



Partner of the agricultural machinery industry –  
expertise unites!

**B'OLLHOFF**

# Böllhoff: **Your agricultural machinery expert** for fastening technology

## **Editorial**

Agricultural machinery engineering is one of the oldest and most important industries of mankind. Characterised by a high innovative ability, the requirements of an up-to-date as well as efficient food production must be met at all times.

Over the past years, agriculture has become increasingly important. As a result of the continuous discussions on environmental issues, apart from the classic role as a food supplier, this sector is now as well regarded as an important energy supplier. The degree of technologisation is of decisive importance and requirements for production are accordingly high.

Böllhoff is a leading system supplier and international service provider for fastening and assembly technology; and as such is a recognised partner to agricultural machinery manufacturers and their suppliers. Be it screws, rivets, clinches or C-parts management – the Böllhoff name stands for innovative and reliable solutions.

**Read the following pages and be inspired.**

## **Fascination**

## **Dynamism**

## **Innovation**



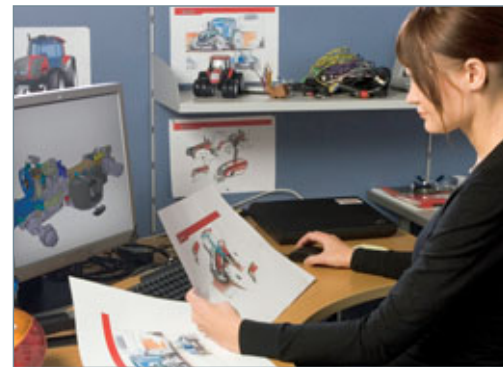


# Your value-added chain



Global competition in the agricultural machinery industry results in high costs and innovation pressure. Therefore, it is innovative ability and technical potential that are the basis for agricultural machinery manufacturers' and suppliers' chances of success. The acceleration of technical progress as well as the satisfaction of customer needs lead to an ever advancing technologisation and to a growing variety of versions.

Moreover, on the supplier side, there is an increasing focus on intercompany cooperation in forms of strategic partnerships aiming at an improved competence in the fields of development, production and logistics.



Research and development

Page  
06 | 07



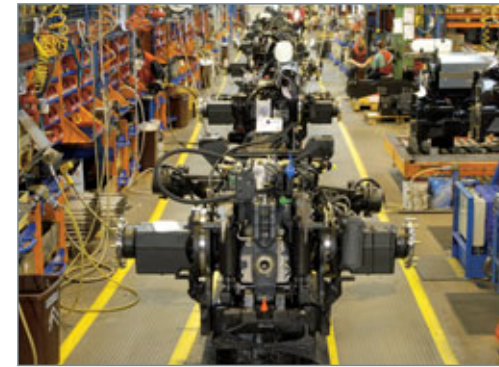
Your modules ...

Page  
10 | 11



... our products

Page  
09 | 12



Purchasing and logistics

Page  
14 | 15



Production and assembly

Page  
16 | 17



Quality and internationalism

Page  
18 | 19

## Diversity as routine

As a provider of complete solutions and systems, Böllhoff offers products and services for all areas of the agricultural machinery value-added chain. Customer orientation begins with research and development.

With its C-parts management, Böllhoff delivers products and fasteners to the heart of the production process. There, customised equipment and machines designed according to the Böllhoff portfolio, ensure high efficiency. Optimised processes avoid downstream costs.

Our partnerships are based on an uncompromisingly high quality standard and a corporate culture imbued with the spirit of a family business.





# Research and development



The task for the manufacturer to develop a technology for farmers as well as for contractors which corresponds to individual requirements and to the requirements at the individual locations is both a challenge and a risk. At the same time shall agricultural machinery be perfectly useable for all kinds of soil and in all kinds of changing climatic conditions.

Optimised fastening and assembly processes are often the key to realising modern material and composite construction concepts.

That is why Böllhoff is positioned as a recognised service provider and system supplier with a comprehensive service competence in the field of fastening and assembly technology.



The ECOTECH service (Economic Technical Engineering) allows agricultural machine manufacturers and suppliers to benefit from technical advice from Böllhoff engineers. Their industrial know-how and advice covers all areas of fastener technology, corrosion protection and screw retention. The simultaneous standardisation and optimisation of fasteners in the

development stage simplifies assembly and reduces tool costs. In view of the ever faster technological development and the increased competitive pressure, this service is a crucial advantage in the agricultural machinery industry.

## Case studies

### RAUCH

Böllhoff organised a customer fair on the factory premises of RAUCH. There, services, products and systems adapted to the specific customer needs were presented. Many of the RAUCH employees could acquire information about the current developments of the fastening technology and as well as new impulses and solutions for their work. Apart from that, the

Böllhoff experts held a presentation on the optimisation potential of fasteners and assembly processes employed by RAUCH. The basis for these results was the analysis of processes carried out in a line walk on the day of the presentation in the company production facilities.

## Customer benefits at a glance

- Awareness of future trends
- Innovation management thanks to in-house research and development
- Development partnerships with companies and research institutes
- Individual application-based advice
- In-house prototype construction and testing grounds
- In-house test laboratory accredited to DIN EN ISO/IEC 17025
- Modern CAE technique



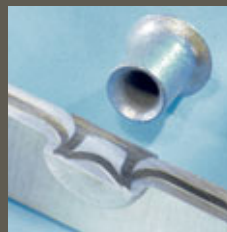
### CASE NEW HOLLAND

Agricultural machines are exposed to strong vibrations. RIVKLE® blind rivet nuts are a well-proven solution to fasten a highly stable thread on thin-walled sheet metals, without cutting a thread or rework a thread. Coated sheet casings stay undamaged.



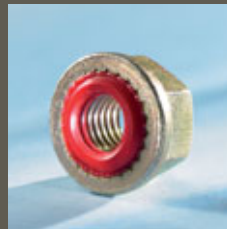






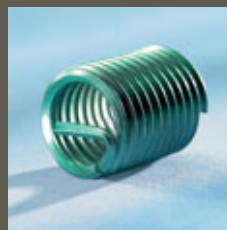
### Self pierce riveting instead of spot welding?

- RIVSET® high strength, reliable fastening of steels, aluminium and plastics
- Particular suitable for hybrid joining
  - High dynamic strength
  - Form- and force-closed



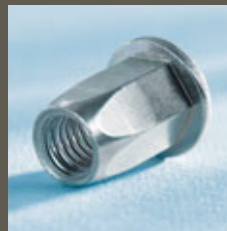
### Tight connections needed?

- SEALLOCK® sealing nuts and screws for reliable sealing against gaseous and liquid media under high pressure
- One-piece component
  - Captive seal
  - Several screwing-unscrewing cycles possible



### Thread strength?

- HELICOIL® thread inserts for thread reinforcement in lightweight materials
- High-strength wear-free thread
  - Corrosion and temperature resistant
  - High dynamic load capacity



### Thin-walled components?

- RIVKLE® solution for fastening a load-bearing nut or bolt thread to a thin-walled workpiece
- Load-bearing thread
  - "Blind" assembly
  - Tightness, e. g. due to seal below the head



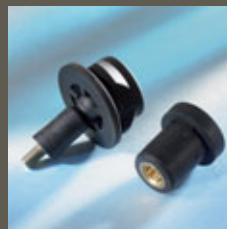
### Thread in plastics?

- AMTEC® metallic inserts for thread reinforcement for plastic components
- Shorter injection cycles
  - Low-stress tight-fit
  - No relaxation



### Easy adjustment of tolerances?

- FLEXITOL® systems for automatic compensation of differing production tolerances
- Easy integration into customer components
  - Assembly from one side



### Vibrations and noise?

- SNAPLOC® and RIVKLE® elastic fasteners and fixing systems for absorbing vibration and noise transfer
- Fast and easy assembly
  - Reduction of parts
  - Adaptability due to adjustable parameters

# Your modules – our products

Electrical / Electronic equipment

Motor / Aggregates

Cabin / Exterior

Interior

Hydraulic system

Running gear

Drive / Gear box



### Special screws for special applications?

- Screws specially tailored to the agricultural machinery industry
- DIN and standard screws as well as special screws with various drives and head shapes
  - Cr(VI)-free coatings



### The right nut for every application?

- Versatile nuts for versatile fasteners
- Nuts with plastic rings or metal lock rings
  - Clip nuts
  - Washer nuts
  - Nuts with captive washer



### Technology and diversity for bolts?

- Customised or standardised bolts
- Various materials and geometries
  - Individual shape, size and type
  - Head bolts, welding studs, threaded bolts, etc.



### Washers and discs for every application?

- Height compensation and underlay with standardised and innovative components
- Contact, spring and ring washers
  - RIPP LOCK® and Nord-Lock® locking washers
  - Customised washers and discs



### Large screws for complex challenges?

- Screws with various coatings and strength levels
- Competence in heat-formed parts
  - Transport guard on thread on request
  - Screws with certificate documentation as per 3.1 and 3.2 EN 10204



### Permanent and secure fastening?

- All types of fastener with a wide range of clamps
- Hose and pipe clamps
  - Fastening clamps
  - All variants and materials



### 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.



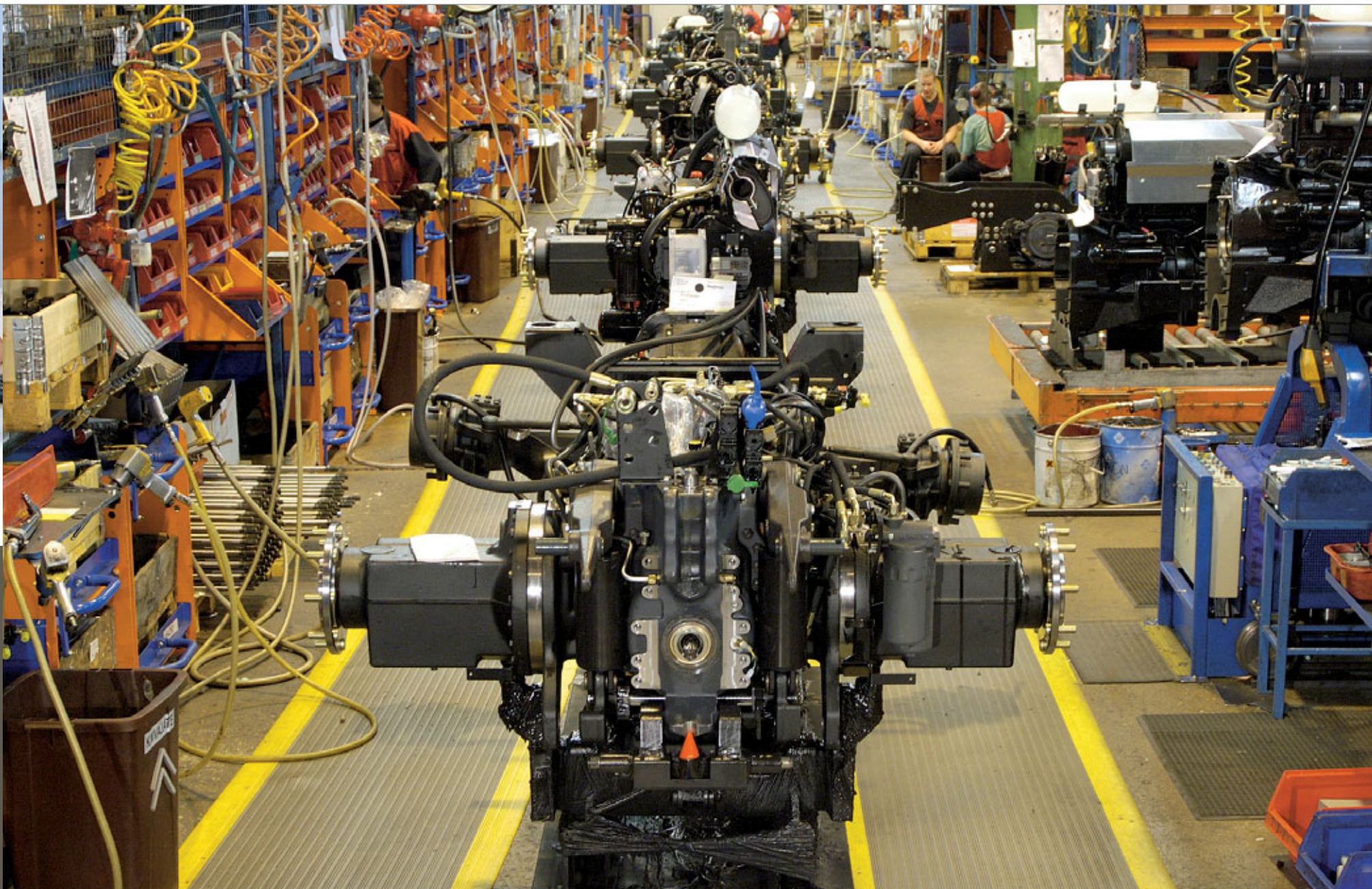


# Purchasing and logistics



Innovative ability and flexibility are two of the biggest challenges for the agricultural machinery industry. The market is subject to considerable fluctuations and high competitive pressure. The growing model diversity and the increasing degree of equipment contribute to a rise in production individuality. This requires an optimisation of material and of information flow. C-parts management systems simplify processes, minimise stocks, avoid supply shortages and reduce costs.

There must, of course, be an uninterrupted supply to the assembly and maintenance lines. Even just a missing or faulty fastener risks bringing production to a standstill.



Under the name ECOSIT® (Economic Supply in Time) Böllhoff has established a supply and stocking system – for added efficiency and cost effectiveness. Böllhoff manages the entire supply chain for its customers: material planning, buying, quality assurance, storage and the internal distribution of goods, right through to the production and maintenance area.

ECOSIT® makes processes in the agricultural machinery industry permanently more reliable and simple – by reducing the number of suppliers and ensuring 100% supply capability.



## Case studies

### SAME DEUTZ-FAHR

At regular intervals, the numerous unloading points in the customer's production are supplied with the most different DIN parts, parts as per drawing, fastening technologies of our own production as well as with other C-parts. Thanks to the ECOSIT® procurement system, logistic and administrative processes could be significantly reduced.

### Supply systems with RFID technology

RFID (radio-frequency identification) is used whenever automatic detection and monitoring is required. RFID technology established itself in the automotive industry years ago. In the private sector the best-known applications include vehicle immobilisers, lift passes and the anti-theft tags used in stores. Now you can also take advantage

## Customer benefits at a glance

- Improvement of internal processes
- Reduction in supplier diversity
- Re-assignment of planning, scheduling and procurement
- Reduction in administrative effort
- Reduction in stocks, storage space and capital commitment
- 100% supply capability
- Standardisation and optimisation of C-parts





# Production and assembly



Up to 50 percent of the added value of an agricultural machinery are produced by suppliers. Yesterday's part suppliers are now establishing themselves as specialists in cooperations or develop to become system suppliers. The complexity of agricultural machinery today requires cross-company cooperation. New business models will considerably change the cooperation within this industry. Modern electronic media are becoming increasingly important for the coordination of tasks based on the division of labour.



Böllhoff's flexibility and innovative strength is reflected in its wide range of fastening and assembly products for the production and modernisation of the agricultural machinery industry: screws, nuts, thread inserts, quick-release fasteners, rivets, standard and custom-made parts in all the required dimensions and materials. All fasteners and their processing

systems are carefully coordinated. Production and modernisation processes can also be optimised with Böllhoff's innovative screw and joining systems.

## Case studies

### CLAAS

For fully automatic screwing of conveyor chains for all series of combine harvesters, CLAAS employs the UNIQUICK® Vario screw system by Böllhoff. This stationary screw system is equipped with an automatic screw feed system in multi-spindle design. Per conveyor plate, two fasteners are simultaneously screwed. At CLAAS, the entire assembly process benefits

from the reduction in assembly times and costs, from a wear-free operation thanks to maintenance-free guides and drag chains, from the high process reliability ensured by the automatic feed system, from controlled screwing and from the completeness check system.

### JOHN DEERE

HELICOIL® locknuts with integrated HELICOIL® screwlock allow repeated and quick assembly and disassembly of the steering wheel in agricultural machinery for repair and maintenance. Moreover does the clamping effect of the HELICOIL® screwlock inhibit accidental loosening of the joint.

## Customer benefits at a glance

- Short production and assembly times
- Established knowledge of the agricultural machinery industry
- Recognised production planning know-how
- High level of development expertise
- Wide product range
- Customer-specific solutions





# Quality and internationalism



The Böllhoff quality management is certified according to ISO/TS 16949:2002. This means a strict orientation towards the zero-defect philosophy: Continuous improvement is a constant process. Apart from that, for more than 130 years, the Böllhoff Group has proven to be a flexible and fast-working independent family business. This independence will also in the future be the pacemaker for the further development of the company. Experience creates trust. Values create connections – Joining together!



Böllhoff is one of the leading international service providers of fastening and assembly technology. The headquarters of this family business, with four generations of history, is in Bielefeld. Böllhoff is a worldwide operating company with over 2200 employees and a network of companies and representatives on every continent.



Wilhelm A. Böllhoff

Michael W. Böllhoff

## Case studies

### Agricultural machinery industry worldwide

The different soils and climatic conditions characterise the different agricultural products and developments of the individual countries on our planet. To meet the specific requirements and needs of these regions, more and more companies operate as agricultural machinery manufacturers and suppliers on a global scale.

However, to be able to have worldwide success, all available resources on this planet must be used efficiently. With Böllhoff as a partner, numerous international production facilities of agricultural machinery manufacturers and suppliers are optimally supplied with a comprehensive range of products and services – worldwide!

### Customer benefits at a glance

- 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 agricultural machinery manufacturer
- Cross-national presence



### Brazil

Brazil is among the most important agricultural regions worldwide. That is why many agricultural machinery manufacturers and suppliers have positioned themselves there. Thanks to the local subsidiary of Böllhoff, these manufacturers, among them JOHN DEERE, AGCO and CNH, benefit from a comprehensive range of services.



**Böllhoff International with companies in:**



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



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Böllhoff Group  
Archimedesstraße 1–4 · 33649 Bielefeld · Germany  
Phone +49 (0)5 21 / 44 82 - 01 · Fax +49 (0)5 21 / 44 93 64  
[www.boellhoff.com](http://www.boellhoff.com) · [info@boellhoff.com](mailto:info@boellhoff.com)

