

## PERFECTION IS OUR STANDARD

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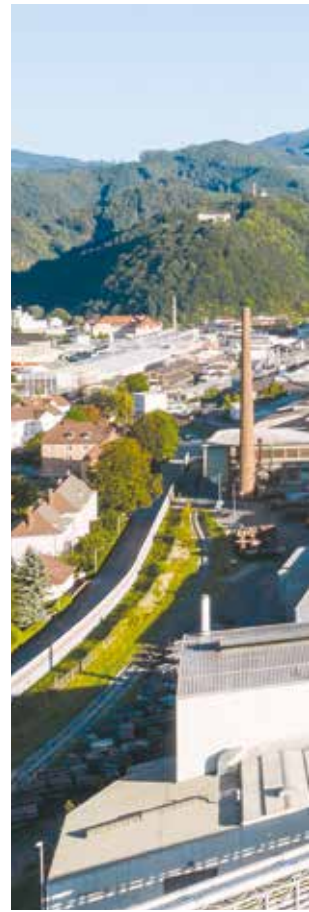
**BÖHLER high-performance materials  
for medical technology**

# METALLURGICAL EXPERTISE SINCE 1870

**and setting new standards since 2023  
with the world's most modern special steel plant**



The new special steel plant in Kapfenberg  
sets new standards for product quality and sustainability.



## **As a technology leader and sustainable leading company**

in relevant market segments of the special steel industry,  
we offer our customers more than 150 years of expertise in development, consulting,  
and production at the highest customer-specific level.

We also utilize our comprehensive research and test facilities to develop  
custom high-performance materials that redefine the performance envelope  
for highly demanding components in medical technology.





We also apply our many years of experience in a wide variety of market sectors with the most demanding of requirements – such as aerospace, oil and gas, motor sports, and more – to the production of our high-performance materials for medical technology.

Due to the increasing importance of the medical market, we are placing a long-term focus on this market segment with the following priorities:

- » ORTHOPEDICS
- » TRAUMATOLOGY
- » GENERAL & PLASTIC SURGERY
- » CARDIOLOGY
- » STOMATOLOGY

We deploy the best available technologies in our production facilities, and we continuously pursue higher efficiency, lower emissions, resource conservation and lower energy consumption in the framework of our existing steel production.

Our unparalleled product quality, process stability and global logistics expertise ensure market-leading delivery performance in all global target markets.

# PERFECTION IS THE MINIMUM STANDARD

THE DEMANDS OF MEDICAL TECHNOLOGY REACH INTO THE ABSOLUTE.  
AND THIS IS ENTIRELY REASONABLE – IN THIS AREA, QUALITY SAVES LIVES.

## OUR CUSTOMERS BENEFIT FROM:

### Product portfolio

We offer a wide range of high-performance materials which meet all current standards of medical technology. Our production facilities and our metallurgical expertise allow us to offer customized products that fulfil highly diverse requirements.

**In addition to meeting the relevant norms and standards** required by customer specifications, our high-performance materials meet additional requirements:

- » High corrosion resistance
- » Best mechanical properties
- » High purity and homogeneity
- » Good polishability
- » Good machinability
- » Biocompatibility
- » Gapless traceability
- » Sustainability





#### **Cutting-edge technology**

At our new special steel plant in Kapfenberg we set new standards for production quality, process reliability, and environmental protection.

#### **Extremely high product quality**

Thanks to our modern manufacturing processes, such as electroslag remelting under inert gas and/or pressure blanketing under vacuum arc, as well as powder metallurgical processes, we are able to guarantee the highest quality standards.

#### **Test laboratory / Analyses**

The modern laboratories of voestalpine BÖHLER Edelstahl provide our production facilities with vital information and product parameters for process control and product certification in accordance with test standards and customer specifications.

#### **Worldwide distribution network**

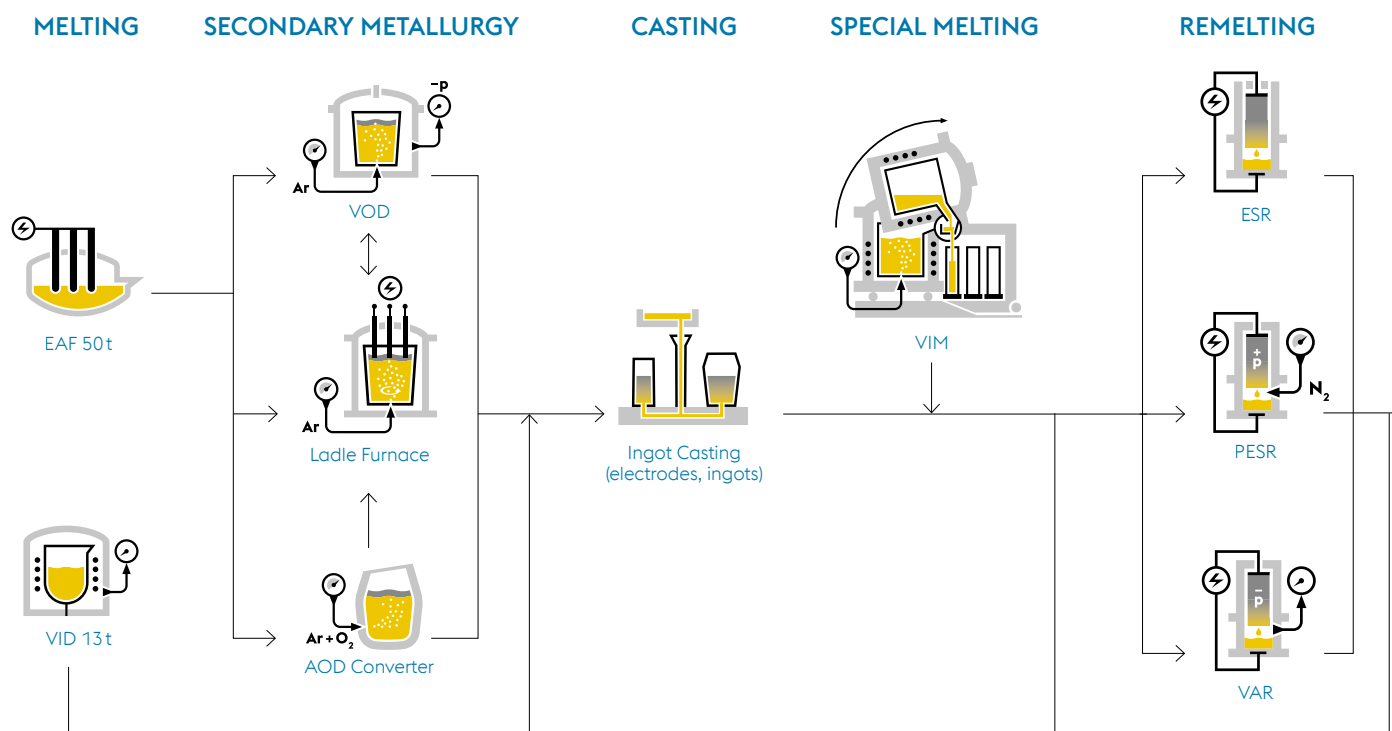
With our central warehouse in Kapfenberg and, as needed, distribution warehouses worldwide, we offer optimal availability thanks to short delivery times and high delivery reliability.

#### **Environment**

Along with conservation of resources, we are constantly establishing new measures to enable environmentally friendly production and operations. Sustainable production processes and the use of the best possible, environmentally friendly technologies have been an inherent part of our corporate philosophy for decades.

# FORWARD-LOOKING TECHNOLOGIES

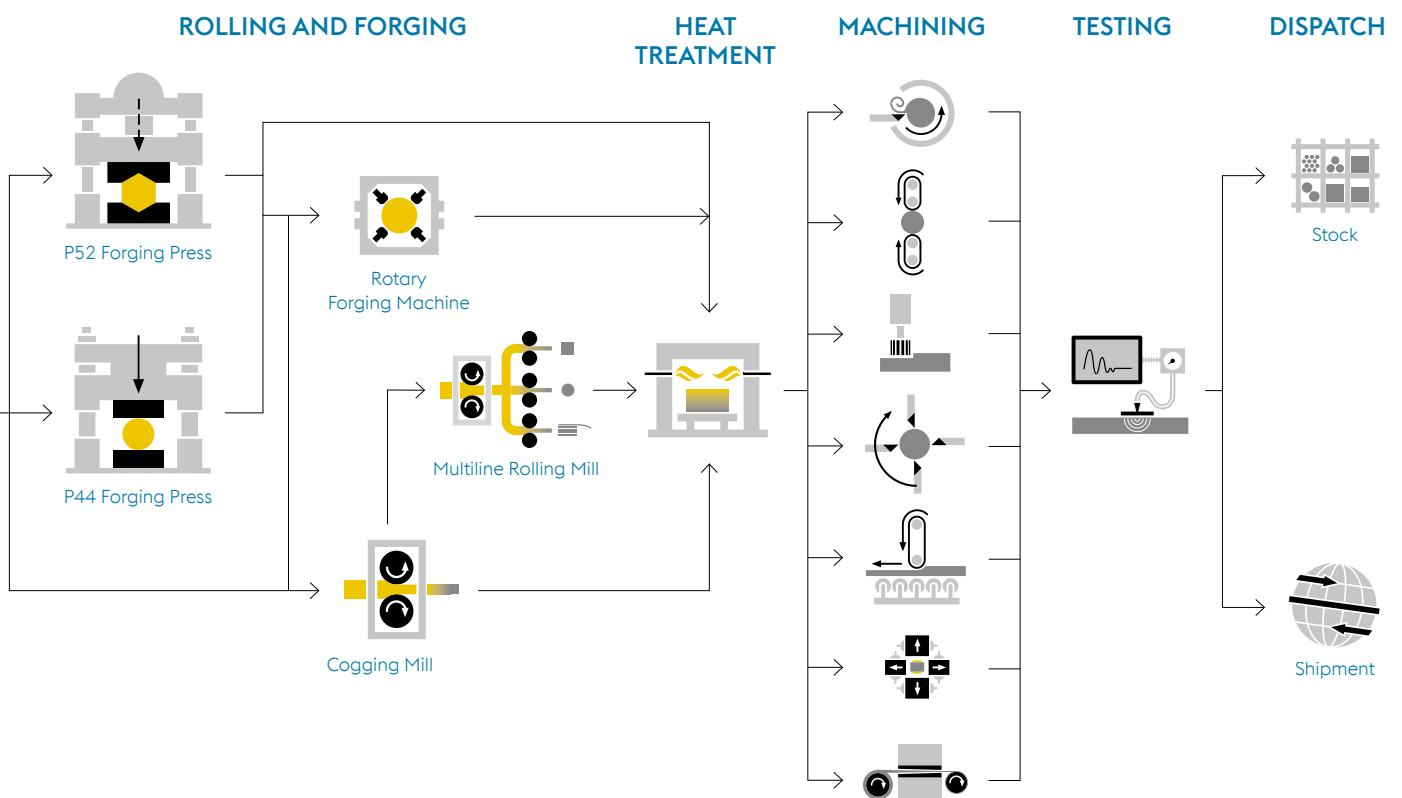
## MATERIAL FLOW OF HIGH-PERFORMANCE SPECIAL MATERIALS



**voestalpine BÖHLER Edelstahl** manufactures a wide range of special steels and special alloys, such as nickel and cobalt-based alloys in the form of wire and bar steel, as well as powder for additive manufacturing, which are used worldwide in a wide variety of medical applications. Our highest priority is product quality, which we make possible for our customers through state-of-the-art manufacturing processes.

With the most modern special steel plant in the world – which we put into operation in autumn of 2023 – and with our wide variety of state-of-the-art remelting and forming units, we are capable of constant optimization and further development of the material properties of our high-performance materials.

# FOR METALLURGICAL EXCELLENCE



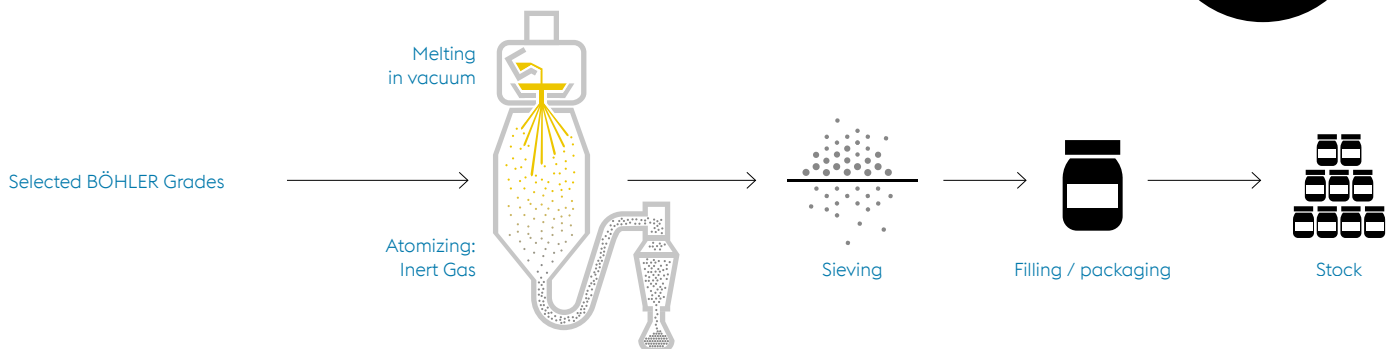
## MATERIAL FLOW AMPO POWDER PRODUCTION FOR ADDITIVE MANUFACTURING

BÖHLER GRADE

MELTING AND ATOMIZATION

SIEVING

SHIPPING



# THE QUALITY OF OUR COMPONENTS STARTS HERE

## MACHINING – CUSTOM FINISH

Thanks to a wide variety of processing and finishing options for bar products, individual requirements can be covered quickly and with high quality.

Our products are adjusted, processed, finished and tested in accordance with standards and customer specifications.

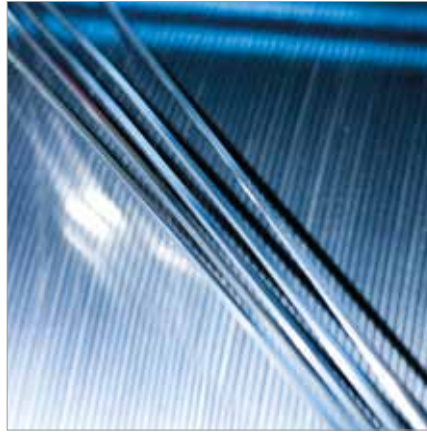
voestalpine BÖHLER Edelstahl strives to meet every customer desire, including with respect to surface finishing.





#### WIRE

- » Pickled
- » Blasted and pickled
- » Unfinished



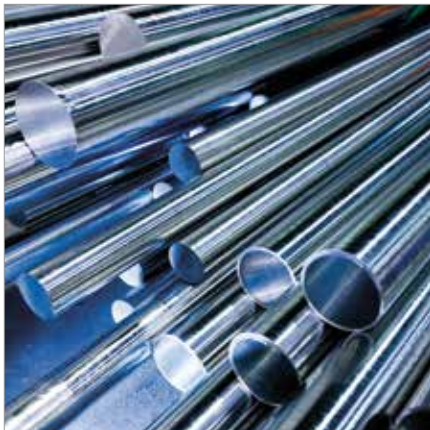
#### HIGH-PRECISION WIRE

- » Cold-drawn
- » Ground



#### AM POWDER

- » Particle size 15 – 90 µm



#### ROUND ROD

- » Peeled and polished
- » Peeled and ground



#### FLAT ROD

- » Unfinished
- » Blasted
- » Pickled
- » Surfaces ground  
Edges unground

#### TOLERANCES

- » IT11-IT9 (IT8 high-precision wire)

#### LENGTHS

- » Production lengths 2 – 6 m
- » Fixed lengths on request

# PRODUCT RANGE

BÖHLER grade	Material code		Melting route	Standards / International designations				
	DIN	UNS		DIN/EN	ASTM	ISO	AISI	Other
AUSTENITIC								
BÖHLER A220SC	1.4441	S31673	Air-melted + ESU	-	F138	5832-1	316L	-
BÖHLER P504	1.4472	S31675	Air-melted + ESU	-	F1586	5832-9	-	REX 734
BÖHLER P558	1.3808	S29225	Air-melted + ESU	-	F2581	-	-	-
BÖHLER P511	-	S20910	Air-melted + ESU	-	F1314	-	-	XM19 / Nitronic 50
MARTENSITIC								
BÖHLER N324	1.4197	-	Air-melted		F899		420Fmod	-
BÖHLER N360	1.4108	S42027	Air-melted + ESU	-	F899	-	-	SEW400
BÖHLER N664	-	S44002	Air-melted	-	F899	-	440A	-
BÖHLER N685	1.4112	-	Air-melted	EN10088-3	F899	-	440B	-
BÖHLER N695	1.4125	S44004	Air-melted	EN10088-3	F899	-	440C	-
PH GRADES								
BÖHLER N700	1.4542	S17400	Air-melted + ESU	EN10088-3	F899 A564	-	630	17-4PH
BÖHLER N700SA	1.4542	S17400	Air-melted	EN10088-3	F899 A564	-	630	17-4PH
BÖHLER N709	1.4534	S13800	VIM + VLBO	-	F899 A564	-	-	XM13 / 13-8Mo
BÖHLER N713	1.4543	S45500	Air-melted + ESU	-	F899	-	-	XM16 / Custom 455
BÖHLER N765	1.4614	S46500	VIM + VLBO	-	F899 A564	-	-	Custom 465
NiCo ALLOY / Co ALLOY								
BÖHLER L035	2.4999	R30035	VIM + VLBO	-	F562	5832-6	-	MP35N
BÖHLER L605	2.4964	R30605	Air-melted + ESU	-	F90	5832-5	-	L-605
BÖHLER L135	-	R31537	Air-melted + ESU	-	F1537	5832-4 5832-12	-	-

Nominally 15 to 45 µm, 45 to 90 µm, or according to customer requirements  
Titanium: 20 to 63 µm, or according to customer requirements

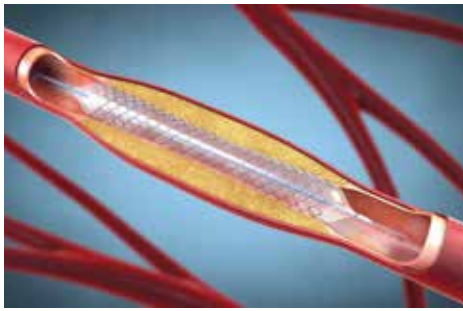
BÖHLER AMPO Grade	Material Short name	Particle size distribution*			Bulk density** [g/cm³]
		D10 [µm]	D50 [µm]	D90 [µm]	
<b>BÖHLER AMPO L175</b>	UNS R30075	18 – 24	29 – 35	42 – 50	≥ 3.6
<b>BÖHLER AMPO M789</b>	BÖHLER Patent	18 – 24	29 – 35	42 – 50	≥ 3.5
<b>BÖHLER AMPO N700</b>	DIN 1.4542	18 – 24	29 – 35	42 – 50	≥ 3.4

\* Measurement of particle size distribution according to ISO 13322-2 (Dynamic image analysis methods);

\*\* The bulk density measurement is based on ASTM B417 and ASTM B212 and refers to our typical measured values.

Product type / size range				
Round rod	Flat rod	Wire rod	High-precision wire	
X	X	5 – 15.5 mm	upon request	
X	upon request	5 – 13.5 mm	upon request	
12.5 – 65 mm	upon request	5 – 13.5 mm	upon request	
12.5 – 65 mm	upon request	5 – 13.5 mm	upon request	
12.5 – 65 mm	upon request	5 – 13.5 mm	upon request	
12.5 – 130 mm	upon request	5 – 13.5 mm	upon request	
12.5 – 65 mm	upon request	-	upon request	
12.5 – 200 mm	upon request	5 – 13.5 mm	upon request	
12.5 – 200 mm	upon request	5 – 13.5 mm	upon request	
15 – 65 mm	upon request	5 – 13.5 mm	upon request	
15 – 65 mm	upon request	5 – 13.5 mm	upon request	
15 – 65 mm	upon request	5 – 13.5 mm	upon request	
X	upon request	X	upon request	
15 – 65 mm	upon request	5 – 13.5 mm	upon request	
upon request	upon request	5 – 13.5 mm	upon request	
upon request	upon request	5 – 13.5 mm	upon request	
X	upon request	X	upon request	

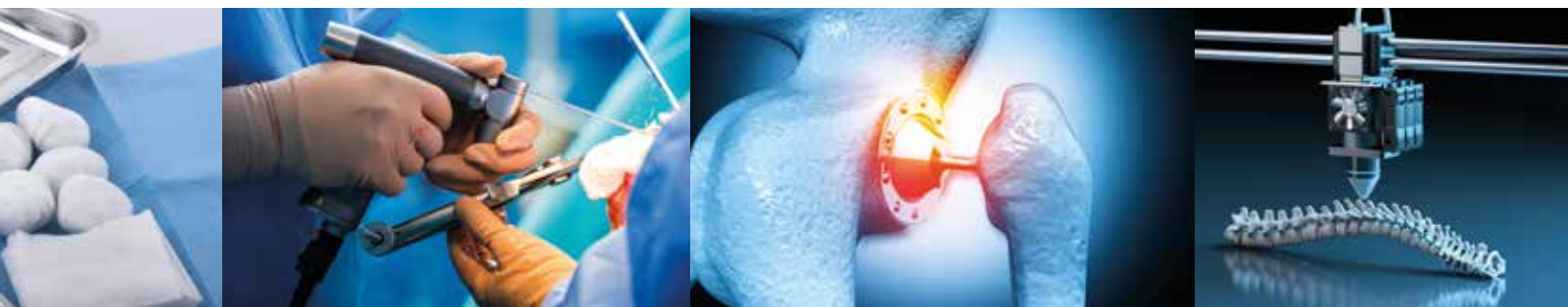
X = Product type not available



# BÖHLER HIGH-PERFORMANCE

BÖHLER grade	ASTM	ISO 7153
<b>AUSTENITIC</b>		
<b>BÖHLER A220SC</b>	Surgical implants and surgical fixation wire	
<b>BÖHLER P504</b>	Surgical permanent implants, devices for osteosynthesis	
<b>BÖHLER P558</b>	Nickel-free surgical applications	
<b>BÖHLER P511</b>	Surgical applications	
<b>MARTENSITIC</b>		
<b>BÖHLER N324</b>	Blades	Chisels, gouges, curettes, bone curettes, rotary instruments, scalers, dental curettes, laboratory and orthodontic forceps, dental explorers, filling instruments
<b>BÖHLER N360</b>	Chisels, knives, osteotomes, reamers, drills, retractors, raspatory, pliers	Chisels, gouges, curettes, bone curettes
<b>BÖHLER N664</b>	Chisels, knives, osteotomes, reamers, drills, retractors, raspatory, pliers	Tweezers/angling tools with/without wear protection and with/without bow handles, screws, rivets, guide pins, scalers, dental curettes, dental explorers, filling instruments
<b>BÖHLER N685</b>	Chisels, knives, osteotomes, reamers, drills, retractors, raspatory, pliers	Chisels, gouges, curettes, bone curettes, scalers, dental curettes, laboratory and orthodontic forceps, dental explorers, filling instruments
<b>BÖHLER N695</b>	Chisels, knives, osteotomes, reamers, drills, retractors, raspatory, pliers	Chisels, gouges, curettes, bone curettes
<b>PH GRADES</b>		
<b>BÖHLER N700</b>	Reamers	Tweezers/angling tools with/without wear protection and with/without bow handles, screws, rivets, guide pins
<b>BÖHLER N700SA</b>	Reamers	Tweezers/angling tools with/without wear protection and with/without bow handles, screws, rivets, guide pins
<b>BÖHLER N709</b>	Reamers, rasps	
<b>BÖHLER N713</b>	Scissors, drills, needles	Tweezers/angling tools with/without wear protection and with/without bow handles, screws, rivets, guide pins, scalers, dental curettes, dental explorers, filling instruments
<b>BÖHLER N765</b>	Reamers, scissors, rasps, knives, screw clamps, punches, striking bars, strike plates, screwdrivers, hexagon wrenches	
<b>NiCo ALLOY / Co ALLOY</b>		
<b>BÖHLER L035</b>	Surgical implants	
<b>BÖHLER L605</b>	Surgical implants and surgical fixation wire	
<b>BÖHLER L135</b>	Surgical implants	





# MATERIAL APPLICATIONS

Other	Typical application		Contact duration (ISO 10993)	
	Implant	Instrument	A - limited (<24 hours)	C - long-term (>30 days)
Temporary implants / trauma surgery, intramedullary nails, screws, pins, cerclage wire, coronary stents, surgical clips, suture wire, staples, guide wire, arterial plaque removers, vena cava filters	*	*	*	*
Permanent implants, joint reconstruction (hip, knee, extremities), spinal fixation	*			*
Nickel-free orthodontic wires and non-magnetic needles, surgical implants and temporary implants / trauma surgery (fixation etc.), dental abutments and screws	*	*	*	*
Surgical implants and trauma surgery (fixation, etc.)	*	*	*	*
Dental instruments (drills, cutters), surgical needles and cutting tools			*	
Dental instruments and kits for oral surgery and implantology (insertion, removal, repair), Drills, screwdrivers, chisels, saw blades, cutting tools	*	*	*	*
Scissors, screws, bone rasps, dental instruments and kits for oral surgery and implantology (insertion, removal, repair)		*	*	
Scissors, screws, bone rasps, scalpels, dental tools (drills, reamers, step drills)		*	*	
Scissors, screws, bone rasps		*	*	
Scissors, screws, bone rasps, stylet, dental kits for oral surgery and implantology (insertion, removal, repair)		*	*	
Scissors, screws, bone rasps, stylet, dental kits for oral surgery and implantology (insertion, removal, repair)		*	*	
Scissors, screws, bone rasps		*	*	
Scissors, screws, bone rasps, stylet, dental kits for oral surgery and implantology (insertion, removal, repair)		*	*	
Scissors, screws, bone rasps, bending devices		*	*	
Vascular stents, guidewires, arterial plaque removers, vena cava filters, orthodontic dental arches, dental abutments and screws	*	*	*	*
Permanent implants, joint reconstruction (hip, knee, extremities), spinal fixation, vascular stents, guidewires, arterial plaque removers, vena cava filters, dental abutments and screws	*	*	*	*
Permanent implants, joint reconstruction (hip, knee, extremities), spinal fixation, structural heart applications, dental abutments and screws	*	*	*	*

# APPROVALS



Only the best special steel is used to create the highest quality products for an industry with a need for perfection

## APPROVALS

- » EN / ISO 9001
- » EN / ISO 9100
- » EN ISO 14001
- » ISO / TS16949
- » ISO 17025 (Laboratory)
- » NADCAP

We provide our customers with simple, consistent production processes, leading to economical production.



# AVAILABILITY

OUR SERVICE CENTERS GUARANTEE  
HIGH AVAILABILITY,  
SHORT DELIVERY TIMES,  
AND MAXIMUM RELIABILITY.

## Technical advice and customer proximity

We offer our customers a comprehensive range of services, from advice on the selection of materials to their application, processing and coating. People are at the heart of everything we do. Qualified, motivated employees who work hard every day to ensure that your order is processed to your complete satisfaction, so you have the right material in the right place at the right time and in the right design.

## Warehouse and service

voestalpine BÖHLER Edelstahl is characterized not only by the quality of its products, but also by their rapid availability.

With our service centers, we guarantee customer proximity, short and reliable delivery times, storage, cutting, processing, packaging and just-in-time deliveries, tailored to the needs of our customers.

## AUSTRIA

### **voestalpine BÖHLER Edelstahl GmbH & Co KG**

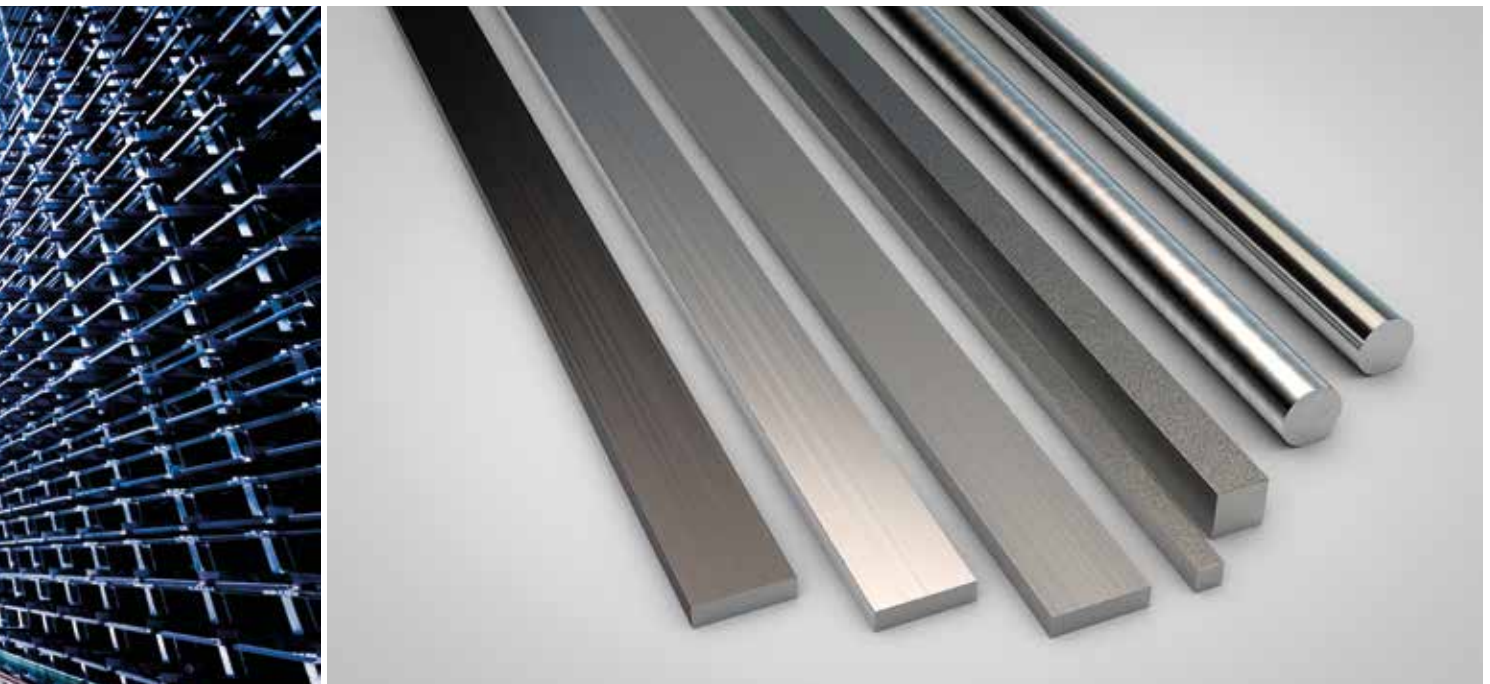
Mariazeller-Straße 25, 8605 Kapfenberg

BÖHLER Produktionsstandort

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Heat recovery

# FOCUS ON THE ENVIRONMENT

THE SPECIAL STEEL PLANT OF VOESTALPINE BÖHLER EDELSTAHL IS ALSO THE MOST MODERN IN THE WORLD WHEN IT COMES TO ENVIRONMENTAL PROTECTION. THE USE OF RENEWABLE ENERGY, SUSTAINABLE HEAT UTILIZATION, AND EFFECTIVE EMISSION PROTECTION ARE CRUCIAL.

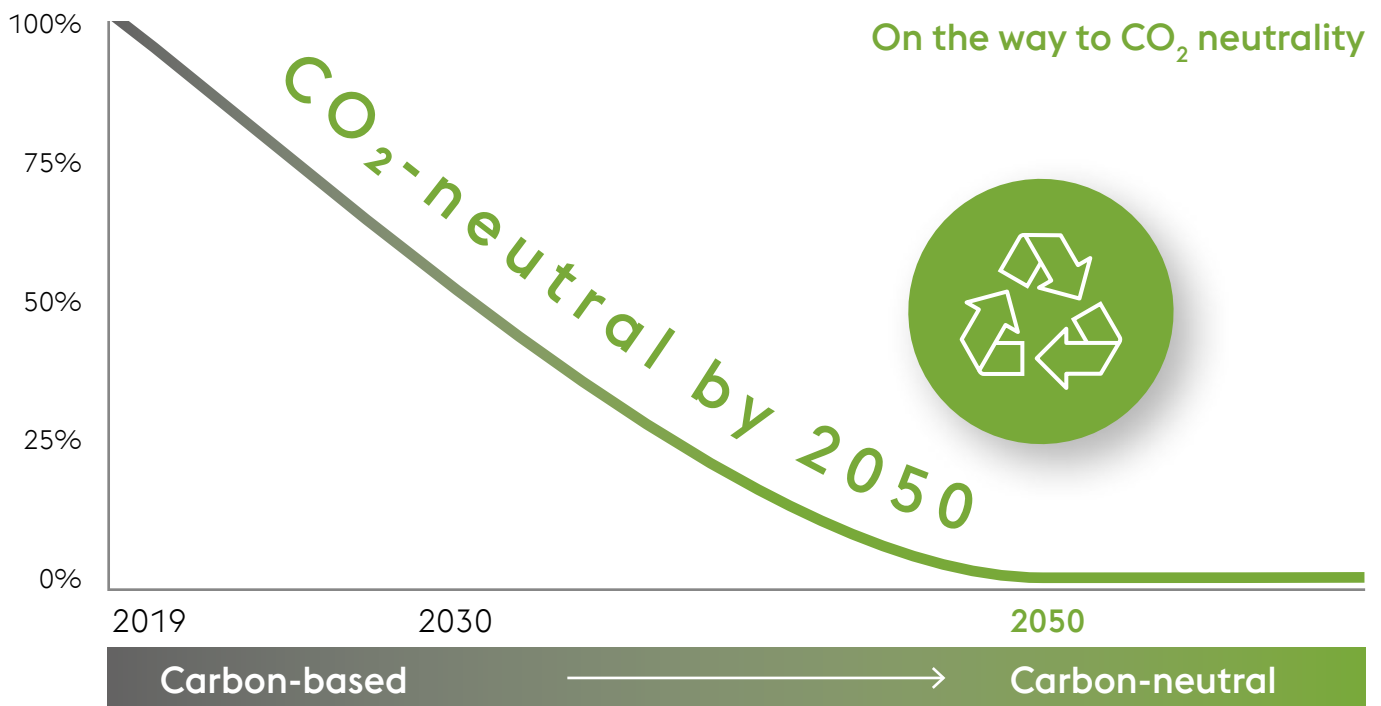
## HEAT CIRCUIT

When you produce 205,000 tons of high-performance materials every year, you use a lot of heat. When an electric arc generates the heat of a sun to melt down raw materials, the molten steel reaches temperatures of up to 1,800 °C. Water is still the method of choice for cooling these systems. In order to conserve this important natural resource, voestalpine BÖHLER Edelstahl works with a modern heat recovery and waste heat concept. Thanks to a closed cooling circuit, cooling water withdrawal and return in the new special steel plant are reduced by 90% compared to its predecessor.

## PASSING ON WARMTH

Heat is a valuable source of energy. The vacuum AOD converter and the electric arc furnace are equipped with a heat recovery system. The energy content of the cooling water can be used to generate a heat output of up to 12.5 MW. For this purpose, a 1,500 m long truss connects the new special steel plant with the central boiler house. From here, the heat is passed on to internal consumers and local energy providers. This saves up to 20 GWh of district heating per year and reduces CO<sub>2</sub> emissions by over 4,000 tons.





A big plus in terms of environmental protection at the new high-tech special steel plant in Kapfenberg is the use of 100% green electricity to operate the electric arc furnace, the core of the plant.

A comprehensive package of measures also contributes to conservation of resources and protects the environment, local residents, and employees.

Special attention was paid to environmental protection right from the planning stage.

The air and wastewater treatment systems are state of the art, meeting the strictest of environmental requirements.

High-performance heat recovery systems also help to reduce emissions.

#### COOLING WITH HEAT

In the new special steel plant, equipment such as computer systems and control stations has to be cooled. By using absorption technology, cooling is obtained from the plant's internal heat supply. This process renders electrically operated compression units superfluous. An absorption cooling system offers the lowest operating costs, requires little maintenance, and generates no additional CO<sub>2</sub> emissions while consuming hardly any electricity.

#### QUIET AND CLEAN

To ensure that the noise of individual processes – like the electric arc used in the melting process – does not become a burden, voestalpine minimizes the noise of feeding, tapping, and extraction systems with the most efficient sound-absorbing cladding and insulation.

Every hour, dust is removed from 3.8 million m<sup>3</sup> of exhaust air. This reduces the amount of dust produced by the new plant by 75%.

A highly digitalized process control system ensures that the blower output is regulated in line with the process. This means that in the new special steel plant, it is linked to the production situation, e.g. the feeding and tapping operation.

# FOCUS ON RESPONSIBILITY

**Strategic focuses  
of voestalpine BÖHLER Edelstahl**

## SUSTAINABLE PRODUCTS

We work on the development and production of sustainable special steel that offers ecological, social and economic advantages while at the same time protecting public health and the environment over its entire life cycle from raw material extraction to its eventual disposal.



## SUSTAINABLE TRANSPORTATION

We are gradually upgrading our vehicle fleet to e-mobility, investing in e-mobility infrastructure, optimizing our delivery logistics, and supporting “soft mobility” for our workforce (sustainable, environmentally friendly, socially acceptable and low-accident modes of transportation such as walking, cycling, and the use of public transit).



## SUSTAINABLE OPERATION



We integrally accept our corporate responsibility:  
We deploy the best available technologies in our production facilities, and we continuously pursue higher efficiency, lower emissions, resource conservation and lower energy consumption in the framework of our existing steel production.

## SUSTAINABLE SUPPLY CHAIN



We practice active supply chain management. The social and environmental impacts and risks of suppliers' activities are systematically collected, evaluated, and taken into account in supplier development.

## SOCIAL RESPONSIBILITY



BÖHLER has set an example for social responsibility since its foundation in 1870 by the Böhler brothers, who saw it as a mission for all future generations. We take our obligation seriously to deal consciously with the diversity, achievements and potential of our employees, society and other organizations.



The information in this brochure is provided without obligation and has not been agreed to. Rather, it is for general information purposes only. This information is only binding if it is explicitly stipulated in a contract concluded with BÖHLER. No substances harmful to health or to the ozone layer are used in the production of our products.



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**voestalpine**

ONE STEP AHEAD.