

# BORSIG

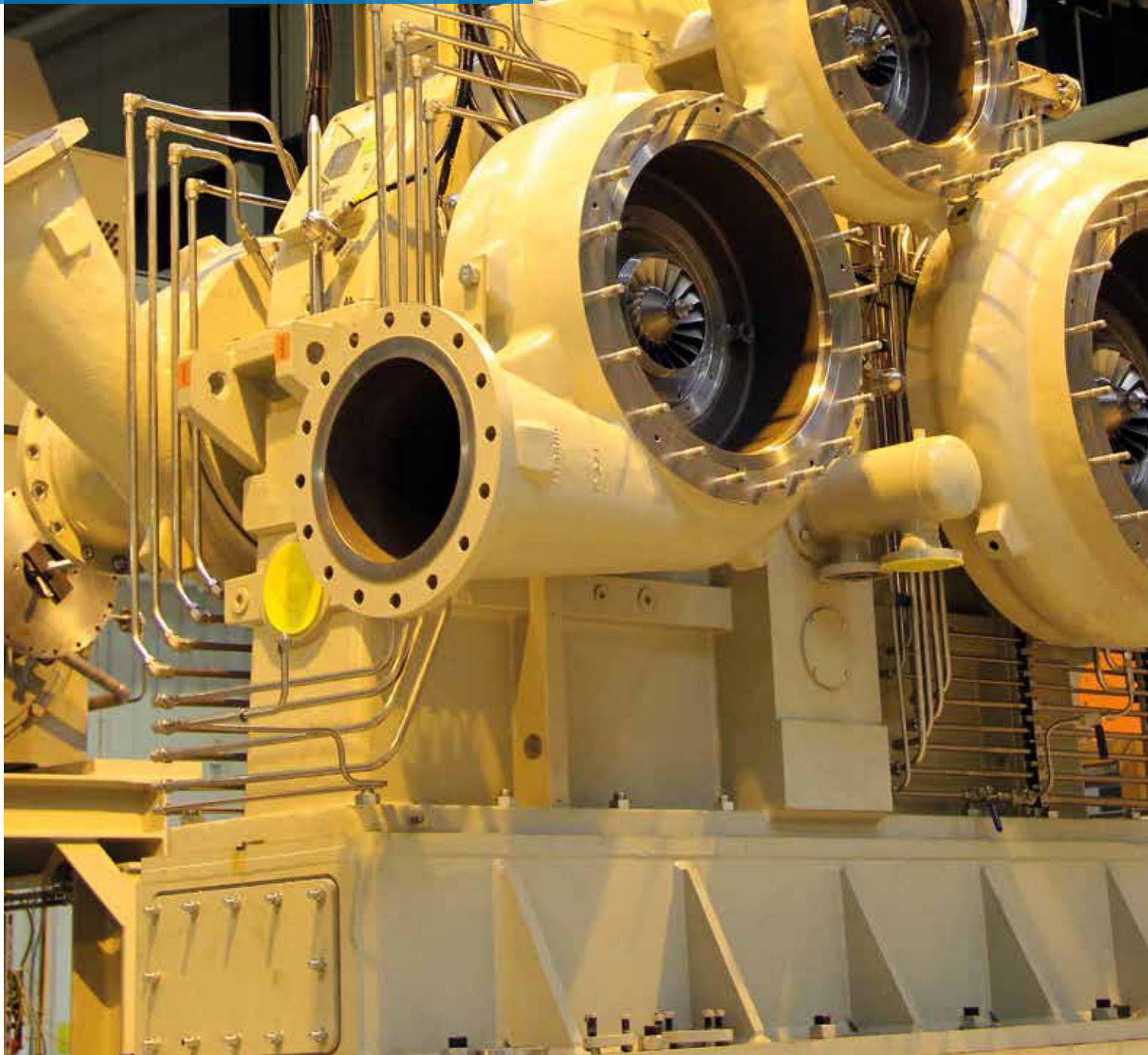
BORSIG ZM  
COMPRESSION  
GMBH

## PROFILE AND PRODUCTS





# COMPRESSORS FROM BORSIG ZM



# ABOUT BORSIG ZM COMPRESSION GMBH

**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 characterised by integrated concepts, from planning and design to assembly and testing relying on more than 160 years of experience in the compressor business. BORSIG ZM Compression, a merger of BORSIG and ZM Zwickauer Maschinenfabrik, 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 and 672) are designed according to customer specifications and used in refineries, the chemical and petrochemical industries, for natural gas storage and the transport of technical gases and in energy supply and power plants.

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

Our product portfolio:

- Reciprocating compressors for process gases
- Integrally geared centrifugal compressors for process gases
- BORSIG BlueLine compressor control
- Compressor services



# RECIPROCATING COMPRESSORS



## FOR PROCESS GASES

Vertical and horizontal  
design according to  
customer specifications

With around 160 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 (turnkey solutions).

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 the 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 APPLICATIONS AND OPERATION

- Hydrogen applications
- Petrochemical industry
- Refineries
- Gas processing
- Fertilizer industry
- Power plant industry
- Steel industry





# INTEGRALLY GEARED CENTRIFUGAL COMPRESSORS

## FOR PROCESS GASES

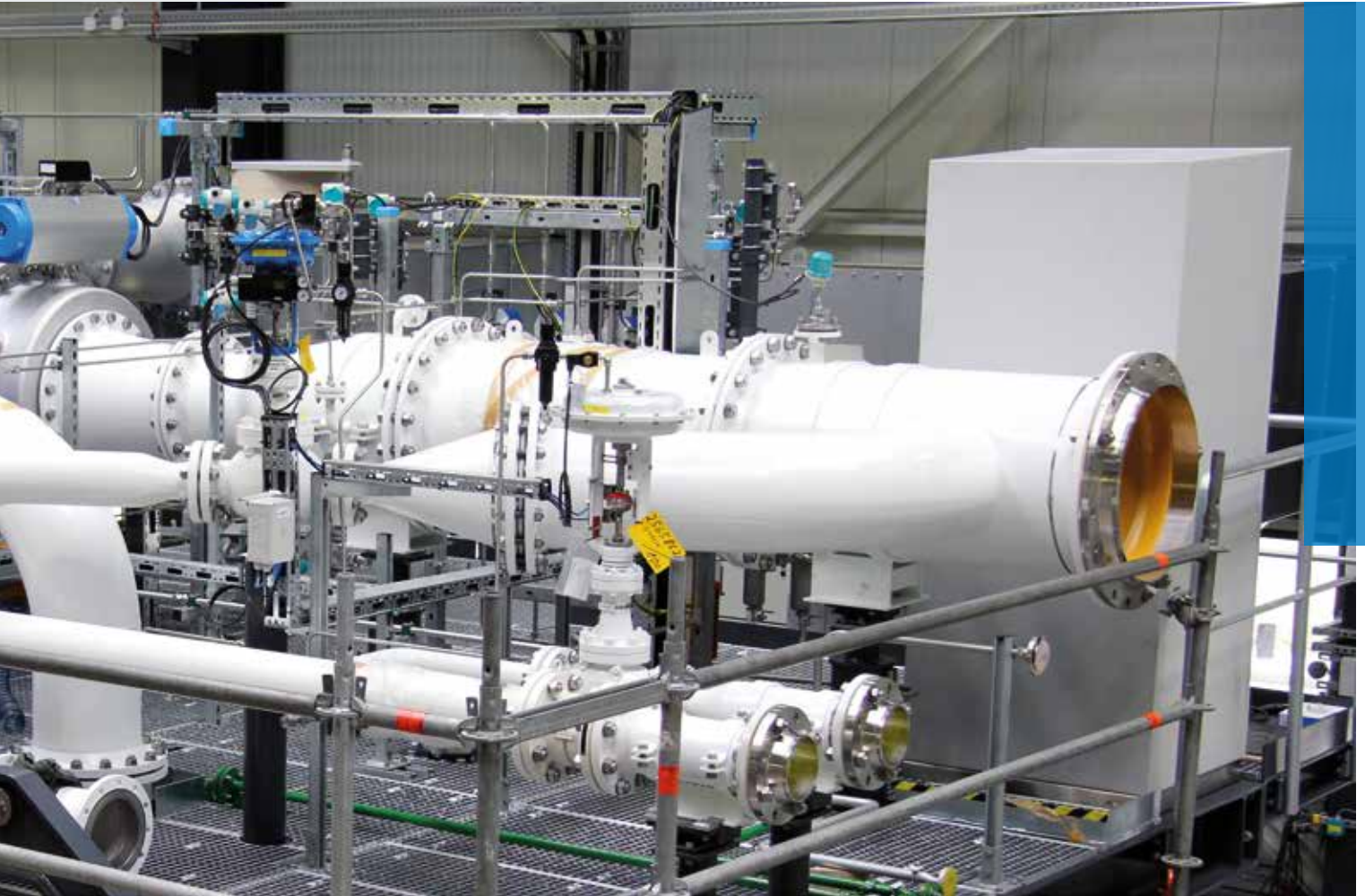
Single- and multistage  
radial design



With around 60 years of experience 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 multistage 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 the in-house test field.



We also offer complete performance tests according ASME PTC 10 on request.

#### POWER RANGES

Discharge pressure:  $p = (\dots 150) \text{ bara}$

Capacity/flow\*:  $V = (\dots 300.000) \text{ m}^3/\text{h}$

Power:  $P = (\dots 25.000) \text{ kW}$

\* based on atmospheric conditions and air



#### TYPICAL APPLICATIONS

- Petrochemical industry
- Refineries
- Gas processing
- Fertilizer industry
- Power plant industry
- Steel industry





# BORSIG BLUELINE



## COMPRESSOR CONTROL

The BORSIG BlueLine combines the compressor control (PLC), emergency shutdown (ESD) and machine protection (MPS).

Flexible compressor control is necessary to maintain efficiency under the changing operating conditions of compressors, surrounding system processes and environmental conditions. In addition to regular automation, modern plants increasingly require certified safety functions.

The BORSIG BlueLine combines the compressor control (PLC), emergency shutdown (ESD) and machine protection (MPS) in a modular automation system. For operators of reciprocating and integrally geared centrifugal compressors from **BORSIG ZM Compression GmbH** and other manufacturers, this means a reduction in hardware, software and engineering costs, as well as considerable savings in service and training costs.

BORSIG BlueLine systems enable the mixed operation of certified safety components (up to SIL3) with standard automation systems.

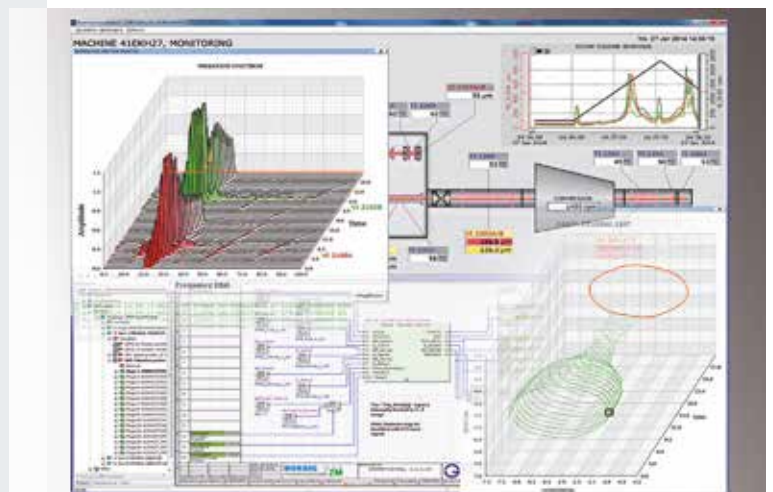
### FEATURES OF BORSIG BLUELINE

- Highest safety standards, certified up to SIL3 (IEC61508, IEC61511, IEC62061) and PL e and CAT 4 (ISO 13849, DIN 954) for open- and closed-loop control
- Highest system availability with up to three times the redundancy and the interchangeability of components during operation
- Mixed configuration of certified safety, measuring and control technology possible
- Integrated Machinery Monitoring System (MMS) and Machinery Protection System (MPS) (vibration monitoring)





- No strict separation of MPS, PLC and ESD necessary
- Full integration of all three systems PLC, MPS and ESD and availability as single modules
- Low space requirement and reduction of the usual interfaces
- Freely programmable with SIL3 certified function blocks
- Open communication interfaces: Open Modbus TCP, RTU Modbus and others on request
- Process visualisation system with integrated, high-resolution recording of process data and procedures



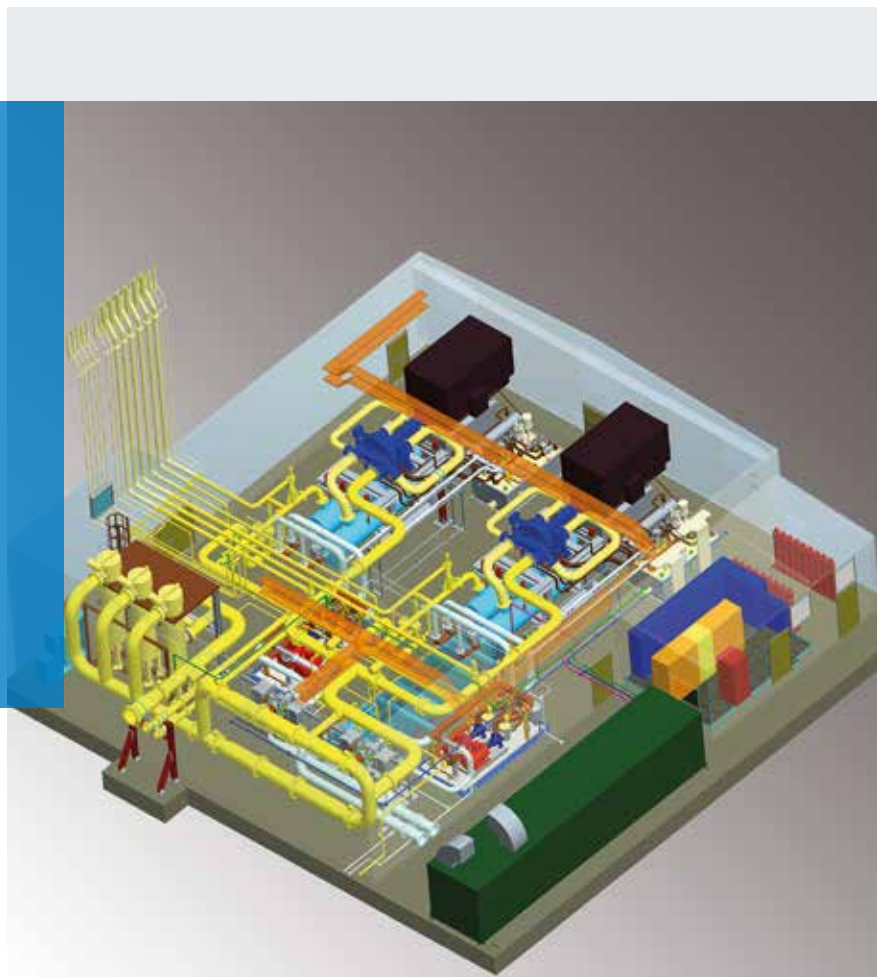
#### TYPICAL APPLICATIONS

- Anti-surge control, optimised for reciprocating and integrally geared centrifugal compressor systems with adaptive control line and static / dynamic final pressure limitation
- Surge detection
- Capacity and load distribution control
- Overspeed protection
- Vibration monitoring
- Simplex, Duplex and TMR systems
- Initial value alarm
- High-resolution data recording

# ENGINEERING

## OF COMPRESSORS

A high level of expertise, sophisticated technologies and flexibility

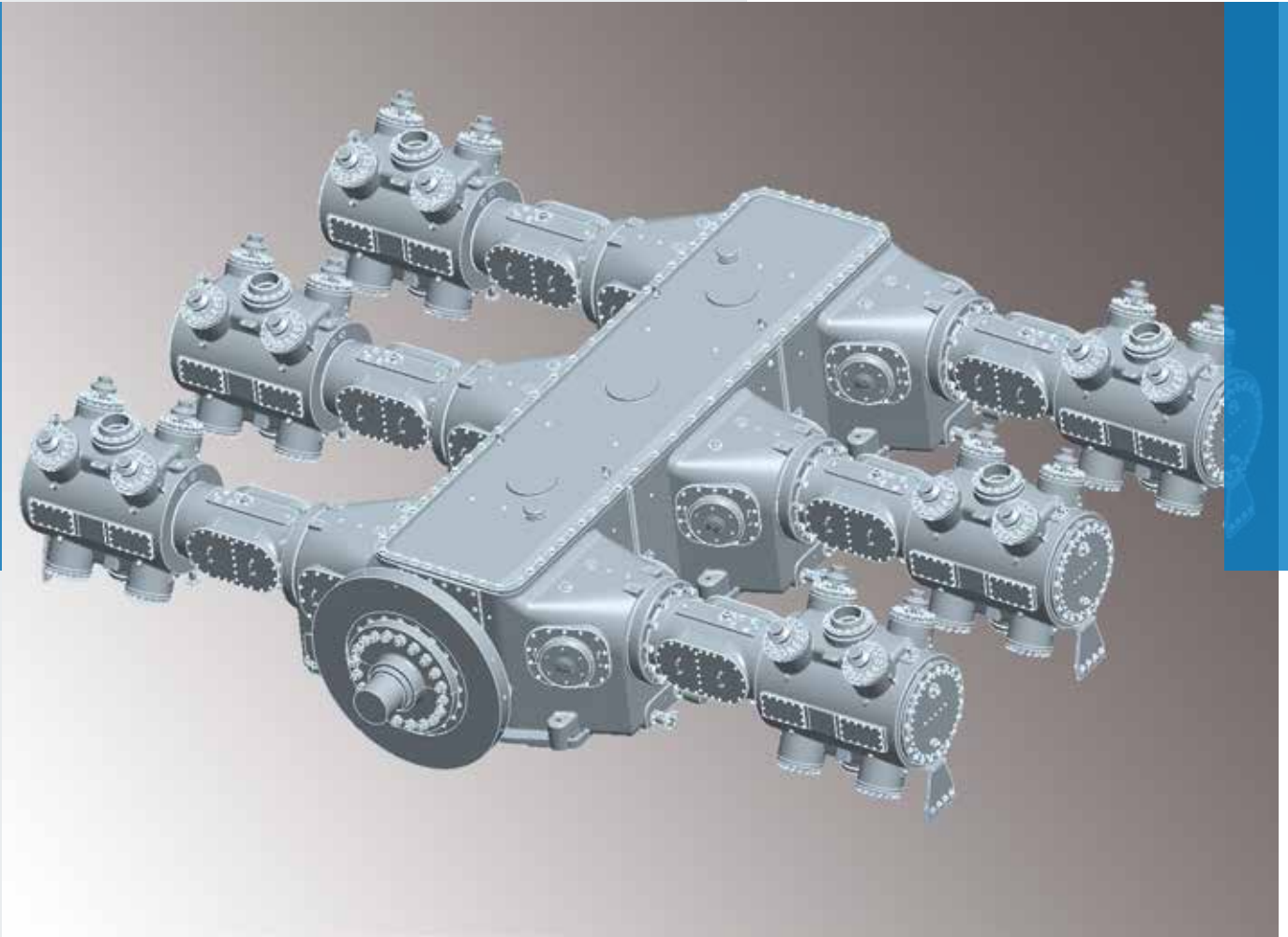


A high level of expertise, the adoption of sophisticated technologies and the flexibility and dedication of our highly skilled designers form the core of our successful engineering business.

**BORSIG ZM Compression GmbH** offers customized solutions based on the latest CAE and CAD software. BORSIG ZM uses a range of cutting edge 3D modeling 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.



# QUALITY



## OF BORSIG ZM COMPRESSORS

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 the SCC\*\* certificate (Safety Certificate Contractors).

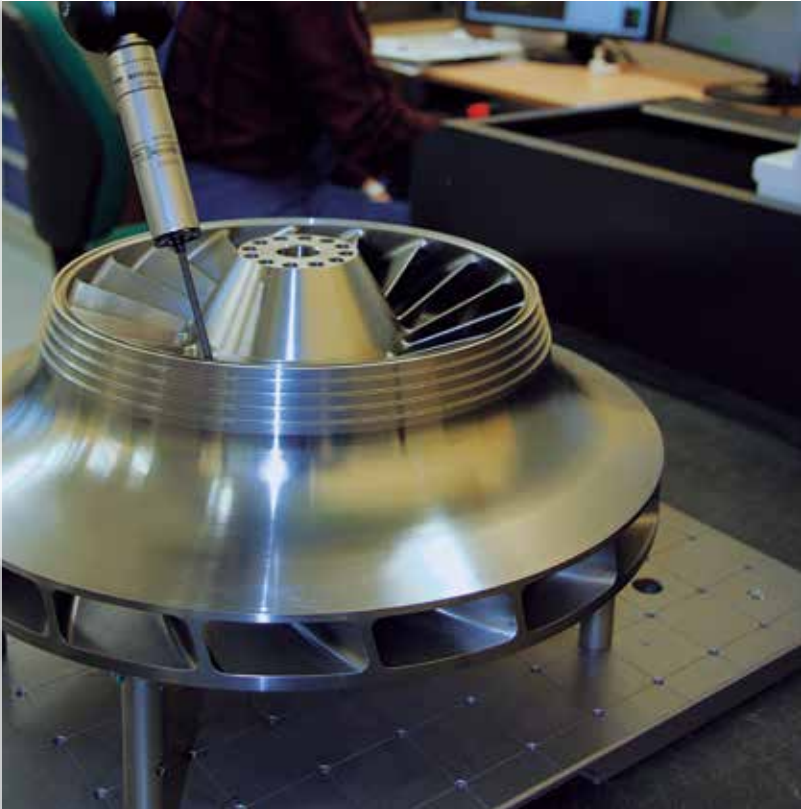
Competent engineering and comprehensive quality management guarantee the high standards of our products. BORSIG ZM applies modern portable measurement techniques such as laser trackers, scanners, index arms etc.

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

The Quality Assurance Team at BORSIG ZM runs 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 m<sup>2</sup>, 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.







# SERVICES

## COMPRESSOR SERVICES

for BORSIG ZM compressors and other brands



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





## PRODUCT PORTFOLIO

- Reciprocating compressors for process gases
- Centrifugal compressors for process gases

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.

A wide range of constantly available spare parts, together with short manufacturing times and high quality standards, guarantee minimal downtime for your compressor.

Emergencies demand short reaction times. BORSIG ZM's service staff is available to its customers worldwide, 24 hours a day, 7 days a week, 365 days of the year.

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# BORSIG

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