BÖHLER

MATERIALS FOR OIL, GAS & CPI

QUALITY KNOWS NO COMPROMISES

More efficient, safer –

These are concepts to which great significance is assigned particularly when it comes to the production of energy. Covering daily energy needs while simultaneously practicing environmental conservation is a challenge for engineers and their materials alike.

For generations voestalpine BÖHLER has been facing up to this challenge by developing and producing materials of the highest metallurgical purity for use in extreme environments. The material properties there are as varied as the manufacturing possibilities at voestalpine BÖHLER. As one of the few producers of steel we at voestalpine BÖHLER have all of the melting and remelting facilities (ESR, DESR, VAR) here at our disposal.

NI-BASED ALLOYS

SUPER DUPLEX

AUSTENITICS

DUPLEX

HEAT TREATABLE STEELS

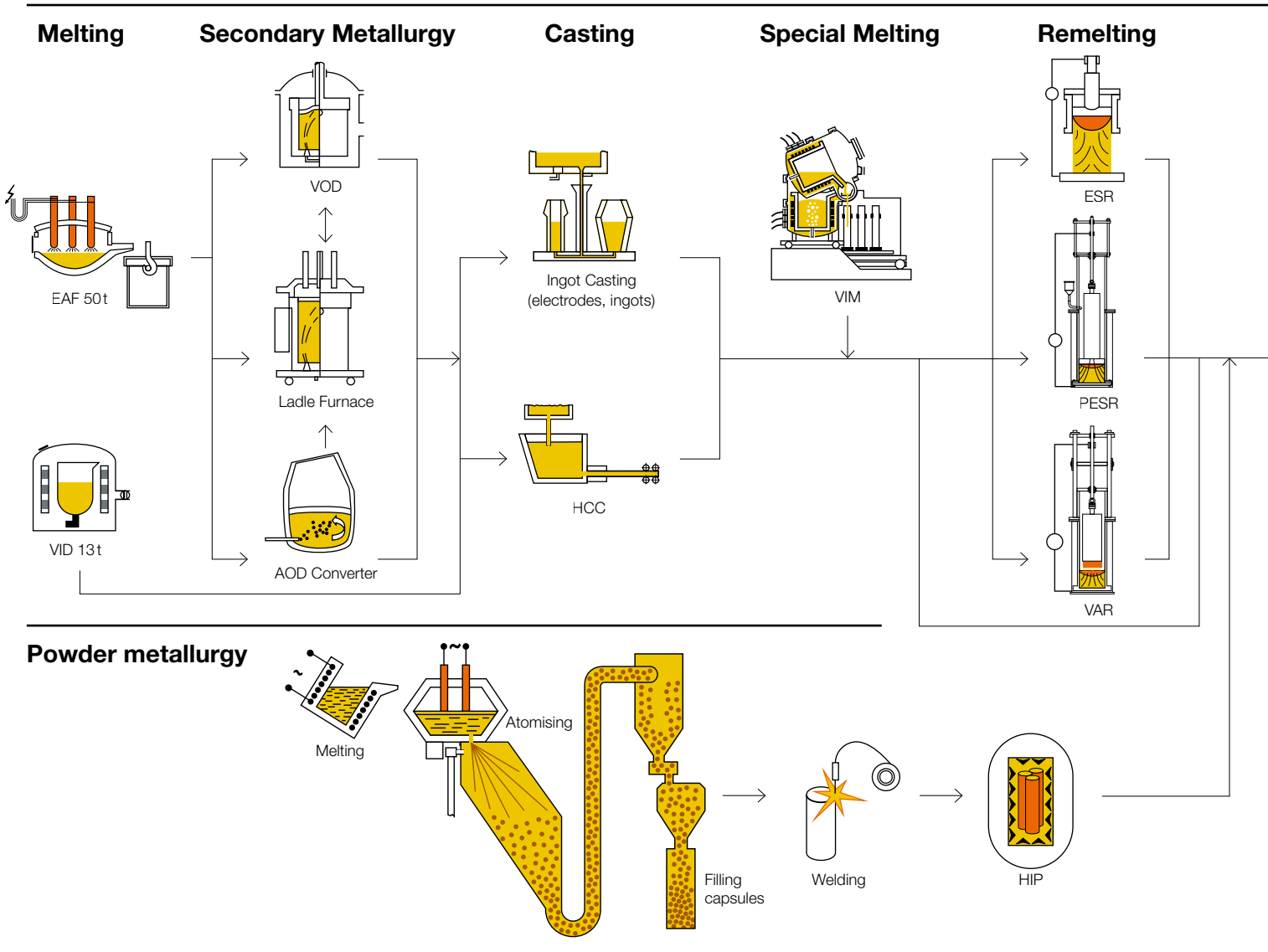
TRENDSETTING INNOVATIONS FOR METALLURGICAL TOP PERFORMANCE

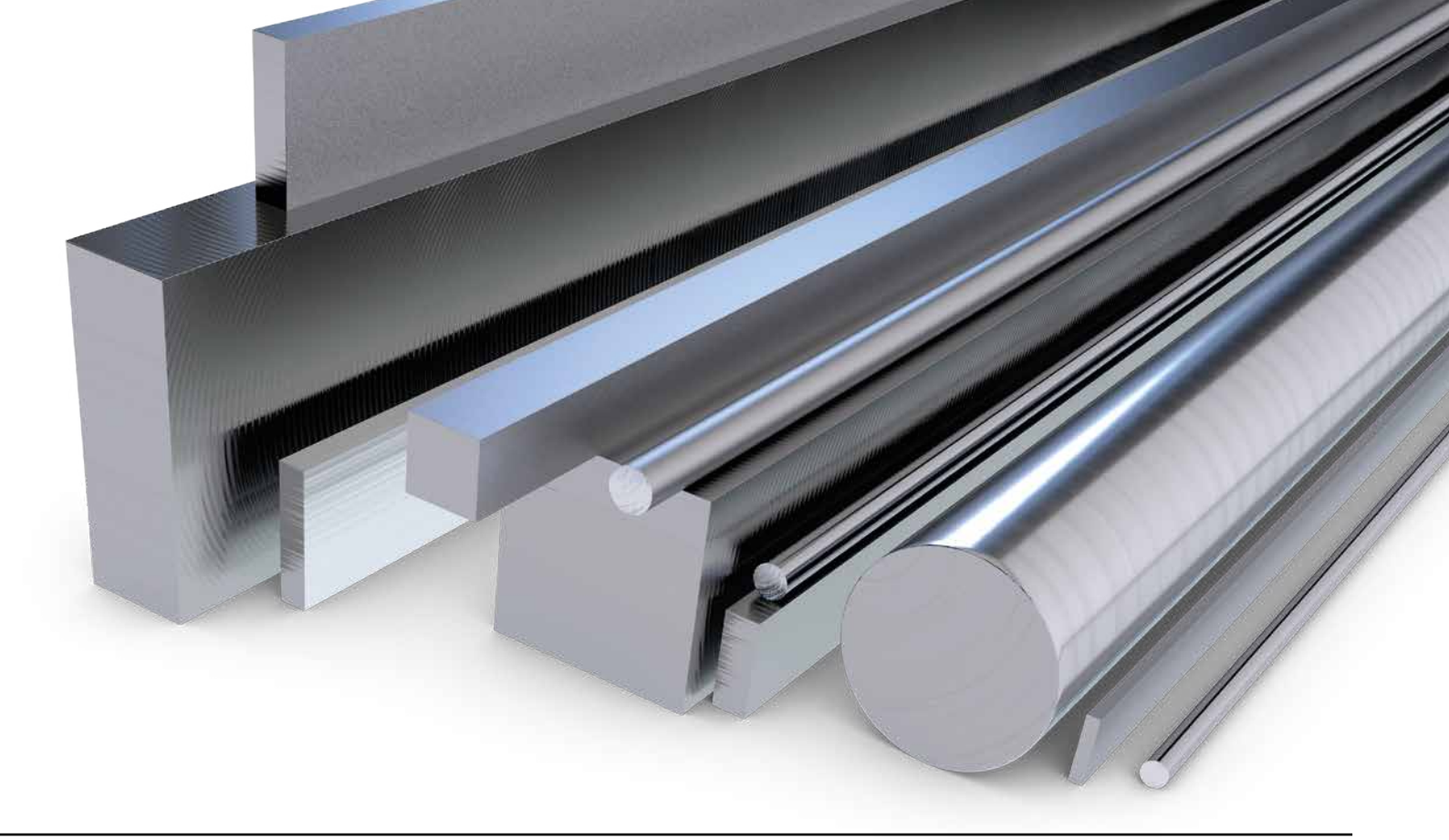
voestalpine BÖHLER is and always has been the world leader in melting and remelting technology. Our 120-year experience, our metallurgic know-how and focusing our innovative strength on the development and production of high performance materials have meant voestalpine BÖHLER has become one of the most important producers of special steel in the world.

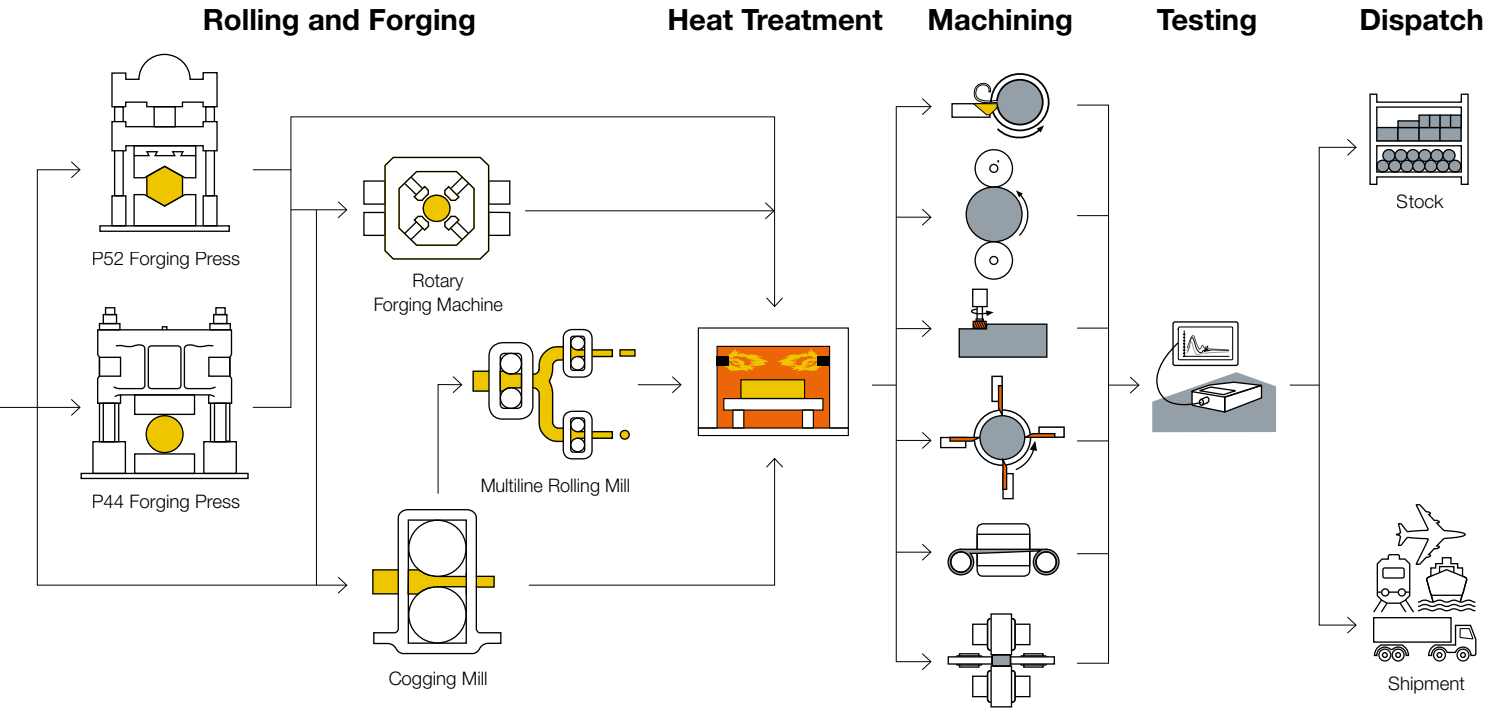
The most modern vacuum induction melting (VIM) and vacuum arc remelting units (VAR) or Pressure electroslag remelting units are what we have at our disposal as a matter of course.

TRENDSETTING TECHNOLOGIES FOR METALLURGICAL TOP PERFORMANCE

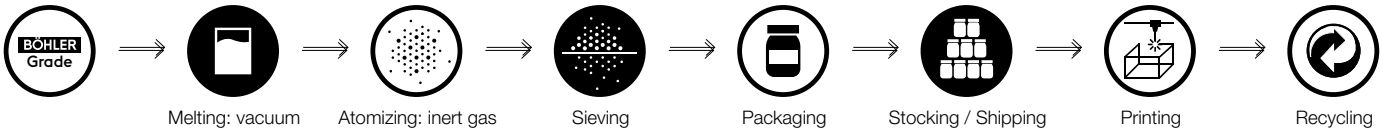
FLOW OF MATERIAL

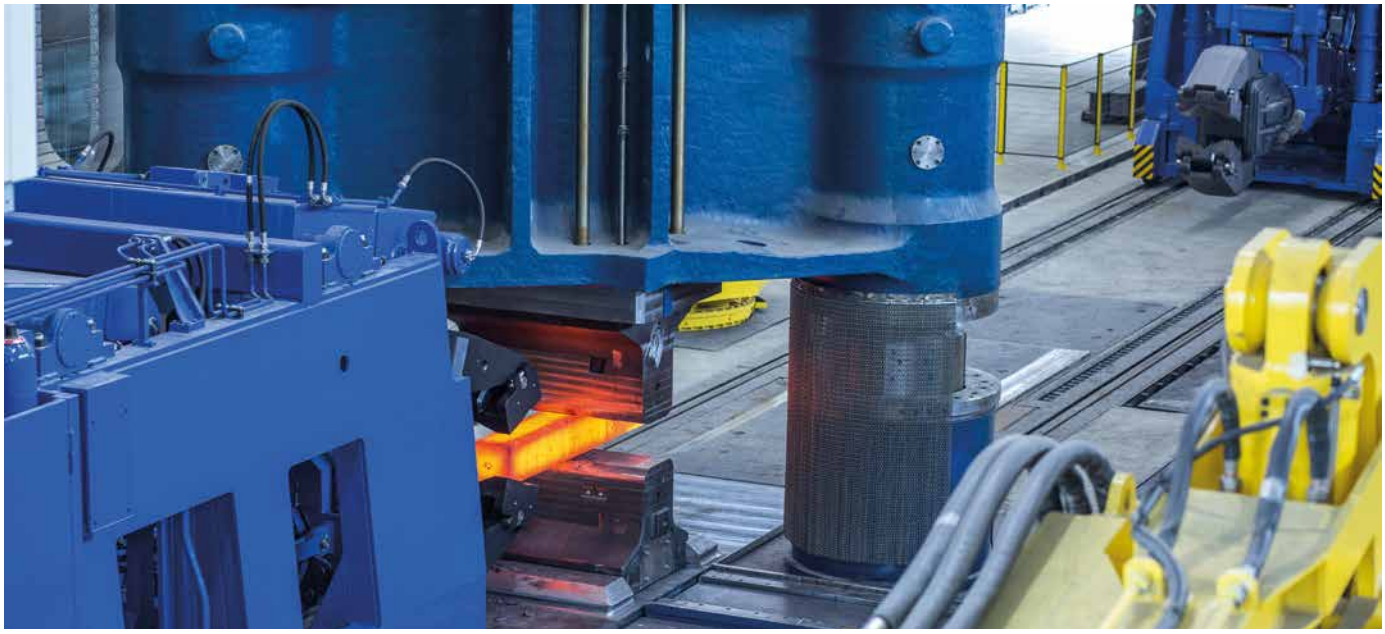





Rolling and Forging
Heat Treatment
Machining
Testing
Dispatch
P52 Forging Press
P44 Forging Press
Rotary
Forging Machine
Multiline Rolling Mill
Cogging Mill
Stock
Shipment

AMPO


BÖHLER
Grade
Melting: vacuum
Atomizing: inert gas
Sieving
Packaging
Stocking / Shipping
Printing
Recycling



SUPERLATIVE TOOLS

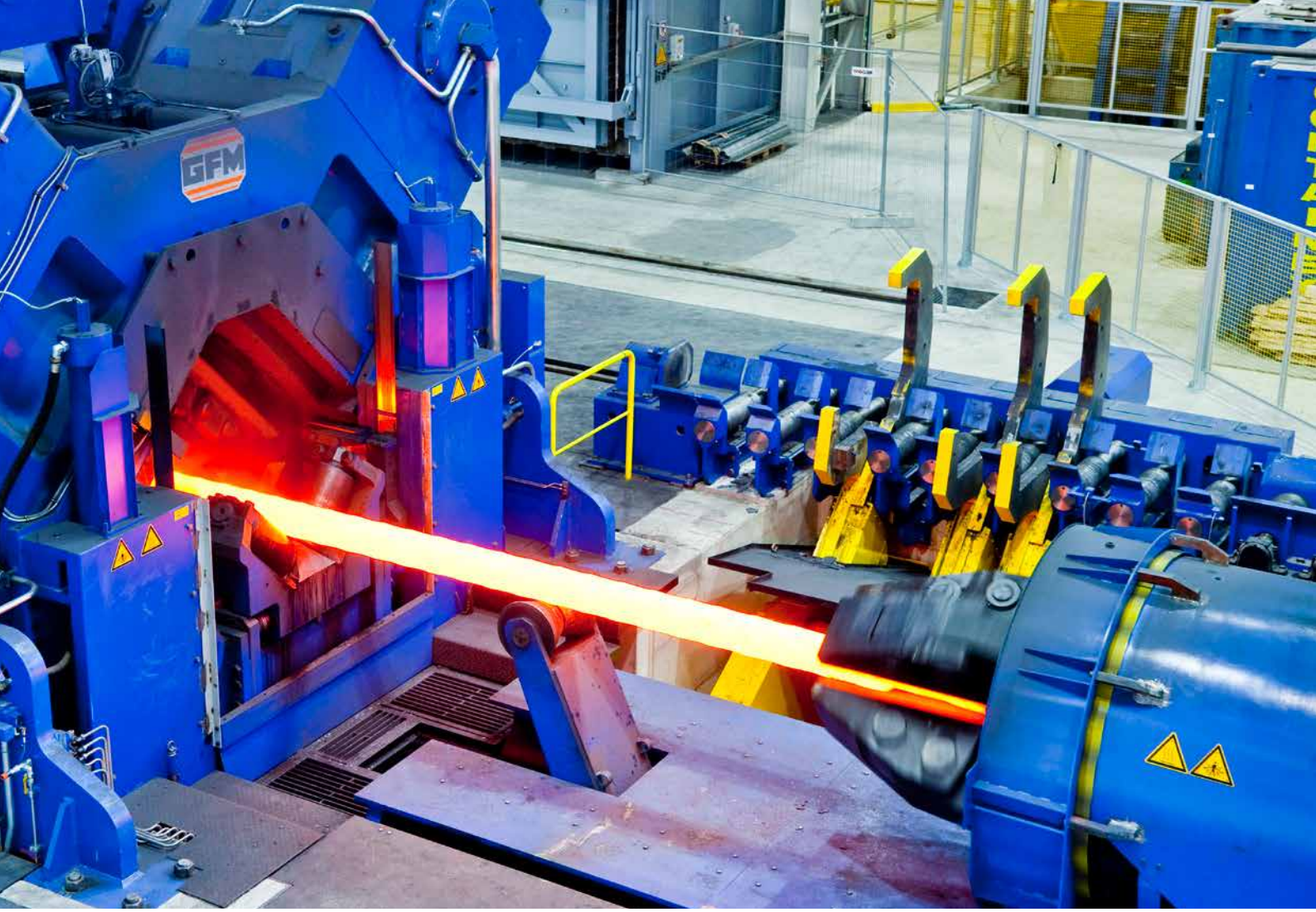
We at voestalpine BÖHLER use state-of-the-art high-performance forging units to produce the most suitable raw-material for your products.

The following units are available:

» With the 5,200 tons we produce open-die forgings up to a piece weight of 40 tons.

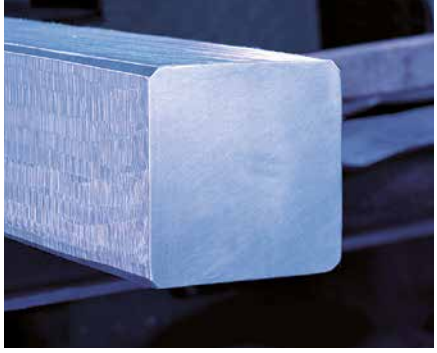
» Another focus is the RF 100 long forging machine. We produce rods and semi-finished products up to a length of 15 m and a diameter of 550 mm with a piece weight of max. 8 tons. A maximum force of 2,000 tons and the powerful manipulators for precise movement of the bars or blocks during the forging process guarantee the highest quality and precision.

» Highlight is the new P44: a rapid forging line for the production of the most sophisticated components for the aviation industry or the oil & gas industry. The optimized design of the entire infrastructure, the plant layout and the high achievable forging frequencies make this unit particularly suitable for the deformation of highly demanding materials, such as Nickel-based alloys. All processes are fully automatic and digitally controlled, a prerequisite for the highest quality standards.

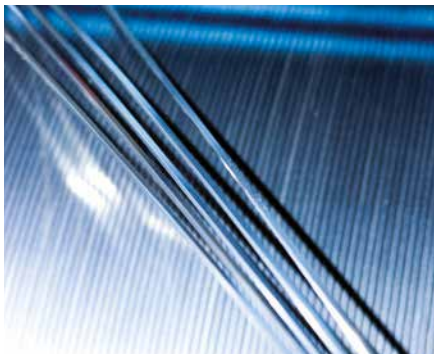

GFM

Flat steel milled

Flat steel – precision ground

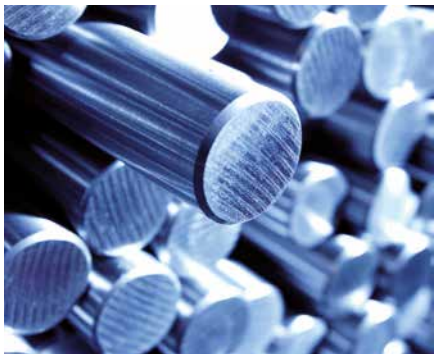


Forged billets, bright ground



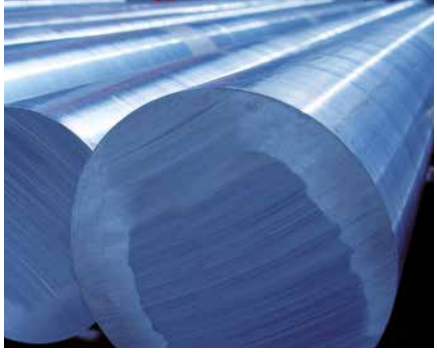
Precision flat wire

Wire / rolled



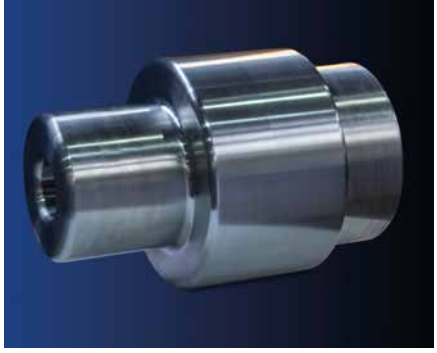
Bar steel ground with bevelled ends

THE QUALITY OF YOUR COMPONENTS STARTS HERE

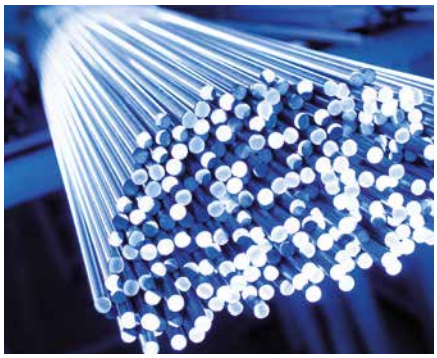


Bar – peeled + ground

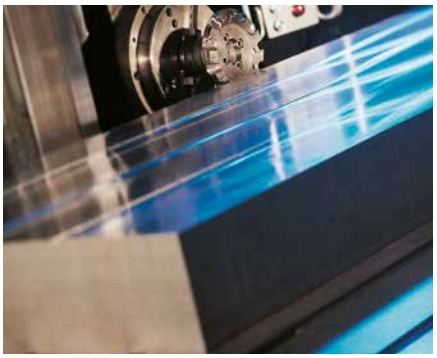
Bar – peeled – polished



Open die forge



Bright steel – peeled – polished



Block sawn + milled

Flat steel

Cross sections of round billets
Surface ground to remove defects

or bright ground	100 – 1200 mm (3.94 – 47.24“)
with peeled surface	100 – 425 mm (3.94 – 16.73“)
with turned surface	425 – 900 mm (16.73 – 35.43“)

Cross sections of square billets

Surface bright ground	100 – 600 mm (3.94 – 23.62“)

BAR rolled

round:	12.5 – 150 mm (0.49 – 5.91“)	
square:	15 – 130 mm (0.59 – 5.12“)	
flat:	width, mm (inch)	thickness, mm (inch)
	15 – 60 (0.59 – 2.36)	5 – 41 (0.20 – 1.61)
	60 – 200 (2.36 – 7.87)	5 – 86 (0.20 – 3.39)
	100 – 300 (3.94 – 11.81)	15 – 80 (0.59 – 3.15)

ROLLED WIRE

rolled:	dia. 5.0 – 13.5 mm (0.20 – 0,53“)
drawn:	dia. 1.0 – 12.0 mm (0.04 – 0,47“)

BAR forged

round:	110 – 1200 mm (4.33 – 47.24“)	
square:	90 – 1200 mm (3.54 – 47.24“)	
flat:	width, mm (inch)	thickness, mm (inch)
	120 (4.72)	50 (1.97) min.
	1600 (62.99)	1000 (39.37) max.

Ratio width/thickness maximum 10:1

BAR pre-machined

IBO ECOMAX:	12.5 – 425 mm (0.49 – 16.73“)

BRIGHT STEEL	
ECOBLANK	peeled and polished
ECOFINISH	band ground
BRIGHT BAR	ground and polished

Open die forgings
premachined or ready machined according to customer requirements, up to 45 tons.

MATERIALS FOR OIL AND GAS APPLICATIONS

Below is a survey of our common materials for the oil and gas industry.
We supply materials according to current specifications and standards.

DUPLEX AND SUPER-DUPLEX GRADES

BÖHLER grade	Market grade	Melting route	UNS	ASTM	Others	Industry specifications	Products and Size Range
BÖHLER A903	–	Airmelted	1.4462 S31803 / S32205	F51	X2CrNiMoN 22-5-3	Norsok-M-650 (MDS D47, size mill request necessary) DIN EN 10088-3 ASTM A182, A276, A479	Round bar: 12.5 - 304.8 mm (0.5 - 12“) Flat bar, Billet
BÖHLER A911SA	–	Airmelted	1.4501 S32760	F55	X2CrNiMoCuWN 25-7-4	Norsok-M650 (MDS D57, size mill request necessary) DIN EN 10088-3 ASTM A182, A276, A479	Round bar: 12.5 - 304.8 mm (0.5 - 12“) Flat bar, Billet
BÖHLER A913	–	Airmelted	1.4410 S32750	F53	X2CrNiMoN 25-7-4	Norsok-M650 (MDS D57, size mill request necessary) DIN EN 10088-3 ASTM A182, A276, A479	Round bar: 12.5 - 304.8 mm (0.5 - 12“) Flat bar, Billet
BÖHLER A930	–	Airmelted	1.4507 S32550	F61	X2CrNiMoCuN 25-6-3	DIN EN 10088-3 ASTM A182, A276, A479	Round bar: 12.5 - 304.8 mm (0.5 - 12“) Flat bar, Billet

AUSTENITICS

BÖHLER grade	Market grade	Melting route	UNS	ASTM	Others	Industry specifications	Products and Size Range
BÖHLER A220	–	Airmelted + ESR	1.4435 S31603	316LUG	X2CrNiMo 18-14-3	STAC 18005 DIN EN 10088-3 ASTM A182, A276, A479	Round bar: 12.5 - 600 mm (0.5 - 23.62“) vFlat bar, Billet
BÖHLER A405	–	Airmelted + ESR	1.4466 S31050	310MoLN	X2CrNiMoN 25-22-2	STAC 18005 DIN EN 10088-3 ASTM A182	Round bar: 12.5 - 600 mm (0.5 - 23.62“) Flat bar, Billet
BÖHLER A959	Alloy 28	Airmelted	1.4563 N08028	–	–	DIN EN 10088-3	Round bar: 12.5 - 203.2 mm (0.5 - 8“) Billet
BÖHLER A965SA	–	Airmelted	1.4547 S31254	F44	X1CrNiMoCuN 20-18-7	Norsok-M650 (MDS R17, size mill request necessary) DIN EN 10088-3 ASTM A182, A276, A479	Round bar: 12.5 - 228.6 mm (0.5 - 9“) Billet
BÖHLER A970	–	Airmelted	1.4529 N08926	–	X1NiCrMoCuN 25-20-7	DIN EN 10088-3 ASTM B649	Round bar: 12.5 - 228.6 mm (0.5 - 9“) Billet
BÖHLER P511	XM-19	Airmelted	S20910	–	X3CrNiMoCuNbN 21-13-3	ASTM A276, A479, A182	Round bar: 12.5 - 304.8 mm (0.5 - 12“) Flat bar, Billet
BÖHLER P513	S21800	Airmelted	S21800	–	–	ASTM A276, A479, A193, A194 AMS 5848	Round bar: 12.5 - 304.8 mm (0.5 - 12“) Flat bar, Billet
BÖHLER T200	660 A286	Airmelted + ESR	1.4980 S66286	–	X5NiCrTi 26-15	VdTÜV 435 DIN EN 10269, 10302 ASTM A453 AMS 5731, 5732	Round bar: 12.5 - 254 mm (0.5 - 10“) Flat bar, Billet

NICKEL BASE ALLOYS

BÖHLER grade	Market grade	Melting route	UNS	ASTM	Others	Industry specifications	Products and Size Range
BÖHLER L625	Alloy 625	VIM + ESR	2.4856 N06625	–	NiCr22Mo9Nb	AMS 5666 ASTM B446, B564	Round bar: 12.5 - 254 mm (0.5 - 10“) Flat bar, Billet
BÖHLER L725	Alloy 725	VIM + VAR	N07725	–	–	API 6A CRA NACE MR0175 / ISO15156	Round bar: 12.5 - 203.2 mm (0.5 - 8“) Billet
BÖHLER L825	Alloy 825	Airmelted	N08825	–	–	ASTM B425	Round bar: 12.5 - 304.8 mm (0.5 - 12“) Billet
BÖHLER L750	Alloy X750	VIM + VAR	N07750	–	–	ASTM B637 NACE MR0175 / ISO15156	Wire: 5 - 15.5 mm (0.2 - 0.6“)
BÖHLER L925	Alloy 925	VIM + VAR	N09925	–	NiCr21TiCuMo	API 6A CRA NACE MR0175 / ISO15156	Round bar: 12.5 - 355.6 mm (0.5 -14“) Billet
BÖHLER L718API	Alloy 718API	VIM + VAR	N07718	–	NiCr19NbMo	API 6A CRA NACE MR0175 / ISO15156	Round bar: 12.5 - 355.6 mm (0.5 -14“) Flat bar, Billet
BÖHLER L718AMS	Alloy 718AMS	VIM + VAR	2.4668 N07718	–	NiCr19NbMo	AMS 5662 ASTM B637 AMS 5663	Round bar: 12.5 - 203.2 mm (0.5 - 8“)
BÖHLER L059	Alloy 59	VIM + ESR	2.4605 N06059	–	NiCr23Mo16Al	ASTM B574	Round bar: 12.5 - 203.2 mm (0.5 - 8“) Flat bar, Billet
BÖHLER L276	Alloy 276	VIM + ESR	2.4819 N10276	–	NiCr21 Mo14W	VdTÜV 400 (max. 360 mm/~14“) ASTM B564, B574 NACE MR0175 /	Round bar: 12.5 - 355.6 mm (0.5 - 14“) Flat bar, Billet
BÖHLER L004	Alloy 004	VIM + ESR	2.4610 N06455	–	NiMo16Cr15W	VdTÜV 424 (max. 360 mm/~14“) ASTM B574 NACE MR0175 / ISO15156	Round bar: 12.5 - 355.6 mm (0.5 - 14“) Flat bar, Billet
BÖHLER L022	Alloy 022	VIM + ESR	2.4602 N06022	–	NiMo16Cr16Ti	VdTÜV 479 (max. 360 mm/~14“) ASTM B564, B574	Round bar: 12.5 - 355.6 mm (0.5 - 14“) Flat bar, Billet
BÖHLER L035	R30035	VIM + VAR	R30035	–	–	AMS 5844	Wire: 5 - 15.5 mm (0.2 - 0.6“)

HEAT TREATABLE STEELS

BÖHLER grade	Market grade	Melting route	UNS	ASTM	Others	Industry specifications	Products and Size Range
BÖHLER N400	F6NM	Airmelted	1.4313 S41500	F6NM	X4CrNi 13 4	DIN EN 10088-3 ASTM A182	Round bar: 12.5 - 1,040 mm (0.5 - 40.94“) Flat bar, Billet
BÖHLER N404	–	Airmelted	1.4418	–	X4CrNiMo 16 5	DIN EN 10088-3	Round bar: 12.5 - 500 mm (0.5 - 19.68“) Flat bar, Billet

PH GRADES

BÖHLER grade	Market grade	Melting route	UNS	ASTM	Others	Industry specifications	Products and Size Range
BÖHLER N700SA	17-4 PH	Airmelted	1.4542	630	X5CrNiCuNb 17 4	DIN EN 10088-3 ASTM A564	Round bar: 12.5 - 203.2 mm (0.5 - 8“) Flat bar, Billet
BÖHLER N701	15-5 PH	Airmelted + VAR	1.4545	XM 12	X5CrNiCuNb 15 5	ASTM A564	Round bar: 12.5 - 203.2 mm (0.5 - 8“) Flat bar, Billet

FORMS OF SUPPLY AND AVAILABILITY

Testing quality you can trust.

Our testing laboratory is responsible for conducting all of the mechanical, technological and metallographic tests on test pieces at voestalpine BÖHLER Edelstahl.

voestalpine BÖHLER has been accredited by the American approval and licensing authorities NADCAP as one of the few testing centers in Europe approved for conducting tests in the sensitive aerospace sector. Prompt availability of raw material is an essential factor in the offshore industry. Our stocks have been set up to meet this requirement.

General stocking locations

Production Company and Central Stock
voestalpine BÖHLER Edelstahl GmbH & Co KG
Mariazeller Straße 25, 8605 Kapfenberg, Austria
P. +43/50304/200
E. oil.gas@bohler-edelstahl.at
www.voestalpine.com/bohler-edelstahl

The dimensions available depend on the materials required. Please enquire.

EXPERTISE IN ALL MATERIAL MATTERS

Main Quality System approvals

» ISO 9001
» EN 9100

Main Laboratory Approvals

» bmwfw, EN ISO/IEC 17025
» PRI Performance Review Institute (NADCAP)

Main Material Approvals:

» NORSOK M-650, Teknologisk Institut Certification AS
» Equinor, rolled and forged bars in ASTM A276 grade, Norsok Standard M-650
» Lloyds Register, Steelmaking and bars, Forgings in carbon, carbon-manganese and alloy steel
» PRI (NADCAP), AC7114, AC7114/3
» TÜV-Süd, AD2000 Merkblatt / Instruction W0/TRD100/HP0, Pressure equipment directive 97/23/EG

BÖHLER SPECIAL STEELS FOR THE WORLD'S TOP PERFORMERS

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