



INDEX

04	PRECISION MADE IN AUSTRIA
06	WHO WE ARE
08	ONE-STOP SHOP WITH NO LIMITS
10	PROTOTYPING
14	ADDITIVE MANUFACTURING
20	BTA DEEP DRILLING
21	GUN DRILLING
22	GOOSE NECK DRILLING
23	COMPLETE MACHINING
26	WELDING
30	SHOT PEENING
32	QUALITY MANAGEMENT
34	OUR NON-MAG MATERIALS

PRECISION MADE IN AUSTRIA...

- ... ALONG THE ENTIRE VALUE CHAIN (PRODUCTION CHAIN)
- ... FOCUSED ON SOLUTIONS WITH THE HIGHEST LEVEL OF PROFESSIONALISM
- ... FROM PROJECT MANAGEMENT TO EVERY PRODUCTION PROCESS, NO MATTER HOW SMALL

We are obsessed with details when it comes to finding the best solutions. We are happy when we can create solutions and products that bring a smile to the lips of even the most critical minds. It's what we call 'precision without limits'. We also call this 'customer satisfaction without limits'. Overall, we group our actions into a set of values, which we are reluctant to define by limits.





NO LIMITS

We have been redefining the boundaries for cutting edge solutions in the highly demanding oilfield industry for more than 30 years. In an industry that has always been characterised by growth, innovation and the highest demands, we have always been pioneers in developing the standards of tomorrow. This attitude has made us the global market leader and has laid the foundation for highly innovative production processes, that are now recognised worldwide, in a wide range of sectors such as aerospace, aviation and the food industry, as well as in additive manufacturing and prototyping.

The requirements placed on innovative new products with ever more complex components, higher design specifications and shorter product life cycles, are rapidly increasing. As are the requirements for the resilience of steels in terms of temperature and corrosion. What was state of the art yesterday will be water under the bridge tomorrow. We conduct very intensive research and development work in close co-operation with our partners in steelworks as well as with research institutes and universities. This is the only way we can constantly improve materials and production processes.

The entire value creation process is part of a multi-certified quality management system and ranges from the procurement of raw materials and precise production, to the final inspection of the finished products. State-of-the-art test procedures ensure that no product leaves production if it does not meet the customer's requirements, no matter how strict.

Our certifications:

ISO 9001

+ ISO 14001

EN/AS 9100

+ API Spec Q1 - License 7-1-0234

+ AEO - Customs simplification

SBOT COMPANY HISTORY

	2801 C	COMPANY HISTORY
1		
O	2023	Opening of 3D Competence Centre
Ö	2020	Commissioning of a photovoltaic system with enormous capacity
Ö	2017	Start of additive manufacturing
Ö	2017	Foundation of Schoeller Bleckmann Aerospace Technology
Ö	2014	Construction of an SC/DC material centre and unbundling of the production areas
Ö	2007	First major expansion of production – construction of halls 11-13
Ö	1997	Foundation of 'Schoeller-Bleckmann Oilfield Technology' (SBOT) and initial floating of the of the Schoeller-Bleckmann Group and conversion into a joint-stock company
0	1995	Privatisation of Schoeller-Bleckmann Oilfield Equipment AG
0	1988	Spin-off of Schoeller-Bleckmann GmbH from VEW
0	1986	Closure of steel production in Ternitz
0	1975	Highest number of employees at the Ternitz site, 4,242 employees
0	1975	Böhler Kapfenberg, Schoeller-Bleckmann Ternitz and Mürzzuschlag/Hönigsberg, Styria Judenburg merged in to 'Vereinigte Edelstahlwerke Aktiengesellschaft VEW'
0	1951	Start of deep drilling technology at the Ternitz site
0	1946	10,000 people were employed at three plant locations (Ternitz, Hönigsberg, Mürzzuschlag). After the 2nd World War the company was nationalised
0	1924	Merger of the Schoeller company with the Bleckmann company from Mürzzuschlag to form 'Schoeller Bleckmann AG'. Expansion into an internationally active company for special steels
0	1862	Alexander Ritter von Schoeller acquires the ironworks 'Theresienhütte'
	1840	Foundation of the steel goods factory 'Martin Müller + Sohn', rolling mill for spring and sheet steel – 'Theresienhütte'

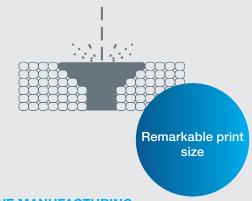
ONE-STOP SHOP

MANUFACTURING FROM ONE SOURCE AT SBOT



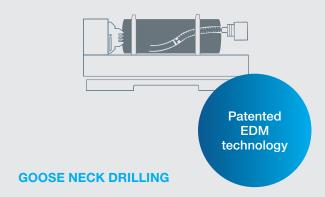
RAPID PROTOTYPING

Transform your CAD data into a workpiece in the shortest possible time. Sounds tempting, doesn't it? Depending on the complexity, we can convert the CAD data you provide into a precise workpiece in just a few weeks.

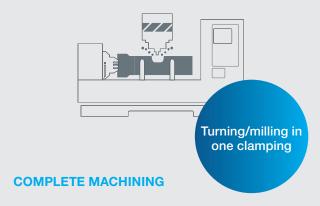


ADDITIVE MANUFACTURING

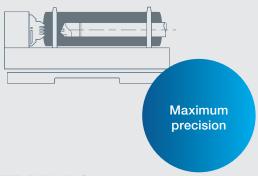
Impressive expansion of 3D printing options for numerous business areas with uncompromising precision and efficiency.



The EDM process developed jointly with the Technical University of Vienna - Goose Neck Drilling, or GND for short - makes it possible to drill curved holes in workpieces. After a five-year development phase, we were able to apply for a patent in 2015.

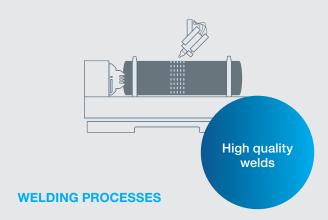


Highly complex workpieces can be precisely and completely machined at our encapsulated 5-axis millling/turning machining centre. The use of vibrationdamped drilling tools also enables machining bores up to a maximum of 14 x D (bore diameter).

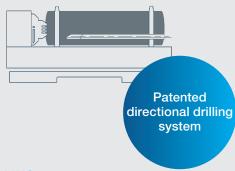


BTA DEEP DRILLING

We use this metalworking process to drill centric and eccentric holes up to a drilling depth of 11 metres with maximum precision on special deep drilling machines.



We offer laser deposition welding, stub welding using narrow gap welding or TIG welding in bores.



GUN DRILLING

We can drill centric and eccentric holes from a diameter of 2 mm with our special gun drilling machines. Drilling depths with a maximum length/diameter ratio of 500 are possible. Our patented directional drilling system guarantees minimum drilling path deviation.



We offer our customers the opportunity to improve the properties of their workpieces with our shot peening systems.

PROTOTYPING YOUR WORKPIECE IN THE SHORTEST POSSIBLE TIME

WE MANUFACTURE CUSTOMISED PRODUCTS FOR YOU!

Find out more about our service. Our capabilities support your engineering design through to the finished component.

Based on our high precision engineering competence, we offer our customers the following services during initial production:

SERVICES



Technical feasibility study



Engineering (CAD/CAM)



Development of new manufacturing processes

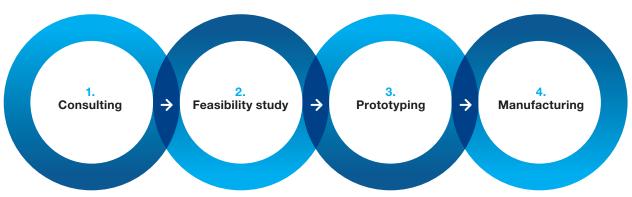


Production of test pieces and prototypes



SCAN CODE FOR MORE INFORMATION





ONE-STOP SHOP FOR FAST PROTOTYPING

Comprehensive know-how paired with great expertise in a wide variety of production methods makes us an equal partner with foresight.

Efficient prototyping is a crucial step in product development, paving the way from feasibility studies to the production of individual parts and small series. Companies can optimise time and resources through the targeted use of modern prototyping technologies. Feasibility studies enable a precise evaluation of design ideas before initiating any expensive production processes. Prototypes serve as tangible models to test design concepts and identify potential challenges at an early stage.

Advanced manufacturing technologies such as 3D printing offer flexible and cost-effective solutions for the production of prototypes and series. The iterative nature of prototyping allows for quick adjustments and optimisations, which ultimately improve the quality of the end product. The seamless transition from feasibility studies to prototypes and then production, enables our customers to bring innovative products to market faster and secure competitive advantages. All in all, efficient prototyping promotes innovation and flexibility in product development.

FROM THE CONCEPT

IN DAYS

TO THE FINISHED PROTOTYPE



ADDITIVE MANUFACTURING

We are a leading manufacturing company with unique technologies and decades of experience in the production of mission-critical components. As the first company in Europe with a Sapphire XC 3D printer, we are very proud to be able to offer remarkable capabilities across numerous business areas. We also offer material testing and machining options such as CNC turning, milling, heat and surface treatments, for the precise post-processing of 3D components, which we can therefore deliver ready for use—we are your onestop shop! Benefit from our experience in manufacturing high-tech components for the demanding oil and gas industry, our original main area of business.

With our competence centre for additive manufacturing, we support your 3D printing project from consultation to feasibility studies, prototyping and series production. Our 3D printers are designed to print large metal components up to 600 mm in diameter and 550 mm in height.

BENEFITS



Rapid prototype production, design changes and spare parts production



Complex geometries with small wall thicknesses



Combination of individual parts to form a complete component (leading to a reduction in the variety of components)



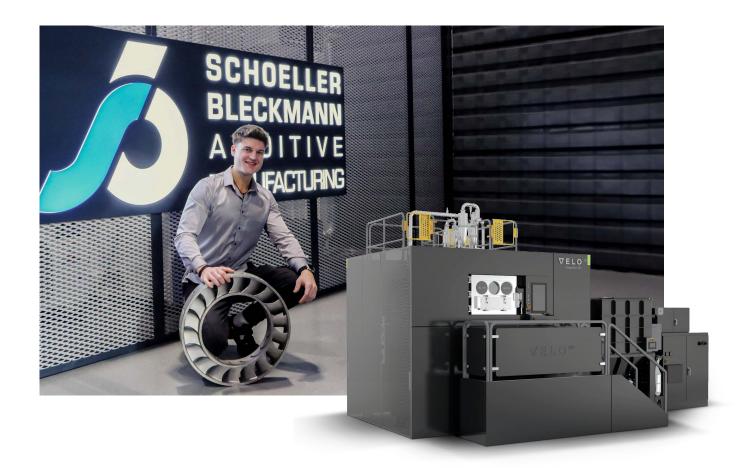
Lightweight construction through bionic design



Hybrid production – assembly on existing part



SCAN CODE FOR MORE INFORMATION



LIMITLESS POSSIBILITIES IN THE MANUFACTURE AND DESIGN OF METAL **COMPONENTS**

- Unique possibilities in component design
- Rapid prototyping, spare parts production on demand and design changes at short notice
- Complex geometries with low wall thickness and overhangs
- Combination of several part functionalities in one 3D printed component
- Lightweight construction through bionic design
- Hybrid production combining the strengths of additive manufacturing with those of traditional CNC machining.
- Enabling the production of highly complex, business-critical parts
- In sizes of up to 600 mm in diameter and 550 mm in height

THE PROCESS

Due to tool-free, selective melting on the component, this technology enables production of the most complex shapes, which cannot be achieved using conventional manufacturing methods or which are only economical in very large quantities (casting).

Components produced with 3D metal printers, already have a wide range of applications in industry (automotive, racing, aviation, medicine, tool & mould making, etc.). Conventionally manufactured parts would need to be redesigned in order to fully utilize the possibilities offered by additive manufacturing.

ADDITIVE MANUFACTURING



DE-POWDERING SYSTEMS

Benefit from premium quality precise powder residue removal and shorter processing times, thanks to our de-powdering systems with short swivel arms. This is the perfect complement to our 3D printing systems.

- + Short swivel arm for optimum component handling
- + Targeted vibration stimulation
- + Unlimited programming of two-axis rotation
- + Digital Factory Tool for process tracking, quality assurance and automation integration

WIRE-CUTTING MACHINES

- + Precise separation from the printing plate up to a diameter of 800 mm
- + Exact contours thanks to five CNC-controlled axes
- + Particularly suitable for thin walled and delicate components



SCAN CODE FOR MORE INFORMATION



PROCESSING MACHINES FIVE CNC-CONTROLLED AXES

- + Accuracy to between two and three hundredths of a millimetre
- + Enables machining on all sides, to achieve the required surface quality, e.g. for sealing surfaces
- + Perfectly designed for the post-processing of 3D printed components

COMPLEMENTARY MANUFACTURING TECHNOLOGIES

- + Turning/milling and grinding machining
- + Heat treatment
- + Shot peening
- + Material testing in our own laboratory
- + Complete measurement of the component including dimensional protocol
- + Repair of components by re-melting the geometry

DRILLING UP TO

16 m

FROM LOTH SIDES AND 11 m FROM ONE SIDE



BTA DEEP DRILLING DRILLING WITH A TOLERANCE OF 0.05 mm





HIGH QUALITY - DEEP DRILLING

We use this metalworking method to drill highly precise centric and eccentric holes up to a drilling depth of 11 m on special deep drilling machines.

Special drilling operations such as step drilling, contour drilling, peeling, reaming and roller burnishing are possible processes over the entire drilling depth. CNC-guided 'bottle-boring' is possible throughout the entire drilling depth.

MATERIALS

- + Ferritic & austenitic steels
- + Duplex & superduplex steels
- + Nickel & titanium alloys
- + Bronze & copper alloys

BENEFITS



Enables precise deep drilling in metal materials



BTA drilling covers wide bore diameter ranges



Compliance with narrow tolerances both in diameter and straightness of the bore is possible

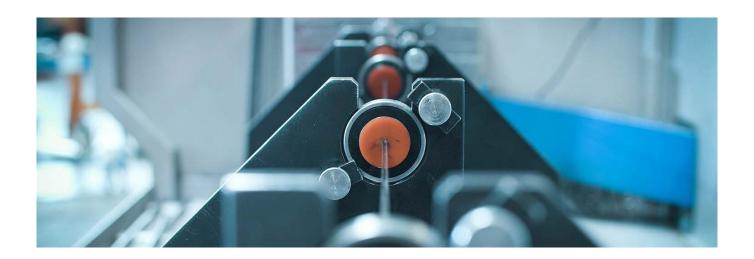
SPECIAL DEEP HOLE DRILLING

- + Peeling
- + Roller-burnishing
- + Bottle boring (max. 8 m deep from one side)
- + Eccentric drilling

GUN DRILLINGDIRECTIONAL DRILLING TECHNOLOGY



SCAN CODE FOR MORE INFORMATION



CONTROLLED DRILLING

We can drill centric and eccentric holes from a diameter of 2 mm on our special gun drilling machines.

Drilling depths with a maximum L/D of 500 are possible. Our patented directional drilling system guarantees minimal drilling deviations. This deep drilling method also allows us to create holes with a specific path.

MATERIALS

- + Ferritic & austenitic steels
- + Duplex & superduplex steels
- + Nickel & titanium alloys
- + Bronze & copper alloys

BENEFITS



High surface quality



Extreme L/D ratios possible



Specialists in materials that are difficult to machine

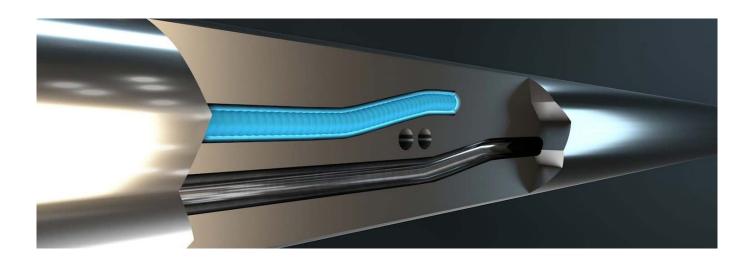
PROCESS

A characteristic feature of gun drilling is that the cooling lubricant is supplied through a cooling channel inside the tool.

The chips are removed from the bore together with the coolant through the V-shaped groove (bead) of the drill shank. This is only possible if deep drilling oil or emulsion is available in sufficient quantities and at sufficient pressure.

GOOSE NECK DRILLING OUR PATENTED EDM TECHNOLOGY





MAXIMUM PRECISION

We developed the EDM-process, called Goose Neck Drilling (short GND) together with the Technical University of Vienna. This allows the production of precise curves with steered tools.

After five years of development, we applied for a patent in 2015.

MATERIALS

- + Ferritic & austenitic steels
- + Duplex & superduplex steels
- + Nickel & titanium alloys
- + Bronze & copper alloys

BENEFITS



Extremely hard materials are machined with a high dimensional accuracy



Complex geometries pose no problem

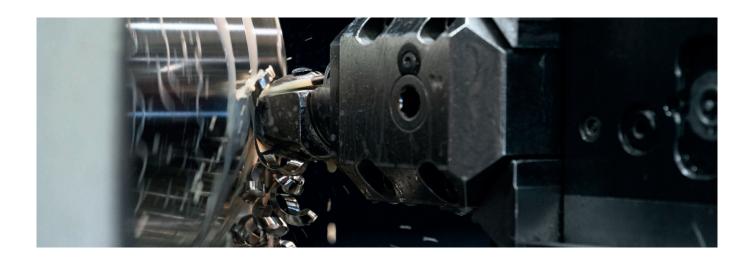
APPLICATION EXAMPLES

EDM is used where mechanical machining of difficultto-machine materials reaches its limits or where mechanical machining is not possible due to geometric requirements.

COMPLETE MACHINING TURNING/MILLING MACHINING IN ONE STEP



SCAN CODE FOR MORE INFORMATION



HIGHLY COMPLEX WORKPIECES

Highly complex workpieces can be precisely and completely machined on our encapsulated 5-axis turn/mill-machines. The use of vibration-damped drilling tools also facilitates bores of up to a maximum of 14 \times D (bore diameter).

MATERIALS

- + Ferritic & austenitic steels
- + Duplex & superduplex steels
- + Nickel & titanium alloys
- + Bronze & copper alloys

BENEFITS



High positional accuracy



High concentricity accuracy and high surface quality



Use of coolants/lubricants at high pressure



Designed for processing high-strength materials

1/10 mm

and the facility of the



WELDING IS COMPLICATED, WELDING IS VERSATILE

Every factor in welding production must match perfectly to ensure a high level of economic efficiency:

- + welding machine
- + welding process
- + filler metals
- + shielding gas

It is this optimum balance that makes it possible to make a high quality joint between metals. Due to the ever-increasing demands on quality and productivity, the selection of the optimum process in each case requires specialised expertise and many years of experience, as a whole range of factors have to be taken into account.

NARROW GAP STUB WELDING PROCESS

LASER DEPOSITION

WELDING

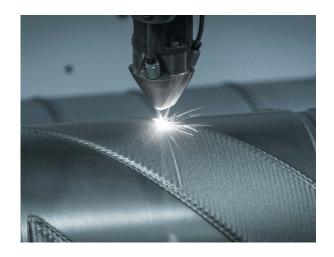




SCAN CODE FOR MORE INFORMATION







LASER DEPOSITION WELDING

Our 6-axis CNC laser cladding machines are customized for build-up welding on both the internal and external surfaces. During this process, the base material and the added powder are melted, using a laser to produce multiple wear resistant layers. We use solid-state lasers as well as CO₂ lasers.



NARROW GAP STUB WELDING PROCESS

Narrow-gap welding is used both for new parts and to repair drill string parts with special geometric requirements. The advantage of this technology is the low melting volume, which has a positive effect on welding quality and costs.



TIG WELDING IN BORES

With this technology, the complete inner surface of a 10 m bore hole can be welded using the TIG process. The material deposited is in accordance with customer requirements – in addition, repairs can also be carried out on components of up to 10 m. The automated process guarantees an excellent welding quality, low heat input and high deposition rates.

SHOT PEENING WITH

mm

CERAMIC / STAINLESS STEELS



SHOT PEENING

COMBATS STRESS CORROSION CRACKING

WE MANUFACTURE HIGHLY COMPLEX WORKPIECES

We offer our customers the possibility of improving the properties of their workpieces with our shot peening machines.

By introducing residual compressive stresses into the border zone, the resistance to stress corrosion cracking and fatigue cracking of high-alloy steels is decisively improved and the fatigue strength is increased.



BENEFITS

Protection against stress corrosion cracking



Protection against fatigue cracks



Increased fatigue strength

MATERIALS

- + High-strength steels
- + High-alloy metals



SCAN CODE FOR MORE INFORMATION







THE PROCESS

The purpose of this process is to eliminate the tensile stresses present in some materials and thus improve their fatigue strength. The residual compressive stresses introduced into the workpiece are achieved by using a blast wheel, compressed air or an injector in the blasting system, shooting particles (ceramic grains or stainless steel rounded cut wire grain) at high speed, against the surface of the workpiece.

The residual compressive stresses applied are responsible for the improved properties of the material and can be precisely determined, either indirectly by the Almen intensity test or directly by a destructive test.

Stress corrosion cracks (environmentally assisted cracking) can occur if mechanical loads (tensile stresses) act together with a corrosive environment on vulnerable steel.

We train our employees in this technology and continuously improve their skills. In this way we ensure that our high quality standards are maintained.

QUALITY MANAGEMENT. WE GO THE EXTRA MILE.

HIGHEST QUALITY STANDARDS
ARE MANDATORY, WE GO THE EXTRA MILE
FOR OUR CUSTOMERS.

No component leaves our company without a quality and dimensional check. More than 1,000,000 features are measured per year to meet and exceed the quality requirements of our valued clients.

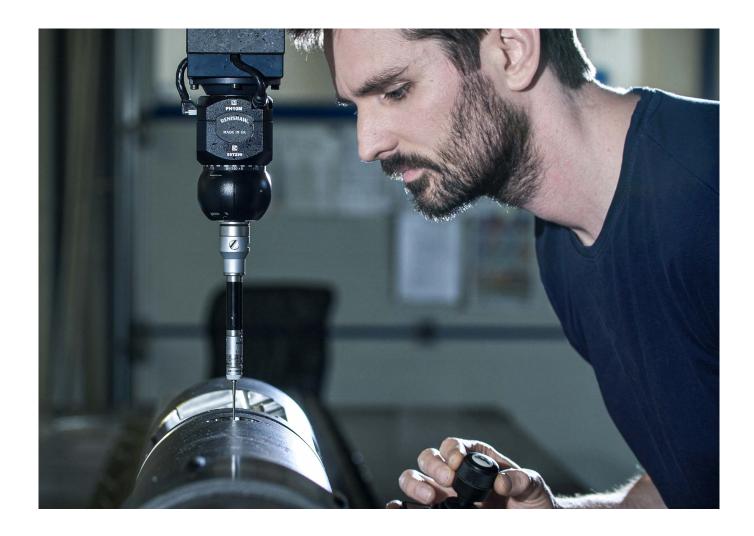
A superior quality management system needs to establish a culture of quality in the organization. Quality management requires the involvement and commitment of all our employees. We constantly train our staff on the quality standards, tools, and techniques that they need to perform effectively and efficiently. We solicit and collect customer feedback regularly and systematically, using various methods such as surveys, interviews, or audits.

We analyze and act based on customer feedback, making improvements or adjustments to our products as needed. Moreover, we involve customers in our quality management process, for instance, by co-creating solutions, testing prototypes, or providing referrals.

CAQ - COMPUTER AIDED QUALITY

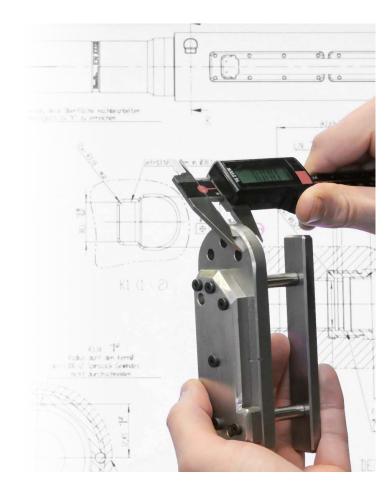
A software that allows digital mapping of the production quality to increase production efficiency and the transparency of production deviations and ultimately serves as a tool to manage and improve quality performance.





FACTS

- Hore than 6,000 handheld measurement devices
- Two fully automated coordinate measuring machines with a machine bed length of 6 m
- CNN controlled laser tracker device to scan the inner and outer geometry of a full size MWD product
- + X-ray testing
- + Examination of surface defects using fluorescence penetrant inspection
- + Surface roughness testing



NON-MAGNETICHIGH PERFORMANCE ALLOYS

UNIQUE PROPERTIES

We are the global market leader in the production of non-magnetic, high- strength and corrosion-resistant steels for the oilfield industry.

Together with our partners, we have been developing and producing outstanding materials for special requirements in the field of directional drilling technology and well completion for decades. Our range extends from nitrogen-alloyed austenitic steels to nickel-based alloys.



PROPERTIES THAT CHARACTERISE OUR STEELS



High strength



High corrosion resistance



Non-magnetic



Good machinability



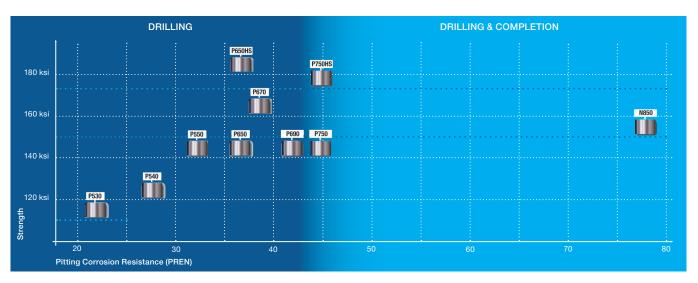
Good weldability

SAMPLES

We test the chemical composition, relative magnetic permeability and fatigue strength for each melt. In addition, we carry out various examinations and tests on each rod:

- + Tensile test
- + Notched bar impact test
- + Hardness test
- + Corrosion tests
- + 100 % volumetric ultrasonic NDT







Schoeller-Bleckmann Oilfield Technology GmbH

Hauptstraße 2 2630 Ternitz / Austria Telefon Büro: +43 2630 315-0 e-mail: sales@sbo.co.at



www.sbot.co.at

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







