



Partner to the oil, gas and chemicals industry –
joined together in competence!

BÖLLHOFF

Böllhoff: **Your expert**

An iceberg floating in the ocean. The tip of the iceberg is above the water surface, representing visible costs. The much larger part of the iceberg is submerged below the surface, representing invisible costs. The water is a deep blue, and the sky is a lighter blue with some white clouds.

Direct (visible) costs

- Purchase price

Indirect (invisible) costs

- Maintenance
- Preventative maintenance
- Spare parts
- Energy/compressed air
- Tools
- Rejects
- Downtime costs
- Supply capability
- Defects in quality

for fasteners



Our core business is to cater for the wishes of our customers and help them cut costs. And we achieve this firstly with the help of logistics concepts, and secondly, thanks to our expertise in fastening technology.

From our experience in working on customer projects in the fields of plant construction and mechanical engineering, apparatus, vessel and pipework manufacture or measuring and control technology we know that it is possible to save significant sums throughout the added value chain by means of technical optimisation and standardisation.

Our expertise is wide-ranging and characterises our product range in every detail as regards the technological skills of Böllhoff's engineers. Quality is the top priority for us. As a strategic partner to our customers we contribute to their added value.

Safe and reliable fastening technology to protect man and the environment!

Quality guaranteed



The requirements of this sector are clear: High-performance materials such as high-alloy stainless steels, titanium or materials with nickel alloys, which satisfy even the most stringent quality standards. Catering for individual customer needs calls for extensive know-how and expert fastening technology.

This is why Böllhoff offers a wide product range of stainless steels, characterised by increased resistance to corrosion, high temperatures and chlorides.

Comprehensive advice with regards to procurement logistics and the quality of fasteners, allows significant process improvement and major cost savings to be achieved.



We don't leave good quality to chance. At Böllhoff quality is planned systematically. We want to satisfy the quality requirements of our customers – however high they may be.

We have always fulfilled the latest norms for quality and environmental management Böllhoff was one of the first companies to be successfully certified to ISO/TS 16949:2002

– the world's highest standard for the automotive industry. Böllhoff has its own accredited test laboratory certified to DIN EN ISO/IEC 17025, further proof of our strong commitment to quality and the environment. DIN EN ISO 14001 certification confirms that we use resources carefully and adopt an environmentally conscious approach in our work.

Customer benefits at a glance

Supply with the following certification:

- AD-W0
- AD-W2
- PED97/23/EC
- ASME

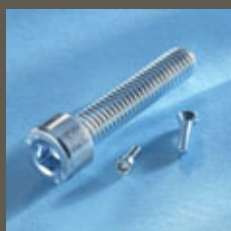
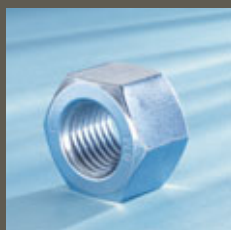
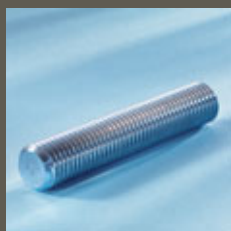
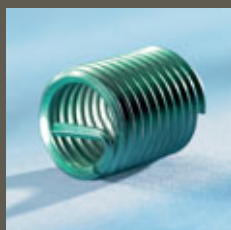
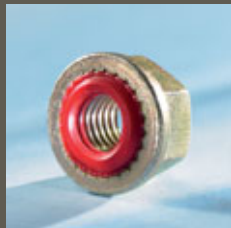
Cooperation with inspection / classification bodies:

- TÜV
 - DNV
 - Lloyds Register
- Quality management certified to ISO/TS 16949:2002









Stud bolts ANSI B16.5

- Available from stock and our own production
- In lengths of 3 metres or customised
- M 10 – M 42 and 1/2"-UNC – 1 1/2"-8UN
- In the materials A2 and A4 or ASTM A193/320 Gr. B8 and B8M Class 1 or 2
- European made raw material complete with EN 10204 3.1 test certificates
- Also available on request in other stainless steel and with multiple certification
- Also available with nuts fitted as a set

Joining together tight

SEAL LOCK® sealing nuts and screws for reliable sealing from gaseous and liquid media subject to high pressure

- One-piece component
- Captive seal
- Repeated usage possible

Thread strength

HELICOIL® thread inserts for thread reinforcement in lightweight materials

- Highly durable non-wearing thread
- Corrosion/temperature resistance
- High dynamic load capacity

Stud bolts DIN 976

- Available from stock and our own production
- In lengths of 3 metres or customised
- M 4 – M 52
- In the materials A2 and A4 or ASTM A193/320 Gr. B8 and B8M Class 1 or 2
- European made raw material complete with EN 10204 3.1 test certificates
- Also available on request in other stainless steel and with multiple certification
- Also available with nuts fitted as a set

Hexagon nuts ISO 4032 / DIN 934 (H=D)

- Available from stock or on short delivery times
- M 4 – M 52
- In the materials A2 and A4 or ASTM A194 Gr. 8, 8A and 8M, 8MA
- Also available on request in other stainless steel and with multiple certification (see table of materials)

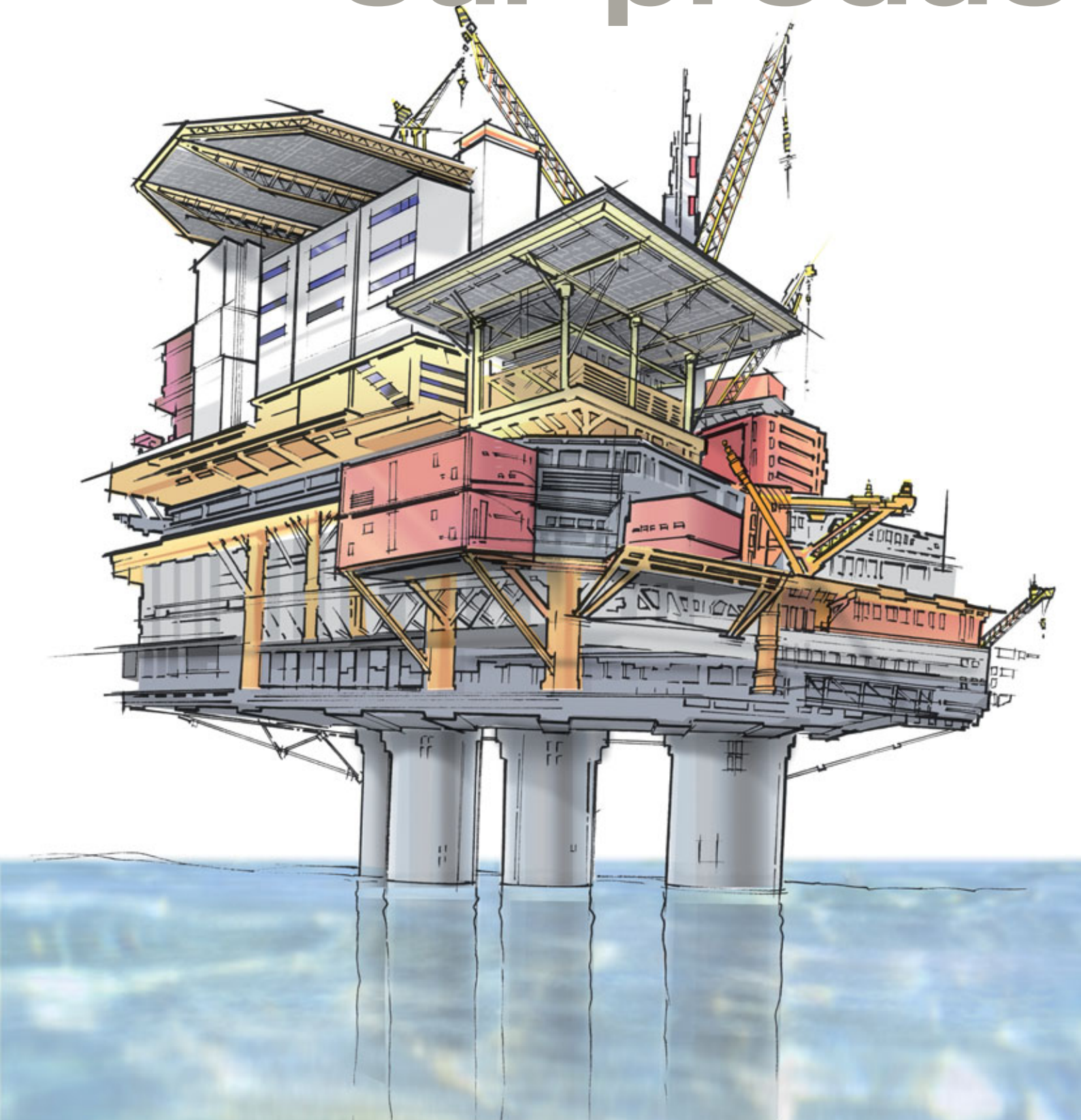
Hexagonal nuts ANSI B18.2.2 Heavy series

- Available from stock or on short delivery times
- 1/2"-UNC – 1 1/2"-8UN
- In the materials A2 and A4 or ASTM A194 Gr. 8, 8A and 8M, 8MA
- Also available on request in other stainless steel and with multiple certification (see table of materials)

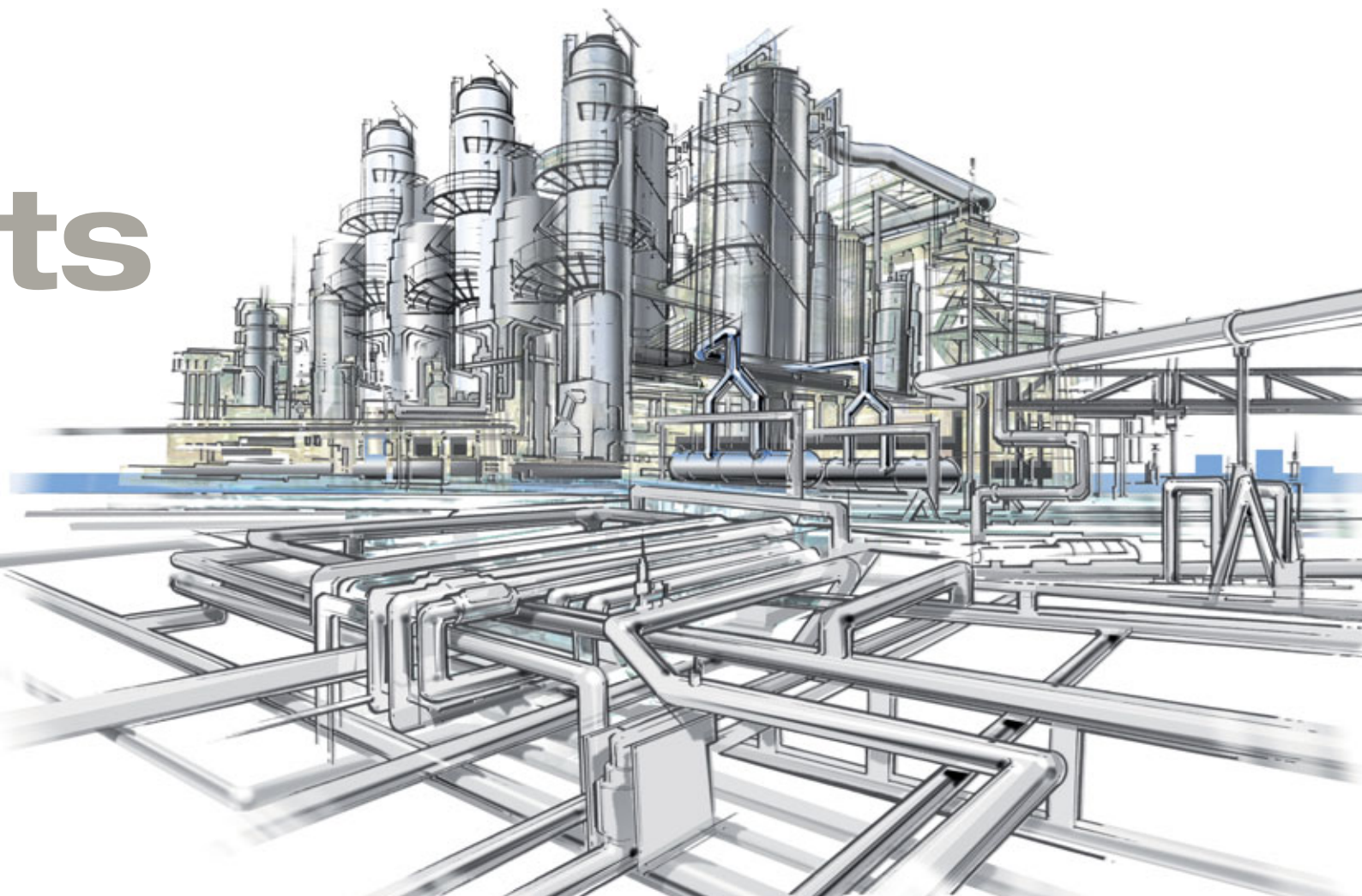
Standard Screws in DIN, ISO, ANSI

- Hex bolt, hexagon socket bolt with metric or imperial threading
- In the materials A2 and A4 or ASTM A193/320 Gr. B8 and B8M Class 1 or 2
- European made raw material complete with EN 10204 3.1 test certificates
- Also available on request in other stainless steel and with multiple certification

Your systems – our products



ts

**Table of materials**

ASTM	AISI	UNS	Material Code	EN 10088-3
A193 / A320 Gr. B8 Class 1	304	S30400	1.4301	X5CrNi18-10
A193 / A320 Gr. B8 Class 2	304 cold worked	S30400	1.4301 cold worked	X5CrNi18-10
A193 / A320 Gr. B8M Class 1	316	S31600	1.4401	X5CrNiMo17-12-2
A193 / A320 Gr. B8M Class 2	316 cold worked	S31600	1.4401 cold worked	X5CrNiMo17-12-2
A194 Gr. 8	304	S30400	1.4301	X5CrNi18-10
A194 Gr. 8M	316	S31600	1.4401	X5CrNiMo17-12-2
Alloy 304L	304L	S30403	1.4307	X2CrNi18-9
Alloy 316L	316L	S31603	1.4404	X2CrNiMo17-12-2
Alloy 321	321	S32100	1.4541	X6CrNiTi18-10
Alloy 316Ti	316Ti	S31635	1.4571	X6CrNiMo17-12-2
High temperature materials				
	310	S31000	1.4845	X8CrNi25-21
	314	S31400	1.4841	X15CrNiSi25-21
Special materials				
Alloy 904L (UranusB6)	904L	N08904	1.4539	X2NiCrMoCu25-20-5
A182 (Duplex)	F51	S31803	1.4462	X2CrNiMoN22-5-3
A182 (Super-Duplex)	F55	S32760	1.4501	X2CrNiMoCuWN25-7-4
Alloy 625 (Inconel)		N06625	2.4856	NiCr22Mo9Nb
B348 (Titan Gr.5)		R54600	3.7165	TiAl6V4
Alloy C276	C276	N10276	2.4819	NiMo16Cr15W
Hastelloy C22	C22	N96022	2.4602	NiCr21Mo14W
A564-89 17-4PH	630	S17400	1.4542	X5CrNiCuNb16-4
Alloy 17-4PH	360		1.4548	X5CrNiCuNb17-4-4

All materials are specially designed to meet the needs of the oil, gas and chemicals industry.

Other materials available on request, including ferritic or heat-treatresisting materials not mentioned in the table of materials.

All materials available with multiple certification and documentation acc. to EN 10204.

Special screws for special applications

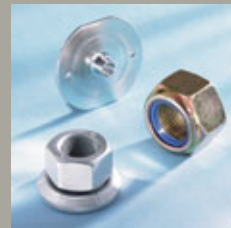
- Screws specially tailored to the oil, gas and chemicals industry
 - ASME and DIN/EN screws and special customised screws
- Studs as per DIN EN or also available with multiple certification as required by the customer (see table of materials)



The right nut for every application

Versatile nuts for versatile fasteners

- Self-locking nuts with non-metallic insert or all-metal version
 - Clip nuts
 - Washer nuts
- Nuts with captive washers



Technology and diversity for screws

- Customised and standardised screws
- Various stainless steel materials and dimensions
 - Custom-made



Washers and discs for every application

Height compensation or locking with standardised and innovative components

- Contact, spring and ring washers
- RIPP LOCK® and Nord-Lock® lock washers
 - Customised washers and discs



Large screws for demanding challenges

Screws especially for your applications

- Competence in heat-formed parts
- With transport guard on thread on request
- Screws with certificate documentation as per 3.1 and 3.2 EN 10204



RIPP LOCK® fastener retention

Locking washers / screws / nuts with mechanical screw retention

- Excellent at preventing self-loosening
- Specially designed for easily damaged surfaces
 - Perfect with slots



More than just fasteners

One-stop-shop for all C-parts to reduce number of suppliers and bundle competence

- Fastening materials, e.g. cable ties
- Hydraulic and pneumatic components
- Balls, sealing rings, bushings, springs etc.



Technical application con



Products of the oil, gas and chemicals industry are exposed to very extreme influences. The individual components have to cope with all kinds of weather, the continuous application of force as well as irregular loads and maintenance. This means that especially stringent demands are made on the fasteners used in this sector. This calls for comprehensive know-how about fastening technology and high-quality stainless steels.

Our customer consultants for application technology can advise on new designs or the optimisation of existing applications. The services offered here range from reducing numbers of parts to simplifying assembly.

Our priority is always to improve products while cutting production costs.



The ECOTECH (Economic Technical Engineering) service allows companies from the oil, gas and chemicals industry to benefit from applications advice from competent engineers. Their industrial know-how and advice from Böllhoff covers all areas of fastener technology, corrosion protection and screw retention. The simultaneous standardisation and optimisation of fasteners in the

development stage makes assembly easier and reduces tool costs. Given the ever faster technological development and the increased competitive pressure, this service offers the oil, gas and chemicals industry a crucial advantage.

sultancy service

Customer benefits at a glance

- Knowledge of future trends
- Innovation management thanks to in-house research and development
- Development partnerships with industry and research institutes
- Technical application consultancy service
- In-house prototyping and test facilities
- In-house test laboratory accredited to DIN EN ISO/IEC 17025
- Modern CAE technology



Case study

LESER GMBH

With over 700 staff, LESER is Europe's largest producer of safety valves and a global market leader in this sector. With a capacity exceeding 130,000 valves per year, production takes place at a modern plant located at Hohenwestedt, Germany. LESER safety valves protect both man and the environment in the fields of chemicals, petrochemicals, industrial gases, oil and gas production.

Starting point

The company was looking for a framework agreement supplier offering C-parts and special parts together with the relevant logistical services. It also wanted this supplier to supply special fasteners complying not only with Leser's works standards but also meeting ASTM and European materials standards.

Böllhoff's solution

Based on the special product range for the oil, gas and chemicals industry, Böllhoff and its supply partners worked closely with the departments concerned at Leser to come up with an individual framework agreement catering for the needs of the customer. This has already been in place for several years and is extended to include new products each time it is renewed

Logistics solutions



Quality and security of supply – these are the biggest challenges in energy management. Whether this involves further development of existing or brand-new technologies and processes: Companies in the oil, gas and chemicals industry are under great pressure to innovate while facing growing demand throughout the world.

This requires optimised material and information flows. Distribution systems for fasteners simplify processes, minimise stock levels, prevent supply bottlenecks and reduce costs.

Uninterrupted supply to the assembly lines is a key prerequisite here. Even just a missing or faulty fastener can bring production to a standstill.



Böllhoff is a leading international manufacturer and service provider for fastening and assembly technology.

The HQ of this family business, now in the fourth generation, is based in Bielefeld. Böllhoff operates on a global scale, with over 2200 employees and a network of companies and representatives on every continent.



Michael W. Böllhoff

Wilhelm A. Böllhoff

BOGE COMPRESSORS

Whether screw or piston compressors, complete installations or individual units – BOGE from Bielefeld can satisfy a whole range of requirements and the highest demands. Following presentation of the RFID technology and registration of BOGE's requirements the multibin system was then replaced by the RFID Bin System at the company's production site in Bielefeld.

ECOSIT® RFID BIN

All relevant part data are stored on the RFID tags of the container labels. Once a container is empty, it is immediately placed in a collection box. The antenna above this bin reads the data on the RFID tag and transmits it to Böllhoff's ERP system. As this process only takes a few seconds and does not involve manual intervention, the delivery process

Customer benefits at a glance

- Worldwide supply
- 24-hr service
- Classical supply to the incoming goods department
- Single or multibin system
- RFID technology
- Quality management certified to ISO/TS 16949:2002
- Environmental management certified to DIN EN ISO 14001
- In-house test laboratory accredited to DIN EN ISO/IEC 17025
- Successful cooperation with leading companies in the oil, gas and chemicals industry



becomes significantly faster and more flexible.

New goods are always supplied in a clean bin.

All bin data can be viewed online at any time and subjected to analysis. This ensures 100% transparency for all goods movements and consumption levels.

Böllhoff International with companies in:

Argentina
Austria
Brazil
Canada
China
Czech Republic
France
Germany
Hungary
India
Italy
Japan
Korea
Mexico
Poland
Romania
Russia
Slovakia
Spain
Switzerland
Turkey
United Kingdom
USA

Apart from these 23 countries, Böllhoff supports its international customers in other important industrial markets in close partnership with agents and dealers.



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