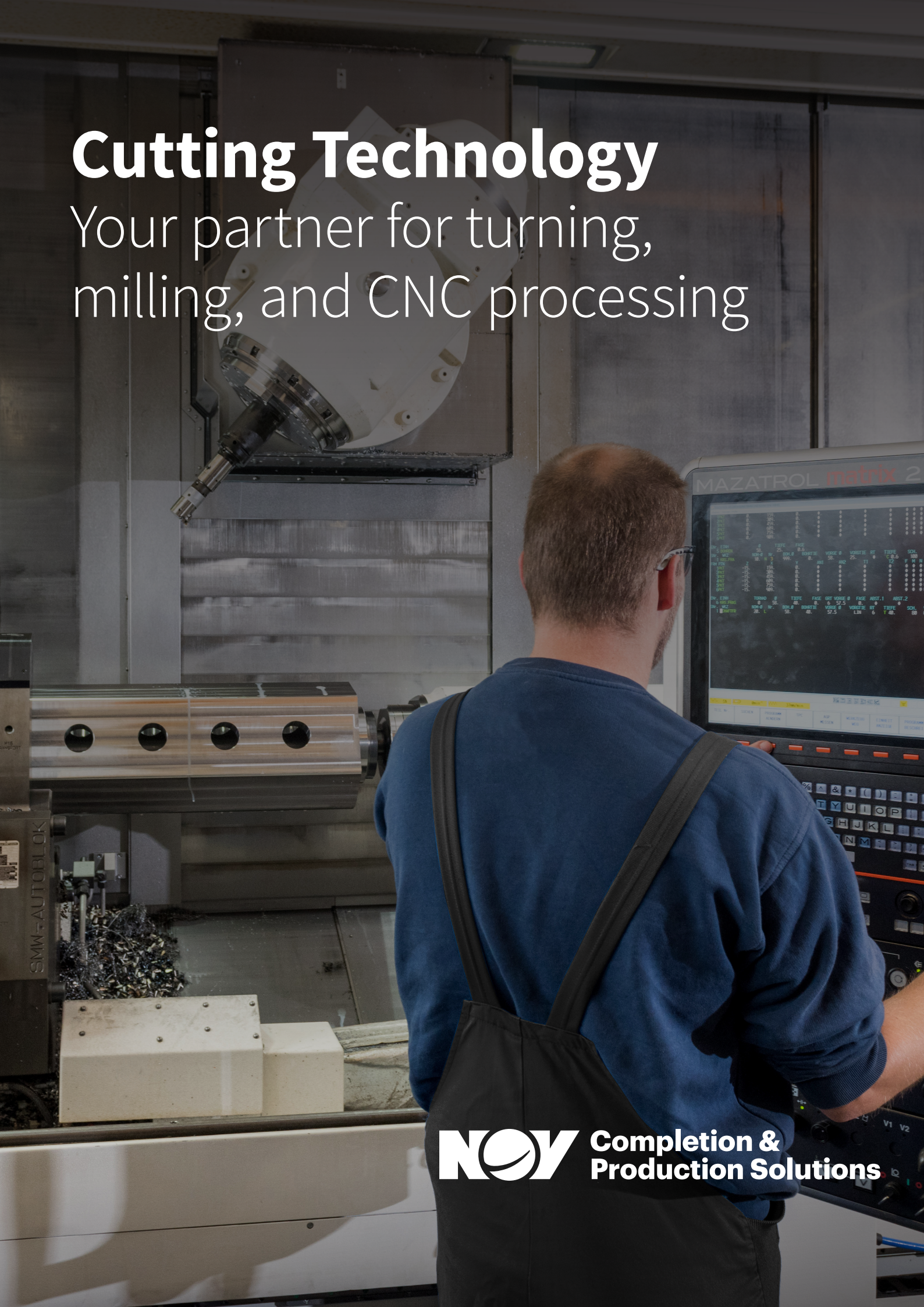


Cutting Technology

Your partner for turning,
milling, and CNC processing

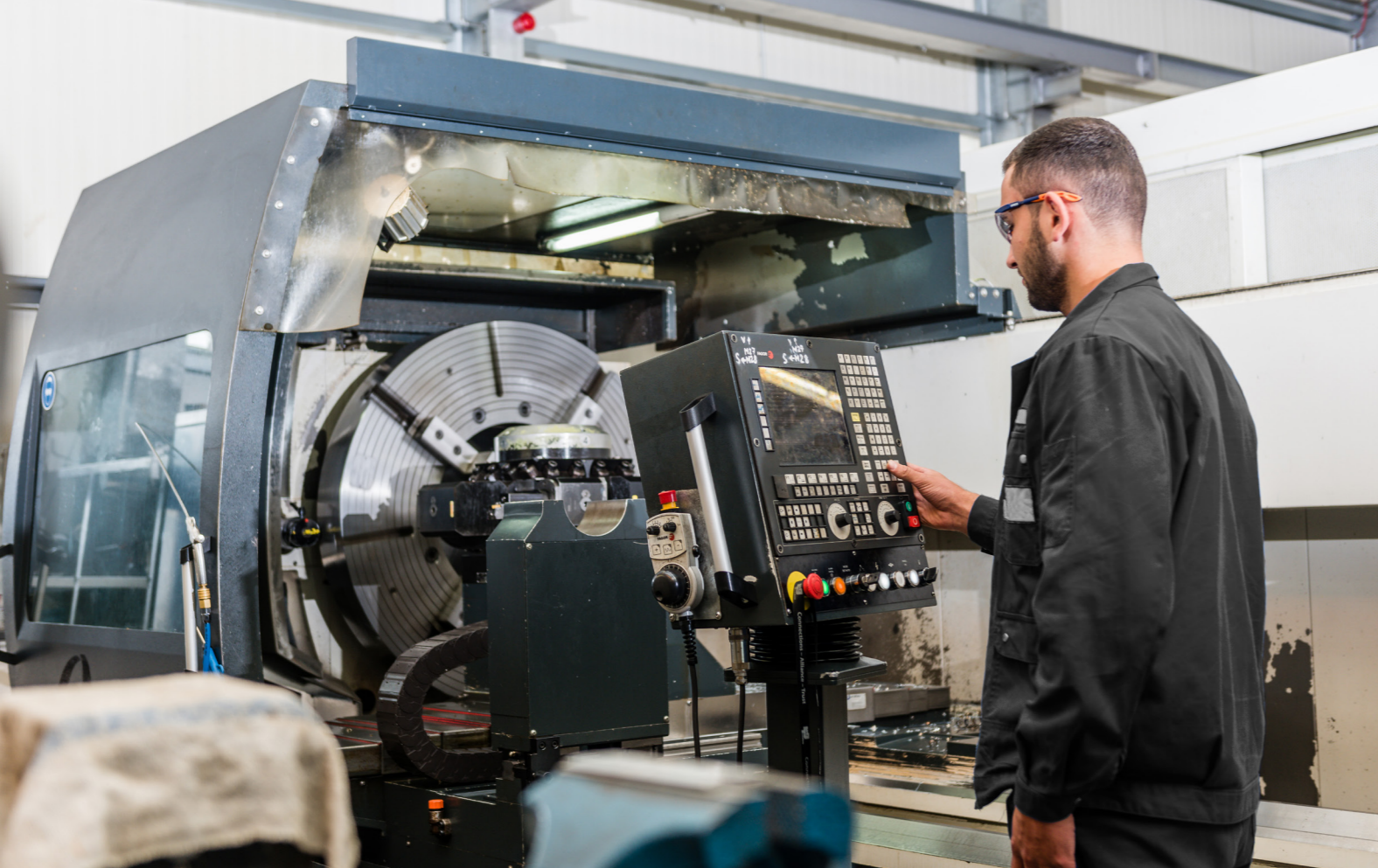


**Completion &
Production Solutions**



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Manufacturing

We provide precise metal cutting and metalworking. As a single-source service provider, we offer qualitative single-item production, complex serial production with inspection stamps, and complete documentation records and certificates.

We meet today's high demands with flexibility and speed by investing in the latest technology and service training our employees.

For decades, our customers have trusted in our services:

- CNC cutting technology: multitasking; simultaneous machining of five axes
- Batch and small-batch production and prototype construction
- Development and construction, including flow simulation
- Surface treatment
- Thread machining
- Documentation and certificate creation
- Testing and measuring: 3D coordinate measurement
- Steel trade: tube, flange, and fittings



We are committed to delivering quality and customer satisfaction

As a certified specialist company, we offer the highest precision during the manufacturing process using our committed, qualified personnel and the latest machines.

With central contacts, network-based planning, certified work processes, and qualified personnel, we are committed to delivering quality and customer satisfaction.

- Management system according to DIN EN ISO 9001:2015
- Manufacturer according to directive 2014/68/EU for pressure equipment
- VAM® licenses for premium threads
- API certificates: 5CT and 7-1

Construction

Our product designers are developing and constructing our high-grade, custom-made products by means of a 3D-CAD software, which enables the production of parametric models, assemblies, and drawings. We arrange the constructions upon request, demonstrating alternative possibilities for an economic production or executing flow simulations. Our optimizations in the manufacturing processes reduce machine hours and lower external costs.

Production volumes

Milling and turning are the key areas of our cutting production. Our skilled workers produce individual series and small batches as well as prototypes and complex series on more than 30 machines, mostly the latest CNC machines.



Services

Surface treatment

Different processes of surface technology help achieve a wide variety of requirement profiles and enable fulfillment of other functions.

Measurement technology

Optical and tactile measurement technology has become an essential instrument in many industries. Among others, we put great emphasis on precise 3D coordinate measurement technology by Zeiss and offer numerous services from one provider. Our offerings include:

- Improved inspection processes
- Unified quality standards for manufacturers and suppliers
- Precise and transparent results
- Comprehensive and unified quality controls

We offer measurements up to a maximum of 1600x900x500 mm and up to approximately 80 kg.

Materials

We process steels of different grades and different types of materials with the highest precision.

By default, we have the following materials in stock:

- Steel for general mechanical engineering
- Steel for use in the field of crude oil and natural gas and material which is resistant to acid gas, among others
- As well as AISI 4140 | AISI 4130 | Alloy 600 | Alloy 718 | C22.8 | CC493K | L80 | P110 | Stellite 6 1.0161, 1.0565 | 1.0566 | 1.0718/11SMnPb30 | 1.1248 | 1.4122 | 1.4301 | 1.4462 | 1.4571 1.5026 | 1.7225 | 1.7227 | 2.0401 | 2.0402 | 3.2315/AlMgSi1 | 3.3206/AlMgSi uvm.

Further materials are available upon request.

Internal surface treatments

- Zinc and manganese phosphating
- Honing
- Sandblasting

External surface and heat treatments

- Anodization
- Hot-dip galvanizing
- Electro-galvanizing
- PVD coating
- QPQ coating
- Glass bead blasting
- Thread coppering
- All kinds of heat treatment, such as hardening, gas nitriding, plasma nitriding, stress relief heat treatment

Machine schedules

CNC milling technology

Machine	Axis	Control	Operating range	Data exchange	Capacity
Vertical milling machine MAZAK VTC 800/30SR	5	MATRIX	Bed: 820x3.500 mm X = 3.000 mm Y = 800 mm Z = 720 mm Indexing head	CAD / CAM	3.800 hrs
Vertical milling machine Hermle C30U	5	iTNC 530	Bed: 540x540 mm X= 650 mm Y= 595 mm Z= 500 mm Turning table = 145°	CAD / CAM	3.800 hrs
Vertical milling machine Kunzmann WF 610 MC	3	TNC 620	Bed: 610 x 400 mm X= 430 mm Y= 690 mm Z= 420 mm	CAD / CAM	1.700 hrs

CNC multi-tasking technology

Machine	Axis	Control	Operating range	Data exchange	Capacity
MAZAK INTEGREGX 400-IV	5	MATRIX	Max. turning dimension: Ø3300 mm Length: 2.500 mm Stem feed-through: Ø102 mm	CAD / CAM	3.800 hrs
MAZAK INTEGREGX I 400	5	MATRIX	Max. turning dimension: Ø260 mm Length: 1.500 mm Stem feed-through: Ø102 mm	CAD / CAM	3.800 hrs
MAZAK INTEGREGX 670-E	5	MATRIX	Max. turning dimension: Ø1070 mm Length 4.391 mm Stem feed-through: Ø320 mm Payload 3.000 kg	CAD / CAM	3.800 hrs

Conventional turning technology

Machine	Axis	Control	Operating range	Data exchange	Capacity
Bulmak	2	None	Max. turning dimension: Ø600 x 1.400 mm Stem feed-through: Ø103 mm Caliber over support: 400 mm	None	1.700 hrs
GDW LZ 400 VS	2	None	Max. turning dimension: Ø220 x 1.000 mm Stem feed-through: Ø62 mm Caliber over support: 225 mm	None	1.700 hrs
GDW LZ 400 VS	2	None	Max. turning dimension: Ø220 x 1.000 mm Stem feed-through: Ø62 mm Caliber over support: 225 mm	None	1.700 hrs
GDW LZ 280G	2	None	Max. turning dimension: Ø160 x 610 mm Stem feed-through: Ø43 mm Caliber over support: 180 mm	None	1.700 hrs

Machine Schedules

CNC turning technology

Machine	Axis	Control	Operating range	Data exchange	Capacity
MAZAK Quick Turn 40	2	PC Fusion CNC 640T	Max. turning dimension: Ø400 x 1.524 mm Stem feed-through: Ø104,5 mm	Dialogue program	1.700 hrs
MAZAK Nexus 200-500	2	PC Fusion CNC 640T	Max. turning dimension: Ø220 x 500 mm Stem feed-through: Ø63 mm	Dialogue program	1.700 hrs
MAZAK Nexus 200-1000	2	PC Fusion CNC 640T	Max. turning dimension: Ø220 x 1.000 mm Stem feed-through: Ø63 mm	Dialogue program	1.700 hrs
MAZAK Quick Turn Nexus 200-IIM	2	MATRIX Nexus	Max. turning dimension: Ø220 x 500 mm Stem feed-through: Ø65 mm Mandrel for power-driven tools	Dialogue program	3.800 hrs
MAZAK Nexus 250 II	2	MATRIX Nexus	Max. turning dimension: Ø260 x 985 mm Stem feed-through: Ø77 mm	Dialogue program	1.700 hrs
MAZAK 350 II M	2	MATRIX Nexus	Max. turning dimension: Ø320 x 1.538 mm Stem feed-through: Ø102 mm Mandrel for power-driven tools	Dialogue program	3.800 hrs
MAZAK 450 II M x2000	2	MATRIX Nexus	Max. turning dimension: Ø580 x 1.840 mm Stem feed-through: Ø186 mm Mandrel for power-driven tools	Dialogue program	3.800 hrs
MAZAK 450 II M x3000	2	MATRIX Nexus	Max. turning dimension: Ø425 x 2.940 mm Stem feed-through: Ø150 mm Mandrel for power-driven tools	Dialogue program	3.800 hrs
MAZAK CYBERTECH TURN 4500M	2	MATRIX 640 MT PRO	Max. turning dimension: Ø810 x 2.925 mm Stem feed-through: Ø275 mm Mandrel for power-driven tools	Dialogue program	3.800 hrs
Gurutzpe A1600 2G CNC	2	Fagor 8055-PW	Max. turning dimension: Ø1.200 x 4.000 mm Stem feed-through: Ø550 mm Caliber over support: 800 mm	Dialogue program DIN-Program	3.800 hrs
DMG NZX 4000 - 3000	3	Mitsubishi 730UM Celos	Max. turning dimension: Ø500 x 2.925 mm Stem feed-through: Ø105 mm Mandrel for power-driven tools	Dialogue program	3.800 hrs
DMG NLX 3000 - 2000	3	Mitsubishi 750 UM	Max. turning dimension: Ø410 x 1.950 mm Stem feed-through: Ø105 mm Mandrel for power-driven tools	Dialogue program	3.800 hrs



Machined Products

By way of machining, we manufacture high-grade products for plant and power plant construction, onshore and offshore fields, the food industry, and the aerospace industry. Our generous production capacities enable us to react and start production in the short term. Moreover, we implement special machine components according to the customer's individual requirements. We adhere to DIN, API, and ASTM standards.

Mechanical engineering and special machine construction

We produce a broad spectrum of high-grade drawing parts, meeting demands for increased efficiency and shorter cycle times and helping you face new tasks in mechanical engineering and special machine construction.

Our flexible production possibilities enable the supply of workpieces precisely according to your preferences. Whether as individual parts or complex serial production, we make your requests possible.

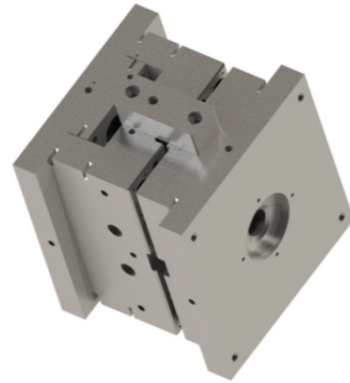
Above all, we supply the following markets with high-grade lathed and milled parts:

- Packaging industry
- Filling technology for granulates, suspensions, and liquid media
- Sorting facilities
- Robot-controlled manufacturing cells in the automotive sector

Material grades: according to customer requirements

Dimensions: requirements upon request



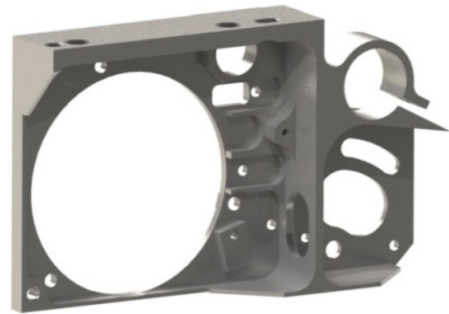


Custom parts

Do you have a component part that is difficult to implement? We specialize in customizing products. Upon request, we will support you in the construction and demonstrate alternative possibilities for cost-efficient productions or execute flow simulations.

Our products include beam attenuators, valve seats, valve spindles, thermometer protection tubes, immersion pockets, and more.

Material grades: according to customer requirements
Dimensions: requirements upon request



Aerospace technology

We are familiar with the highest requirements for the material purity and product safety for manned and unmanned aircrafts. Our aspiration for the highest precision and quality has made us a reliable partner and supplier for the aerospace industry.

For all products, we draw up evidence on the material characteristics and a comprehensive documentation of the entire manufacturing process up to the tested control on outgoing goods according to your specifications. Our merchandise management system enables complete traceability.

Our offerings include aeronautical engineering, space technology, and custom parts

Material grades: according to customer requirements
Dimensions: requirements upon request

Tool manufacturing

We manufacture complex devices, tools, and functional components.

Our products include: punching tools, deep-drawing technique, pressure tools, mold construction, copper-electrode production, and more.

Material grades: according to customer requirements
Dimensions: requirements upon request



Food technology

Our partners in the cookie and pastry industries have the highest requirements for the processing of molded parts and embossing rollers. With our knowledge and great care during manufacturing, we deliver:

- Embossing rollers
- Cookie-cutting cylinders
- Molded parts

Material grades: according to customer requirements
Dimensions: requirements upon request
Design: customized designs are available

Crude oil, natural gas, and geothermal energy

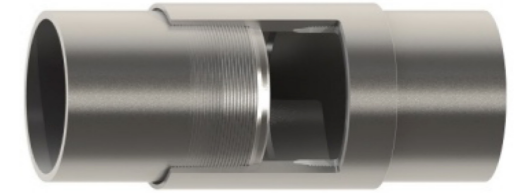
Our comprehensive portfolio for the crude oil, natural gas, and geothermal energy industry offers you everything from one competent provider: premium thread-cutting or subsurface repair, variable mufflers, and liner hanger systems or completion tools.

With our services and products, we always aim to achieve the best results for our customers. Therefore, our experienced constructors are glad to support you in the development of custom parts.

Threads

We hold different types of thread licenses, VAM® and API among others, and manufacture various thread types.

- VAM® Top / VAM® Top HC / VAM® Top HT
- VAM® 21 / VAM® 21 HT
- DINO VAM®
- VAM® FJL
- VAM® SLIJ-II
- NOV Grant Prideco EIS
- BIG OMEGA
- OTTM GOST Threads
- API 5CT: threader for casing and tubing connections



API 7-1: Threader for rotary shouldered connections	Code letter	Type
Buttress casing	BCSG (BTC)	
Long thread casing	LCSG (LTC)	
Short thread casing	CSG (STC)	
External upset	EU	
Non-upset	NU	
Extreme line	XCSG	
Internal flush	IF	
Regular	REG	Bore back; stress relief
Full hole	FH	Bore back; stress relief
Numbered connections	NC	Bore back; stress relief
Sucker rod	SR	
American Macaroni thread	AMT / AMMT	
Phil A. Cornell	PAC	DSI
Wilson flush joint	WFJ	
Trapezoidal thread	ACME	
Trapezoidal thread	STUB ACME	
Tapered pipe thread	NPT	
Cylindrical pipe thread	G	
Cylindrical pipe thread	R, Rp, Rc	
Unified screw thread	UNC, UNF, UNS, UNR, UNJF	
Metric	M	

Machined Products

Lubricators

Our lubricators enable the safe insertion of wireline equipment in a borehole under pressure. We make pressure stages, dimensions, and thread connections in accordance with your requests and specifications.

We offer lubricators with the following equipment:

- Standard
- With side port
- As lightweight

Pressure ratings: 3,000, 5,000, 10,000 psi

ID dimensions: 2, 2.5, 3, 4 in.; other dimensions upon request

Length: 8 ft; other lengths upon request

Thread connections: OTIS™, Bowen™, or Elmar™ quick unions

Models: Standard or acid gas



Special components

Do you have a component that is difficult to implement? We manufacture metal parts with our latest turning and milling centers within the shortest time for you.

We produce:

- Automatic connectors
- Centralizers
- Linkage rollers
- E valves
- R valves
- Special centralizers according to customer's specification
- Custom parts according to the drawing



Mufflers

Provisions for noise abatement in the workplace require companies to take certain safety measures to protect employees. Discharging gases on drilling rigs can result in loud noise. Designed for the discharge of dry gas, the variable muffler helps reduce noise during the discharge of dry gas. It is suitable for the pressure relief of locks with a maximum of 350 bar (5,000 psi).

Benefits

- Unified component part
- Different connections available
- Removable, transportable, handy

Material: V2a

Connection dimensions: ½-in. NPT and 2-in. WECO male



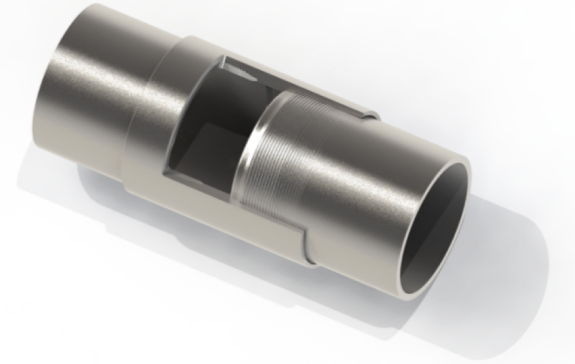
Licenses & Certifications

Licenses for premium threads

Our comprehensive quality management and certification in compliance with current industrial standards secure the highest quality of our products and services.

We hold the following VAM licenses:

- VAM® Top
- VAM® 21
- VAM® FJL
- NOV Grant Prideco EIS
- VAM® Top HC
- VAM® 21 HT
- VAM® SLIJ-II
- VAM® Top HT
- DINO VAM®
- BIG OMEGA / IS



Certificates

5CT: Threader for casing and tubing connections

7-1: Threader for rotary shouldered connections

API Specification Q1 approved Quality Management System

ISO9001:2015 approved Quality Management System

Documentation and certificate creation

From raw material to the final product, we provide precise documentation and attach a certificate upon the customer's request.

- Certificate of compliance with the order DIN EN 10204-2.1
- Restamping
- Acceptance test certificate DIN EN 10204-3.1
- Acceptance test certificate DIN EN 10204-3.2
- Test and measurement reports



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