



BORSIG

**Process gas compressors
and services**

BORSIG ZM

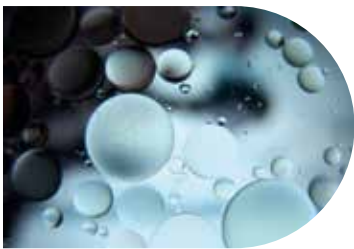
Compression GmbH

**Think.
Create.
Change.**

Tailor-made compressor solutions.

BORSIG ZM Compression GmbH, a member of the BORSIG Group, offers individual solutions for reciprocating and integrally geared centrifugal compressors according to customer specifications.





Our approach is characterized by integrated concepts, from planning and design to assembly and testing, relying on more than 165 years of experience in the compressor business. BORSIG ZM Compression GmbH, with two sites in Germany,

- Meerane/Saxony
new compressors and after-sales service
- Gladbeck/North-Rhine-Westphalia
valve service and after-sales service

guarantees the highest product quality with competent engineering, state-of-the-art manufacturing processes and seamless quality assurance.

Our reciprocating compressors (API 618, API 11P / ISO 13631) and integrally geared centrifugal compressors (API 617 Ch.3 and 672) are designed according to customer specifications and used in refineries, the chemical and petrochemical industries, for natural gas storage, the transport of technical gases and in energy supply and power plants.

We also offer innovative and reliable solutions for the hydrogen industry. Hydrogen is set to play a pivotal role in the energy mix of the future. With the development of new, oil-free compressors, BORSIG ZM Compression GmbH is helping to create the required infrastructure by participating in a major green hydrogen research project.

With our leading technology, high quality components and our comprehensive compressor service, we set the highest standards in individual design, quality and durability under the heaviest conditions.

Our products and services

- **Reciprocating compressors for process gases**
- **Integrally geared centrifugal compressors for process gases**
- **Compressor services**
- **Spare parts**
- **Engineering services**



- API 618, API 11P / ISO 13631
- manufacturer`s standard
- durable and long-lasting design
- tailor-made solutions

Reciprocating compressors for process gases.

Vertical and horizontal design according to customer specifications.



With more than 165 years of expertise in the manufacture of reciprocating compressors, BORSIG ZM Compression GmbH offers tailor-made horizontal and vertical compressor solutions for process gases with all auxiliary equipment.

Our reciprocating compressors are developed for the heaviest continuous operation and available with lubricated or non-lubricated cylinders. They comply with the design standards of API 618 and API 11P / ISO 13631 as well as other international and manufacturing standards.

We use state-of-the-art 3D design tools that enable either a complete system or specific parts and components to be visualised and designed.

All BORSIG ZM reciprocating compressors are mechanically tested according to API 618 standards at our in-house test field.

All models boast a long service life, high wear resistance durability and low lifecycle costs.

Power ranges

discharge pressure	$p = (... 1,000) \text{ bar}$
capacity/flow	$V = (... 115,000) \text{ m}^3/\text{h}$
power	$P = (... 21,000) \text{ kW}$
stroke	$L = (... 500) \text{ mm}$

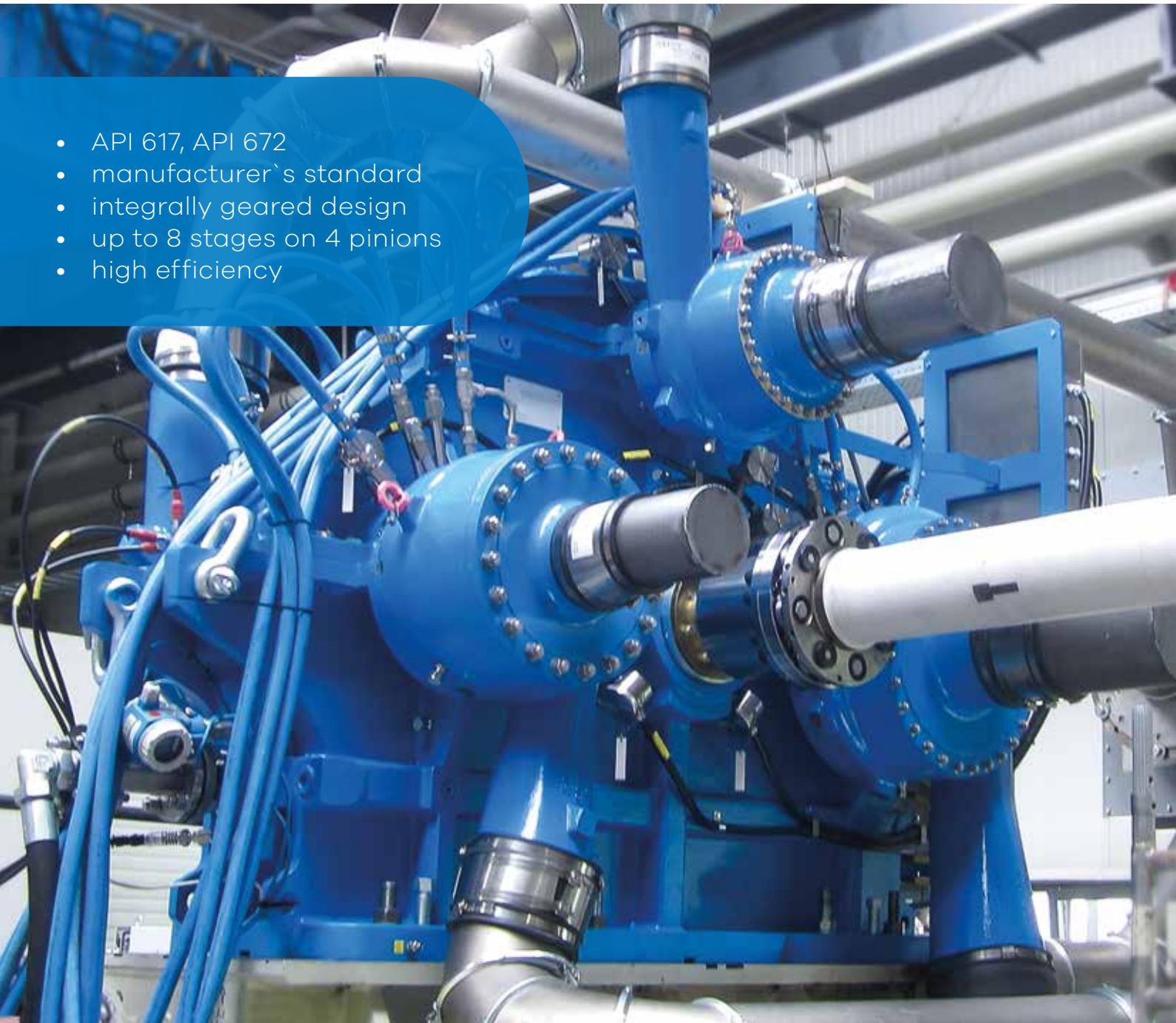
Typical industries

- petrochemical industry
- refineries
- gas processing
- fertilizer industry
- power plant industry
- steel industry

Integrally geared centrifugal compressors for process gases.

Single- and multi-stage design.

- API 617, API 672
- manufacturer's standard
- integrally geared design
- up to 8 stages on 4 pinions
- high efficiency





With more than 60 years of expertise in turbo compressor construction, BORSIG ZM Compression GmbH offers integrally geared centrifugal compressors according to customer specifications as turnkey solutions with all necessary system components.

Our BTC series provides multi-stage geared turbo compressors with up to 8 stages, which correspond to the design standards of API 617 (3rd Chapter) and API 672. The oil system is designed according to API 614 or the manufacturer's standard. The latest research results in fluid mechanics as well as gear and bearing design provide the basis of our development. High efficiency is achieved through speed variation, cooling between each stage, inlet guide vane control and axial inflow.

All integrally geared centrifugal compressors from BORSIG ZM Compression GmbH are mechanically tested according to the API 617 standards at our in-house test field.

We provide complete performance tests according ASME PTC 10 on request.

Typical industries

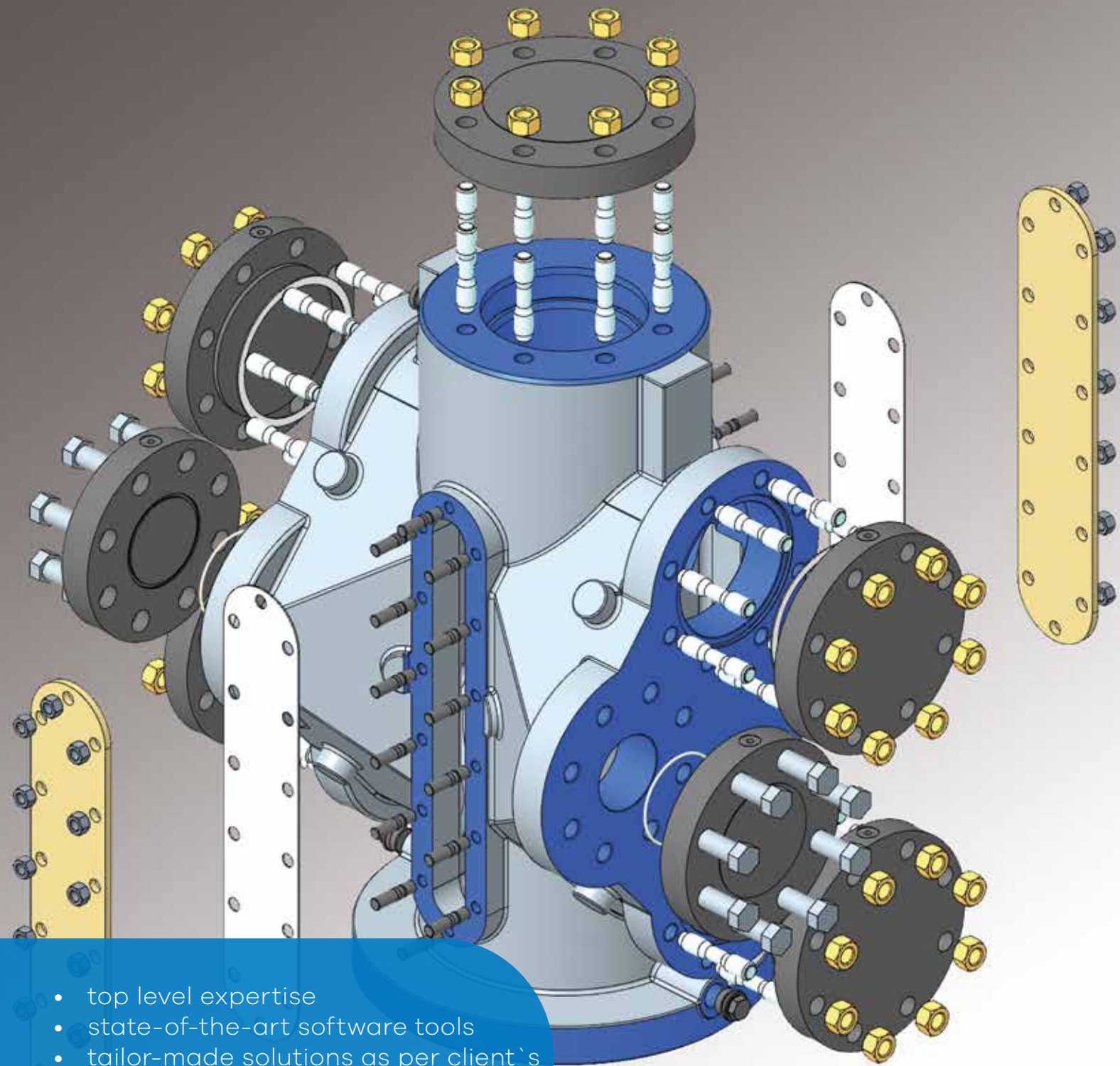
- petrochemical industry
- refineries
- gas processing
- fertilizer industry
- power plant industry
- steel industry

Power ranges

discharge pressure $p = (... 200) \text{ bar}$

capacity/flow $V = (... 300,000) \text{ m}^3/\text{h}$

power $P = (... 25,000) \text{ kW}$



- top level expertise
- state-of-the-art software tools
- tailor-made solutions as per client`s request
- replication and re-engineering

Engineering and consulting of compressor packages.



A top level of expertise, sophisticated technology and flexibility.

A high level of expertise, the adoption of sophisticated technologies and the flexibility and dedication of our highly skilled designers form the core of our successful engineering business.

BORSIG ZM Compression GmbH offers customized solutions based on the latest CAE and CAD software. BORSIG ZM uses a range of cutting edge 3D modelling and computer graphics programs as standard practice.

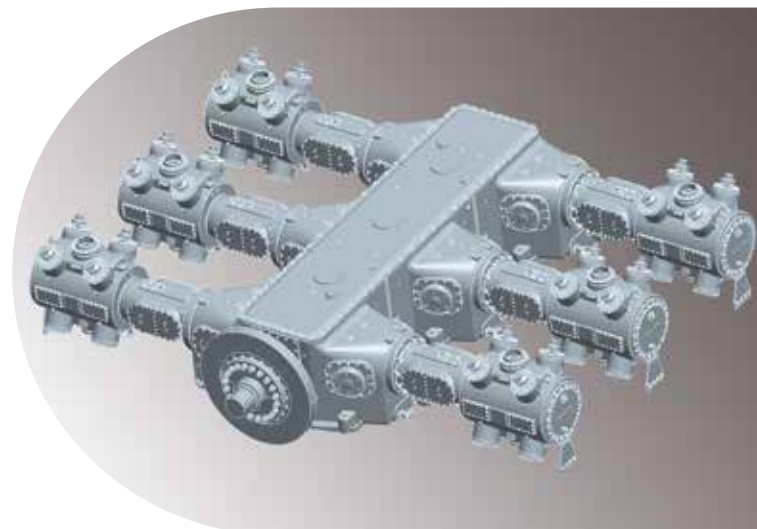
We collaborate closely with our customers and their engineering partners. The design of our compressors, equipment and control systems is safety conscious and oriented towards ease of maintenance and operation.

We also carry out feasibility studies and verification and revamp studies. The precise design and modernisation of the parts or components is also part of our portfolio. We can even realise the accurate replication and re-engineering of parts, components and entire compressors.

National and international standards such as DIN ISO, API, ASME, British Standard as well as project specific customer specifications are taken into consideration.

BORSIG ZM Compression GmbH can support customers in solving particular challenges, such as increasing or controlling the capacity of their compressor units.

BORSIG ZM's calculations include the design of compressor parameters, simulation and optimization of valve dynamics, and finite element analysis (FEA) of mechanically critical components. Most gas and thermodynamic problems can be analysed by recalculating the compressor, so that the time and effort required to solve the problem remains manageable..



Quality assurance and sustainability.



The BORSIG ZM Compression GmbH Quality Management System is certified according to DIN EN ISO 9001. Our high quality standards are also verified according to additional certifications such as the DIN EN ISO 14001 - Environmental Management System and SCC** certificate (Safety Certificate Contractors).

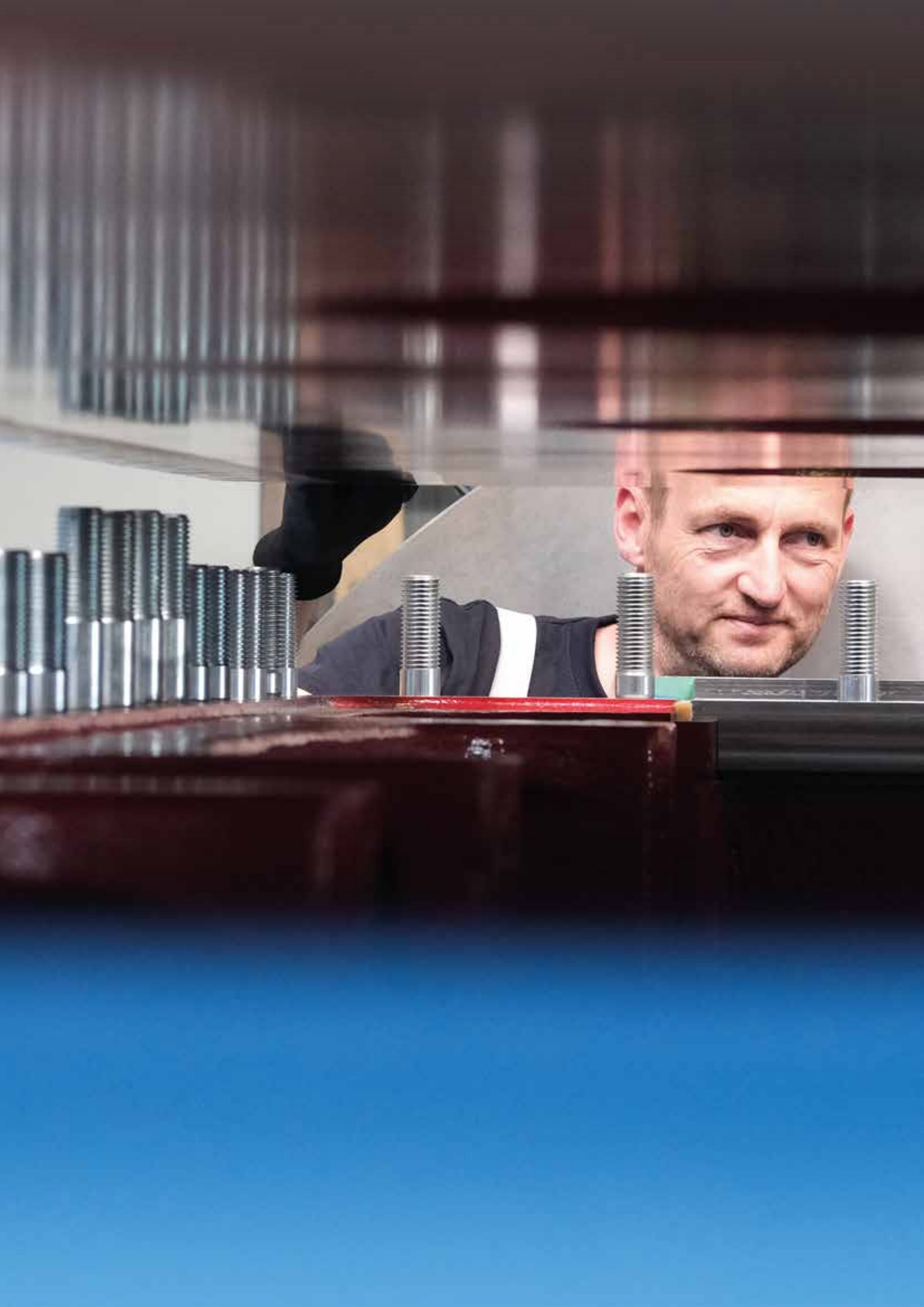
Competent engineering and comprehensive quality management guarantee the high standards of our products. BORSIG ZM applies modern portable measurement techniques such as laser trackers, scanners, index arms etc.

The Quality Assurance Team works according to appropriate testing schedules, measurement equipment administration and is linked to the production planning and control system (PPS).

We also run tests independently of production control. It guarantees the compliance of processed material, manufactured components, equipment, products and services with national and international standards, regulatory and contractual requirements and BORSIG's internal rules and policies.

We have our own test field with 1,700 m², 8 test beds and a power input of up to 5 MW to carry out function and performance tests (ASME PTC 10) of our compressors as well as any other machinery with high current or even mean voltage.

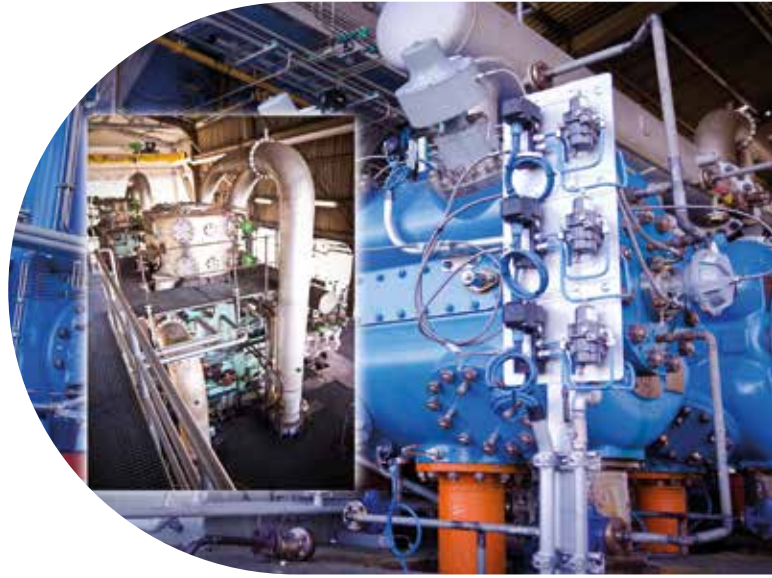




Compressor services and after sales

for BORSIG ZM compressors and other brands.

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- A photograph showing two male technicians in an industrial setting. The technician on the left is wearing a bright orange high-visibility jacket with reflective white stripes, a white hard hat with the 'BORSIG' logo, safety glasses, and yellow earplugs. He is holding a clipboard and a pen, looking down at it. The technician on the right is wearing a dark blue jacket and a white hard hat with the 'BORSIG' logo. They are standing next to a large piece of industrial machinery, which appears to be a compressor. The background shows a green metal structure and other industrial equipment under a clear sky.
- spare parts
 - maintenance services
 - revamp and modernization
 - reverse engineering
 - replication and re-engineering of parts
 - valve service



As a leading manufacturer of compressor systems worldwide, BORSIG ZM Compression GmbH offers a comprehensive service package from a single source. Our flexible and efficient after-sales service provides comprehensive care of your compressor regardless of the make.

In addition to the competence and long-standing experience of our staff in compressor manufacturing, a particular strength is outstanding quality of our services in accordance with our excellent OEM quality standards.

Service portfolio

- installation and commissioning of compressor units
- spare part management
- revamp and modernisation
- maintenance and overhauling
- troubleshooting
- in-house and on-site training
- compressor valve service

BORSIG ZM's engineering competence provides support with the installation and commissioning of compressor units as well as their revamp, modification and modernisation. We provide a comprehensive maintenance service to keep systems available and running at an optimal level.

Emergencies demand short reaction times. The BORSIG ZM Compression service hotline is available worldwide 24 hours a day.

24-h Service Hotline

phone: +49 (0) 3754 5390 5120

e-mail: service.bzm@borsig.de

— Valve service and modification.

Small components – a great impact. Valves are true lungs of a compressor which contribute significantly to sustaining the proper flow rate and pressure of the working medium.

Optimum valve design and, as a result, low pressure drop helps to reduce energy consumption.

Valve reconditioning

Compressor valves are reconditioned in accordance with specified maintenance intervals. Full efficiency is restored for further use. A reconditioned valve has the same lifetime as a new one. There is no doubt about the price advantage of a reconditioned valve compared to a new one. The robust valves can be refitted over and over before their complete replacement takes place.

Analysis and optimization

For more than a century BORSIG ZM Compression GmbH has been analysing hundreds of reciprocating compressors of various manufacturers, many of which fail to reach their optimum operating conditions. Our long-term experience has shown that reliable analysis of compressors and valves is often able to solve customers' problems.

Modification

If frequent valve damage occurs or if the operator is interested in a higher efficiency of his valves, most valves can be modified or optimized subsequently. As a result, compressor valves rarely need to be replaced by new valves. Often the benefits of high-performance plastics can be used. In most cases modifications can be made during the reconditioning of compressor valves without high additional costs.

Reconditioning of components

BORSIG ZM Compression GmbH has capabilities to recondition components of compressors or to manufacture new ones if required:

- liner press-fit
- crosshead refurbishment
- new crosshead shoes
- new crosshead bolts
- new piston as a welded or single item
- piston rods according to OEM standard





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