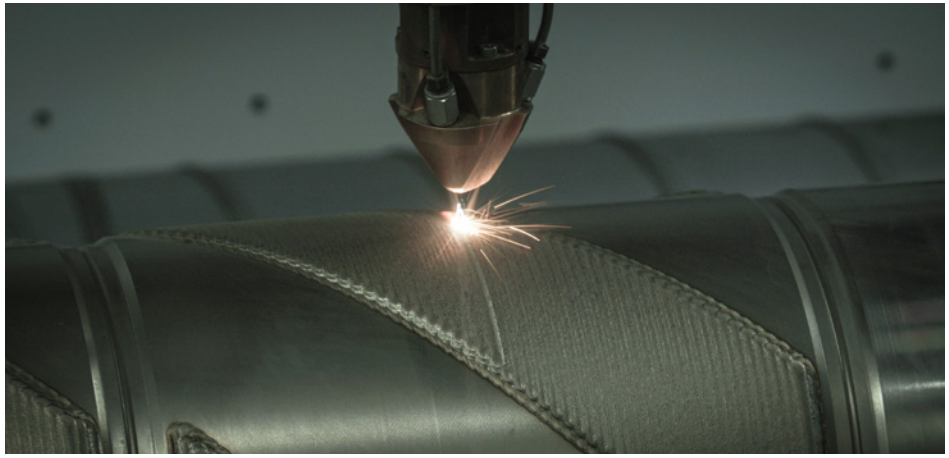
- Cost efficient production
- Achieving high positional accuracy
- High concentricity accuracy and high surface quality
- Use of coolants/lubricants under high pressure
- Designed for processing high-strength materials



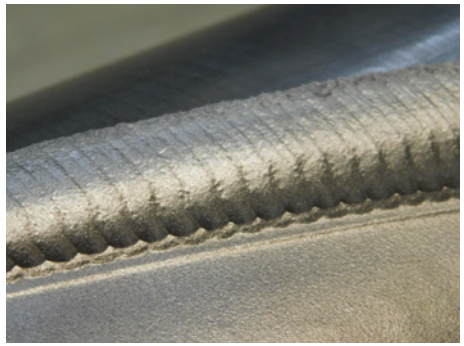


WELDING PROCESSES

Laserwelding

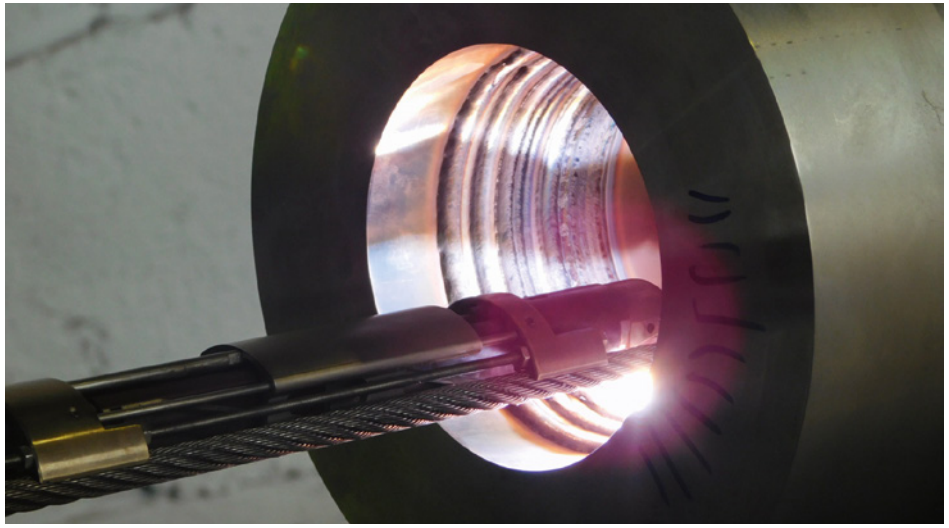


- Solid-state laser / CO2 laser
- 6-axis machine
- Length of workpiece up to 10 m
- Diameter outside: 50-500 mm
- Diameter inside: >38 mm, depht up to 1 500 mm
- 3- layer strategy (buffer-interface-hardfacing)
- Characteristics: Tungsten-carbides in a Ni-base matrix



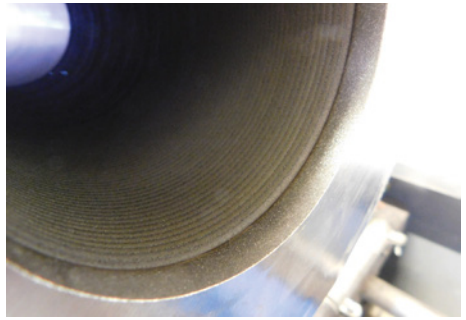
WELDING PROCESSES

Inside Welding - TIG automated



Technical data

- Diameter min. 50 mm
- Length of workpiece: max. 10 m



Thickness per layer

- ~2 mm
- Multilayer welding applicable

Micrographs

- No pores or cracks
- Good bonding to basic material

Gundrilling

A well-known technology further developed for extreme applications.
Using a patented process, we are able to control the toolpath.

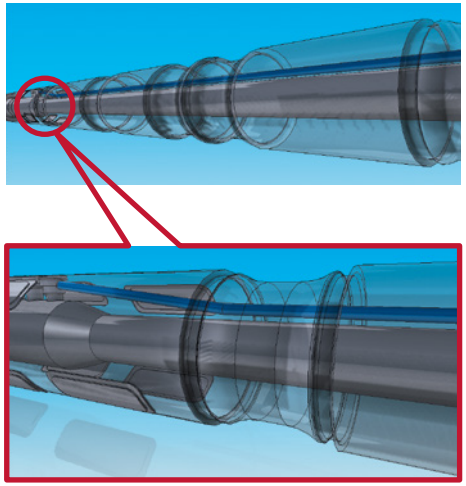
Process description

- Holes in the diameter range from 2-25,4 mm
- Drilling depth up to 400 x drilling diameter
  (e.g. 5 mm diameter – 2 000 mm depth)

Specific workpiece

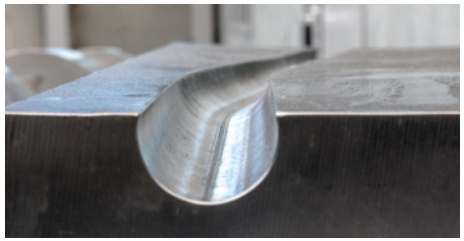
- Drill diameter: 8 mm
- Total drill length: 2 750 mm

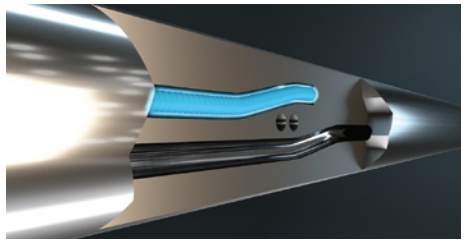
After a drilling length of 2 000 mm, the borehole was deflected in order to be able to connect two features.



Goose Neck Drilling (GND)

This special erosion process is our patented EDM technology for the production of curved holes. We are currently working on a new development project with a diameter range from 5 to 10 mm.

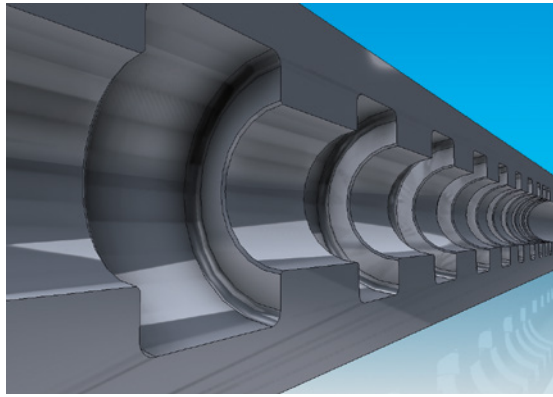




- S-shaped bore possible - axle offset up to 60 mm
- Angle deflections radius > 10 x bore diameter
- Currently possible bore diameter: min. 32 mm

Bottle Boring

This special technology is a process for creating inner contours and trepans at bores.
SBOT is able to conduct this technology manuel and CNC-controlled.



ADDITIVE MANUFACTURING
Metal 3D Printing

Samples for 3D printing

What we offer

- Consulting
- Feasibility study
- Prototyping
- Serial production

Test piece 3D print size comparison

Benefits

- Complex geometries with less support structures
- Real-time monitoring of the printing process
- Quality documentation
- Design freedom

Impeller cross-section (left) and (right) manifold (distirbutor for detergent liquid)

Material

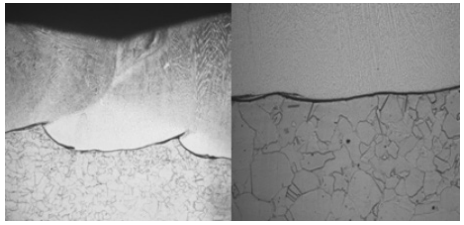
- Alloy 718
- Titanium alloys
- 316L
- GrCop42
- Co base alloy 21
- Aluminum alloys
- M300 (tool steel)
- 15-5 PH / 17-4 PH

Dimensions

- Diameter up to 600 x 550 mm length

QUALITY ASSURANCE

All products run through our precision machining processes from raw material sourcing to final inspection. Only products that meet our strict quality standards will be released for delivery.

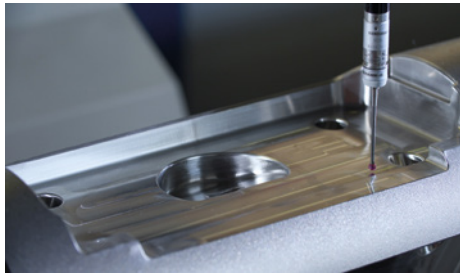


Inhouse laboratory testing

- Fatigue test
- Tensile test
- Charpy V impact test
- Hardness test
- Oxalic acid test ASTM A 262
- Intergranular corrision test ASTM A 262 - pract. E

Laser Tracker / Scanner

- Laser guided high end 3D measuring device
- Optimized precision (pointing: 0,003 mm)
- High end 3D measurement software

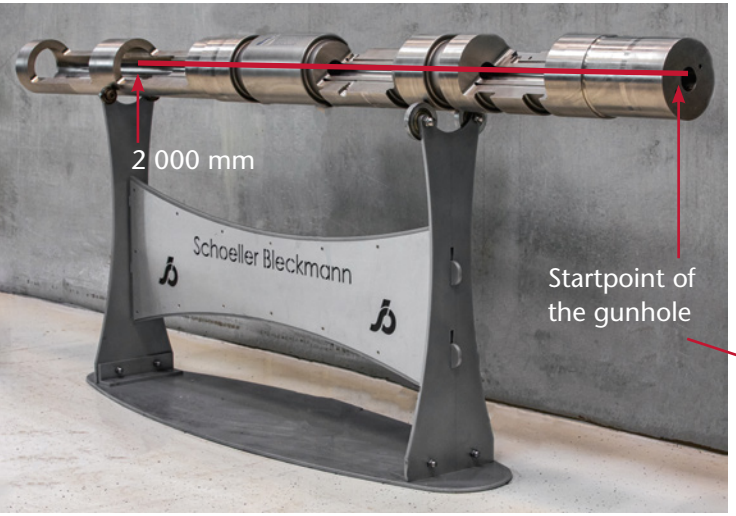


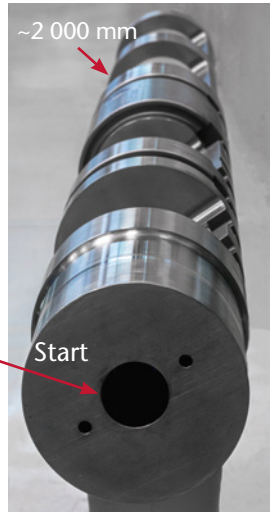
CMM

- 3 - Axes
- Geometry of work pieces can be measured and recorded
- Workpiece length up to 6 m

MANUFACTURING SAMPLE FOR OILFIELD BUSINESS

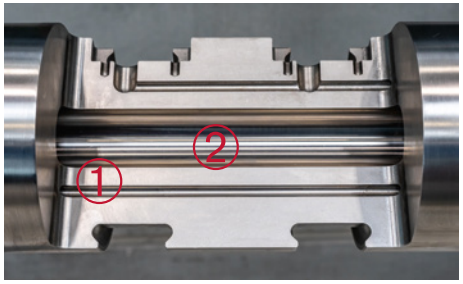
Typical Workpiece





Showpiece

Material: high strength
Diameter: 170 mm x length 4 600 mm

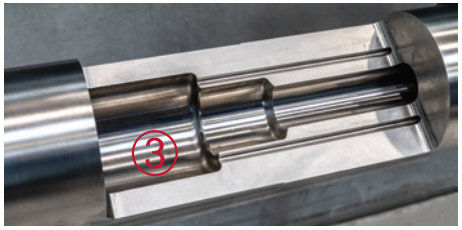


① Gunhole requirements

Diameter 5 mm x depth 2 000 mm
Tolerance of hole circle radius: 0,5 mm

② Peeled Surface (sealing area)

Rmax: 0,3 Ra
Tolerance: + / - 0,025 mm



③ Roller burnished surface

Rmax: 0,1 Ra

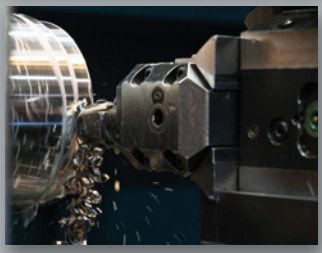
MANUFACTURING SAMPLES OF OUR CENTERS OF COMPETENCE

SBOT has wholly transferable skills, processes and integrated manufacturing capabilities for the aviation and aerospace industry.

By integrating state-of-the-art 3D-DMLS printing technology, we have the ability to print the most complex geometries for high performance components.

Sample for a high-pressure vessel

Part designation	Rotary transformers	Wireless connector
Material	Stainless Steel and Aluminium	
Tolerances	0,05 mm	0,05 mm
Diameter	228 mm	450 mm
Depth	50 mm	10 mm
Wall thickness	5-20 mm	5-20 mm



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Find us on

We provide leading edge technology!

SBOT is certified according to

- EN 9100:2018
- ISO 9001:2015
- ISO 14001:2015
- API Spec Q1-License 7-1-0234