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BOSSARD
Proven Productivity

A piece of history comes to an end

No. 740 | DECEMBER

Bossard News

EDITORIAL

Dear customers,

I am filled with a bittersweet mixture of emotions as I write the last few words of this edition. With a sense of accomplishment and a touch of nostalgia, we say goodbye to the pages of our much-loved Bossard News – also known as BOMI. BOMI has accompanied us over a significant portion of our company's 192-year history. For us, it was more than just a publication. It was a bridge between us and you, our esteemed customers. The content in each edition of BOMI has been guided by our shared journey toward creating added value, introducing new solutions and services and our shared goal of making you – and therefore us as well – that little bit more competitive each and every day.

However, the journey is not over – quite the contrary. We have adapted the format and will continue to stay in contact with you in the future by means of various different media to keep you in the loop with what's happening at Bossard, technical solutions, the Smart Factory and other topics, and will strive to strengthen dialog both personally and digitally. At this point, I would sincerely like to thank everyone who was involved in putting BOMI together over the years. Even more, I would like to thank you, our beloved customers, who have taken the time to read what we have written in each edition.

We look forward to writing a new chapter and building new bridges to foster contact and lively discussions.

We would like to thank you for your trust over the past year; we wish you a relaxing holiday season, lots of energy and we look forward to working with you in the new year!

PETER KAMMÜLLER
General Manager, Bossard Switzerland

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PDF

Online

The PDF edition of Bossard News is available online at: www.bossard.com

A WORD FROM US

You are currently reading the very last edition of “Bossard News”

Yes, you read that right. We have decided not to carry on with our “Bossard News” (BOMI) publication. After 740 editions, our customer magazine is closing its pages and being consigned to the company’s history.

BOMI has been a key communication channel to you, our valued customers, over many decades. Even a trip to the dusty archive did not reveal when edition no. 1 was published, and it is said that only a few members of the Bossard family were privy to the magazine’s founding. Today, we look back on the early days with some memories from the past.

We have attempted to inform you of the importance and allure of our industry with fascinating articles on fastening technology, news from the fields of engineering and logistics, as well as concise editorials. Readers clearly expressed that they prefer to receive information digitally in a survey published in BOMI 738 (the June 2023 edition) – and we are more than happy to deliver. We will be doing something good for the environment, too. So the time has come and we are closing this chapter.

However, we will not stop reporting on the world of fastening technology – not by any means. But, from now on, we will be using the following digital channels to do so – and we invite you to join us there:

Bossard LinkedIn
Switzerland

Bossard newsletter
Short, sweet and up to date: news six times per year

Bossard website
Read the likes of our customers' success stories

We would love to see you there. Until then, we would like to sincerely thank you for your loyalty – and hope you enjoy flicking through this final edition.

ENGINEERING

Assembly Technology Expert

PRELOAD FORCE IN SCREW JOINTS

How accurate are the most common screw tightening procedures?

There are many ways of tightening a screw joint depending on the tools used and the fasteners' mechanical properties. We are going to take a look at the most common procedures in the industry today and the effects they have on the key objective: the preload force.

Why is correct screw joint tightening important in the first place?

The screw's ability to do its job depends on the preload force applied during tightening. The use of torque is just a means to an end and is subject to numerous influences that could cause large deviations. How large these deviations are is recorded in the likes of VDI 2230 (a guideline for calculating highly stressed screw joints) and specified with the factor "alpha A" (α_A) and according to the tightening procedure. The larger this alpha A value is, the more imprecise the tightening procedure.

The influence of friction

Friction has a huge impact on the preload force. For example, it acts between the screw surface, the component and the washer, in the thread on a nut or in the finished thread on the component. This friction is distributed widely and depends on the surface quality, the lubrication, the material and so on. It can result in large deviations from the planned preload force. You can find more on the topic of friction in Bossard News no. 737 from March 2023.

Let's take a closer look at the most common tightening procedures used in the industry today.

Hand tightening

During hand tightening, screws are tightened with a tool in an uncontrolled manner according to "what feels right" (see graphic, area A). This varies depending on the person and over the course of a day, meaning that the screw may not be tightened enough or may be tightened too much. This procedure has inherent risks, as it is not possible to control how much the screw is tightened.

Conclusion

Preload force result	Extreme distribution
Technical effort	Low

Tightening with a torque wrench

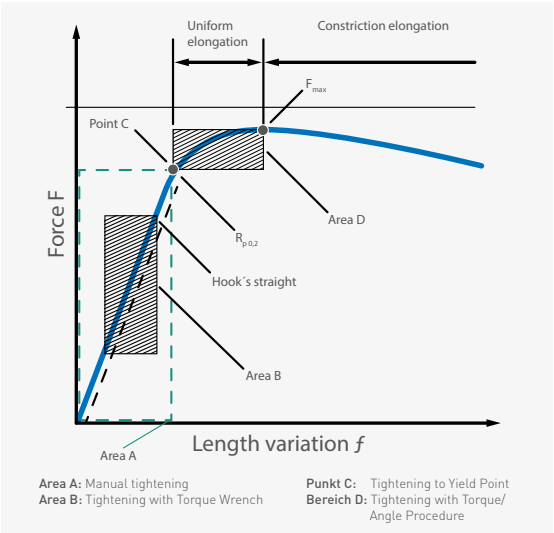
You can achieve a higher level of precision when tightening with a torque wrench than you can with hand tightening (see area B). The wrench emits a signal and a visual, acoustic or motion indication to show that the desired torque has been achieved. However, this can give people a false sense of security, as friction factors also come into play here – just as they do with hand tightening. So the torque has to be coordinated to factors such as the surface, lubrication condition and so on. If this is not the case, deviations in the preload force occur, and this is something that has a significant impact on the product function in turn.

Operation by employees is also key, as, according to the type of tool, it depends how you hold it in your hand, how you operate it, how you adjust it and what dynamics are used for tightening – to name just a few of the influencing parameters.

The tools themselves generally work with a very high level of precision and have a distribution of 4 to 6% depending on the type and standard. However, the employee can cause an up to 50% level of inaccuracy in the preload force through improper handling. Precise employee instruction is advisable to ensure that these kinds of precision tools are used correctly. Training in accordance with the state of the art is required as per ISO 9001 and the Machinery Directive.

Conclusion

Preload force result	Large distribution possible
Technical effort	Low



Tightening to yield point

Tightening to the yield point generally involves using an electronically controlled tool to tighten the screw to its maximum load limit. This has benefits in terms of screw utilization – as it is truly working at its maximum – and is ideal for screw joints (see point C in the graphic). However, it is important to bear in mind the surface pressure and the load on the components in this case. The benefit of this procedure is that tightening to the yield point is independent of friction. The electronic screwdriver detects a deviation (lead deviation from Hooke's law as a result of the torque and angle of rotation) and switches off automatically. The tool must be fixed to be able to use this procedure correctly and to ensure that no angle deviations that would lead to incorrect results occur.

Conclusion

Preload force result	Very low distribution
Technical effort	High

Combined torque and angle of rotation procedure

The combined procedure taking into account torque and angle of rotation is also independent of friction and enables tightening to the screw's yield point or uniform elongation range (see area D). This means that the maximum screw preload force is also achieved here. However, the initial effort required for this procedure is somewhat greater. A series of tests, as far as possible with the original components, must be carried out here to determine the correct values for the torque and the angle of rotation to be applied.

Firstly, a torque that generates approx. 1/3 of the preload force to be expected is applied. This ensures that the components to be clamped lie firmly on top of one another. The screw is then further tightened using the angle of rotation previously defined in the test. Angles of rotation of 60°, 90°, 120°, 180° and 270° are generally used here. The screw is tightened by means of the thread pitch and the angle of rotation, by means of which the relevant screw elongation is achieved. The screw is tightened up to the uniform elongation range here. You can find more details in the editions 712 and 713 from 2016.

Conclusion

Preload force result	Very low distribution
Technical effort	High

Only some of the influencing parameters for the procedures described are mentioned here – there are many others. The information and parameters listed here are not exhaustive and must be checked precisely in each individual case before use.

Would you like to expand your knowledge of screw joints?

Then take a look at our online Bossard Academy – you can find various courses with additional information on the topic there.

SCAN ME

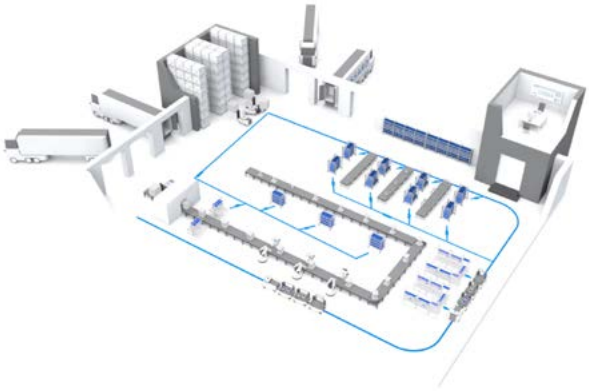
Do you have any questions about the range of training courses we offer?

SCAN ME


Smart Factory
Logistics

LAST MILE MANAGEMENT

How can you overcome challenges in internal logistics?



In the complex world of internal logistics, the "last mile" of the material's route from the central warehouse locations to the assembly work stations plays a crucial role. Needs-based and efficient material supply are essential here to ensure that last mile management (LMM) is optimally supported.

Frequent scenarios

- **Challenge:** material flow optimization
  Our solution: LMM ensures a seamless flow of material to the assembly line. It optimizes routes and coordinates smooth transportation of materials for more efficient production.

- **Challenge:** reducing unnecessary distances to be walked
  Our solution: LMM can be used to identify and eliminate unnecessary distances to be walked. You save time and money and your internal logistics operations run more efficiently.

- **Challenge:** transparent inventory management based on real-time information.
  Our solution: LMM provides precise data on material consumption at each individual assembly work station – in real time. Thanks to this information, your inventory management team always has an overview of material requirements.

- **Challenge:** speeding up ordering and delivery processes
  Our solution: LMM enables you to adapt your ordering system to the unavoidable fluctuations in material requirements. You can take proactive action, minimize waiting times in the delivery process and therefore contribute to ensuring more efficient production operations.

> ***"The distances the assembly staff have to walk have been reduced by at least 13% since last mile management was implemented."***
>
> *Isabelle Ebert, Continuous Improvement and Quality Expert at ABB*

- **Challenge:** adapting internal logistics in the event of changes
  Our solution: manufacturing companies are in a constant state of change. LMM offers the flexibility required to seamlessly implement changes and adjustments to the material flow. Your assembly operations will get back up and running at their usual speed in no time.

The example of ABB, a global tech firm operating in the field of electrification and automation, illustrates the positive impact that last mile management can have. Implementing LMM in Production has resulted in faster processes and significantly cut process costs when dealing with C-parts. The improved material flow impacts the entire production chain and plays a role in ensuring a lasting increase in efficiency.

Would you like to learn more about our last mile management solutions?
www.bossard.com

SCAN ME

PRODUCTS

Product Solutions

BIGHEAD®

Fastening solutions for embedding and surface bonding

The bigHead® fasteners stand out from the crowd of other products due to their ingenious design and diverse potential uses. They consist of a fastener such as a threaded pin, a threaded bush or a pin and a wide head for distributing the load.

The potential uses are virtually limitless and range from securing connection terminals and other electronic components in large battery casings to fastening components in a wind turbine's nacelle.

How are bigHead® fasteners used?
There are two ways to install bigHead® fasteners:

Installation during the manufacturing process

This is a particularly efficient alternative in which the bigHead® fasteners are integrated directly during the parent component manufacturing process.
A separate work step for installation is no longer required, which has a positive impact on throughput in production. (Illustration 1 and title image)

Retrofitting

In this variant, the bigHead® fasteners are mounted to the surface of a parent component (usually by means of an adhesive connection) once the manufacturing process is complete. The major benefit of retrofitting lies in the opportunity to adapt to an extremely diverse range of material types and component designs, ensuring maximum versatility and flexibility. (Illustration 2)

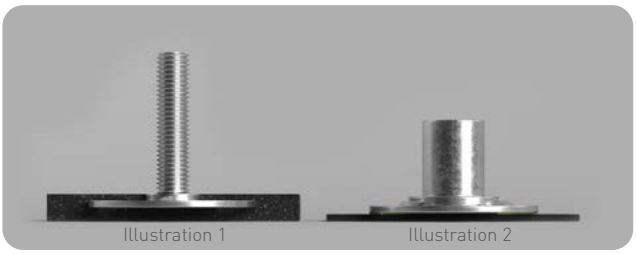


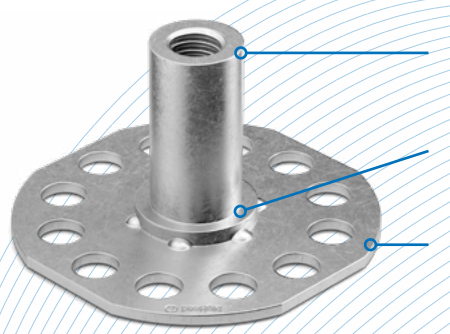
Illustration 1 Illustration 2

What benefits do bigHead® fasteners offer?
bigHead® fasteners are specifically designed for use with composite materials and plastics. The benefits for you include:

- Hidden fastenings
- Fastening of thin materials
- Maximum load distribution
- Secure and repairable connection points

Designed together!

With bigHead® by your side, you save both time and money – whether you are planning a product or testing innovative variants and installations. We are far more than just a fasteners manufacturer and support you as a partner throughout the design process – until your requirements are met. Our expertise in composite materials and the high level of production flexibility will ensure that your project is a success. With bigHead®, you don't just create fastenings – you develop innovations too.



E-SHOP

VIDEO

LEVELING FEET

Hidden heroes in fastening technology

Leveling feet are an indispensable yet often overlooked element of fastening technology. The small components – also known as leveling mounts – play a key role in ensuring the stability and safety of machines, device housings and other objects.

Leveling feet consist of a foot section generally made of plastic or metal and a threaded pin screwed into the foot section. The threaded pin enables you to individually adjust the height of the leveling foot and therefore ensure that the object is optimally aligned. By doing so, you can therefore compensate for unevenness and create a solid foundation for a variety of applications.

Critical advantages for versatile applications

Leveling feet are used wherever machines or components need to be securely positioned and stabilized. The range of uses is broad and extends from the mechanical engineering and automotive sector, the pharmaceutical industry and filling, packaging and conveyor systems to furniture and household appliances.

The use of leveling feet provides a whole host of benefits:

Easy alignment and assembly
Leveling feet enable quick and easy assembly with precise height adjustment. So objects can be optimally aligned and machines securely positioned.

Safety and stability
Machines and devices can be stabilized on uneven floors or surfaces thanks to the use of leveling feet. This reduces the risk of accidents, increases workplace safety and protects objects against damage.

Protection against vibrations and shocks
Vibrations and shocks can be reduced using leveling feet, which extends machines' and devices' service lives. Optional rubber soles provide additional stability, reduce the risk of unintended slipping or shifting and thus also help to reduce noise.

The right leveling feet for your application

The range of different product types is as wide as leveling feet's potential applications. Criteria that need to be taken into account when selecting the leveling feet include material, bearing load, inclination, dimensions and particular requirements.

Bossard's assortment of leveling feet

Stainless steel leveling feet: for applications in which the material must not rust and where hygiene regulations must be met.

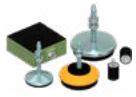
Hygiene assortment: the 3A-certified range includes specific products designed for use in challenging environments with extremely strict hygiene standards.

Plastic: leveling components made from glass fiber-reinforced polyamide, capable of withstand freezing down to -22°F as an option, with UV radiation protection and ESD.

CNC/heavy load: heavy-duty leveling feet for large machines, conveying systems, lathes, automotive, CNC or robot applications.

Solid material: robust steel components, available with various coatings and produced from a single piece.

Eco Line: a good compromise between leveling feet made from plastic and those made from solid material.



Anti-vibration: this range is particularly suited to solving vibration problems. Depending on the industry, you can choose between plastic, steel or stainless steel components.

Small leveling feet: these adjustable feet and rubber feet are ideal for simple applications and large volumes.

Are you looking for the right leveling feet for your application? Our experts will help you to find the ideal solution!

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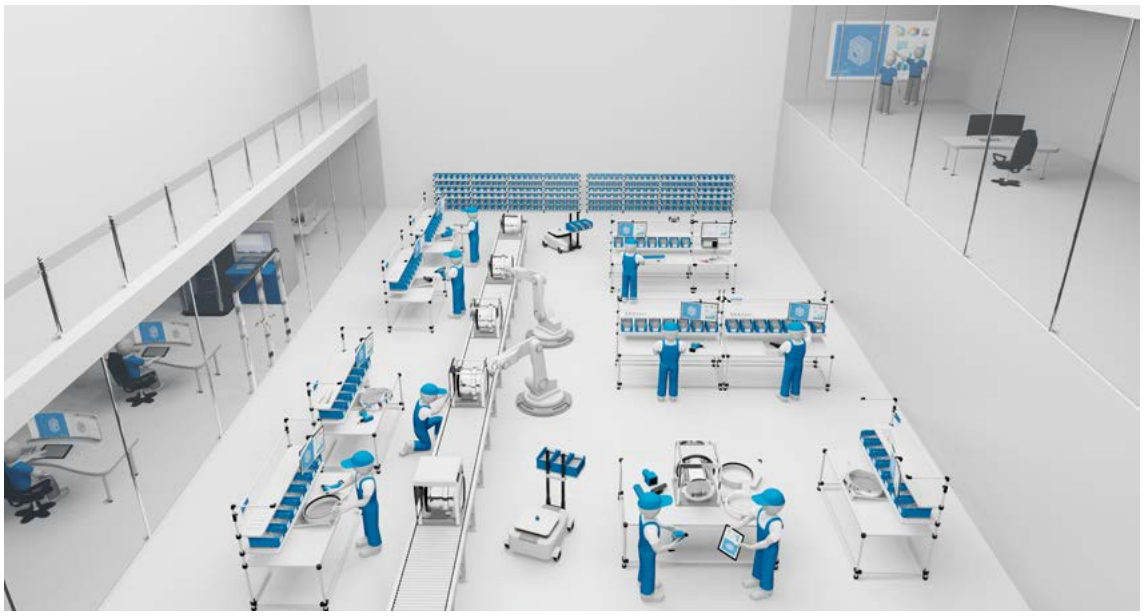
You can learn more about our Access Solutions assortment on our website: **www.bossard.com**

E-SHOP

Smart Factory Assembly

SMART FACTORY ASSEMBLY

The digital transformation in Production



You can digitalize and automate your assembly line using Smart Factory Assembly solutions from Bossard to achieve higher quality, improved traceability and increased flexibility. This comprehensive solution is suitable for a variety of industries and manufacturing companies operating in the industrial field, in medtech and laboratory technology or in mechanical engineering.

SMEs in particular benefit from our experience with the digital transformation in Production. Together, we find pragmatic approaches to modernizing their production operations.

Three key elements of digital production

1.) Digital and interactive work instructions
Digital and interactive work instructions form the foundation of the digital assembly line. Digital work instructions guide employee through the individual production steps and provide various benefits. For example, new production processes, such as when changing between mass and individual production, can be initiated and started more quickly. Work and process reliability are improved at the same time.

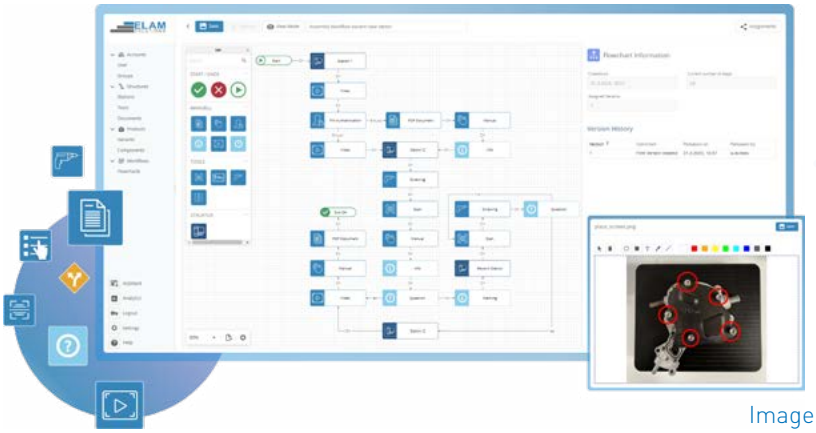


Image 1

2.) Intelligent tools and digital devices

Process reliability and precise data collection are the key to success. Smart Factory Assembly from Bossard enables digital networking of all your devices, machines, tools and processes. You have access at all times to precise data you can use to identify bottlenecks or errors, optimize work processes and make sound strategic decisions. This results in a harmonized and precise network for high-efficiency production operations.

3.) Data collection and process optimization

One of the most powerful tools on the digital assembly line is the ability to collect information and conduct analyses at each stage of the process, right through to the finished product, by means of real-time information. You can optimize the production process and streamline production using these kinds of in-depth insights, resulting in minimal rejects and maximum productivity.

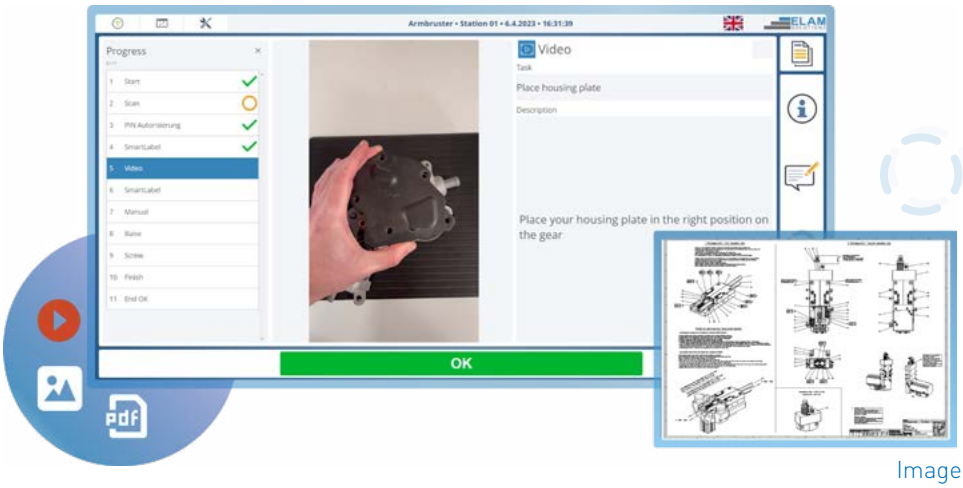


Image 3

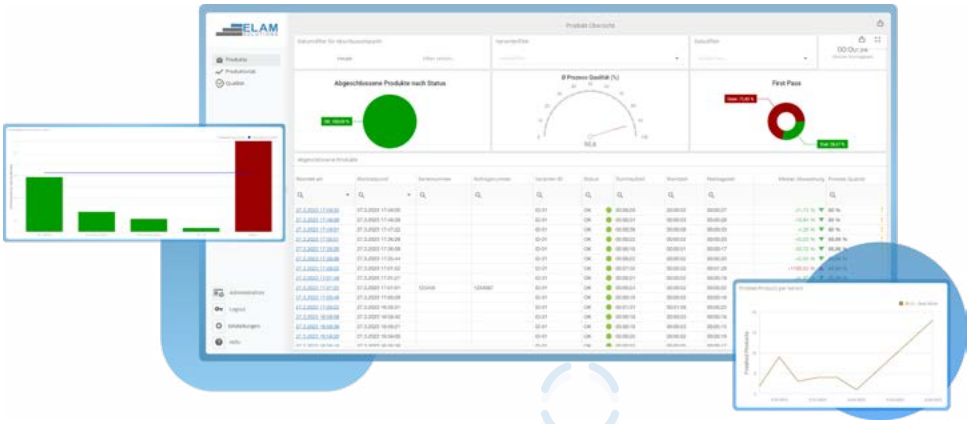


Image 2

What does “cloud-based” mean?

User-friendly interface

Enable digital assembly through continuous access to interactive and adaptable work instructions. Connect digital devices seamlessly to the appropriate software, allowing production processes to be designed, automated and changed effortlessly (see Figure 1).

Centralized and remote management

Provide all users with new functions and device interfaces in real time. Your employees have immediate access and make informed decisions to continuously improve operational processes (see Figure 2).

Complete flexibility

One piece of software – a wide range of products. You can change the processes from absolutely anywhere and initiate them uniformly in all work stations and assembly lines. Enjoy the flexibility and efficiency that our solution offers your operational processes (see Figure 3).

Our solution is cloud-based and offers numerous benefits with respect to organizing and managing completely networked production operations.

Would you like to test our service free of charge or receive additional information? Then follow the link or scan the QR codes
www.bossard.com

TESTZUGANG

KONTAKT

SUCCESS STORY

INTEGRA BIOSCIENCES

SMART FACTORY ASSEMBLY

Increased process reliability and reduced variety of documents

Teaching numerous new employees the ropes and enabling increased flexibility in assembly, without jeopardizing process reliability, all the while, of course, maintaining the high level of quality are the challenges that come with strong company growth.

INTEGRA Biosciences AG – a leading provider of high-quality laboratory instruments and consumables for liquid handling and culture media production – was facing precisely these challenges and chose to use the ELAM system solution from Bossard to ensure precise digitalization and networking in its assembly operations.

Expansion without growing pains?
Dominik Müller, Production Engineer at INTEGRA Biosciences AG, reported on the increased requirements due to the expansion:

"Our company's constant growth and the growing number of employees in Production meant we were faced with the challenge of leveling up our new employees' qualifications and making the training process easier, without jeopardizing our high level of product quality."

When training new employees for the various assembly stations, it turned out that using manual assembly instructions wasted a lot of time and compromised safety.

"Up until then, in-depth training courses and paper documents had supported our processes, but we were looking for a more effective solution to increase process reliability and improve employee rotation."

And that's where Bossard came in
It was ultimately decided that the ELAM 5 system from Bossard would be introduced as part of a comprehensive examination of various systems. This platform enables precise digitalization and networking of assembly operations. ELAM integrates the performance of networked devices, real-time data collection, traceability of each step, top flexibility and tailored adaptations. The effort required for training staff is drastically reduced since the assembly steps are digitalized, making rotation between different assembly tasks easier. Assembly errors are virtually reduced to 0 and all of the key data required to make sound decisions can also be accessed at all times in the network.

Dominik Müller commented: "We decided to opt for the Smart Factory Assembly solution from Bossard based on a thorough comparison with other assembly production systems. The outstanding features that were pivotal during our product selection decision included the flowchart function and the flowchart builder, the measurement and test value recording, not to mention the user-defined group allocation to enable efficient adaptation to the production processes."

Christoph Sidler, Project Manager (Smart Factory Assembly) at Bossard, reported on the project as follows: "The collaborative relationship with INTEGRA Biosciences AG has been and is extremely interesting, as together we analyze and discuss the company's specific requirements and try as far as possible to map them digitally with our standards. The focus is not so much on the product, but rather on the scalable process."

"Although our main aim was not to reduce throughput times and to increase output, we have nevertheless successfully eliminated many manual steps, which has resulted in noticeable time savings and easier data evaluation."

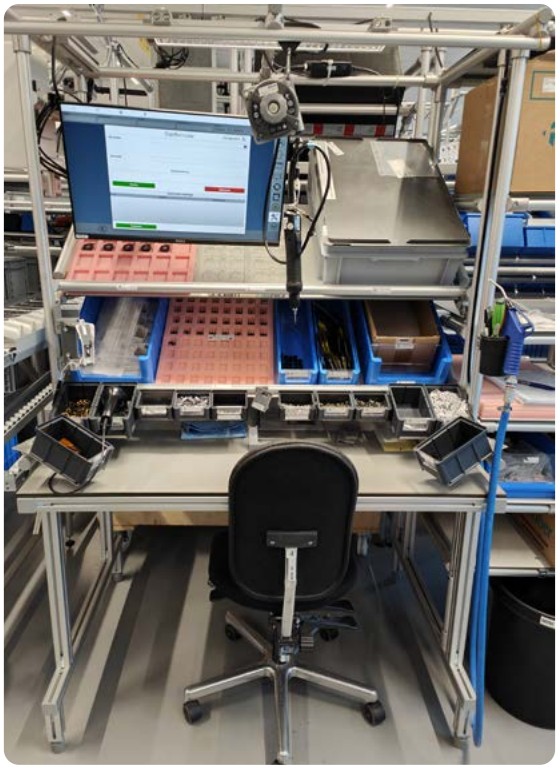
Dominik Müller, Production Engineer at INTEGRA Biosciences AG.

High quality, digital assembly instructions and production data in a centralized system

Using ELAM has meant that assembly instructions can be digitalized and simplified, which also makes updating them easier. All of the relevant production data is now recorded in a centralized system, so there is no longer any need to maintain and archive additional Excel or Word documents.

Conclusion: fewer documents helps to ensure process reliability

"We have significantly improved process reliability by implementing the ELAM 5 system, as we now guide employees digitally through the assembly process and have massively reduced the huge variety of documents at the same time. The employees can focus on their core duties better, ultimately improving both the efficiency and the quality of our production operations," remarked Dominik Müller, summing up the experience.



GLOBAL – LOCAL: BOSSARD SWITZERLAND

BOSSARD IS THE PREMIUM PARTNER FOR THE EVZ WOMEN'S TEAM

Switzerland

Image©: Valentin Studerus

Image©: Valentin Studerus

Bossard is expanding its long-standing partnership with the EVZ ice hockey team and is now a premium partner of the EVZ Women's Team, who are currently having an impressive season.

Bossard has supported the EVZ Men's Team for many years as the main sponsor. We are now expanding our involvement and are supporting the advancement of women and girls in ice hockey as a premium partner for the Women' Team.

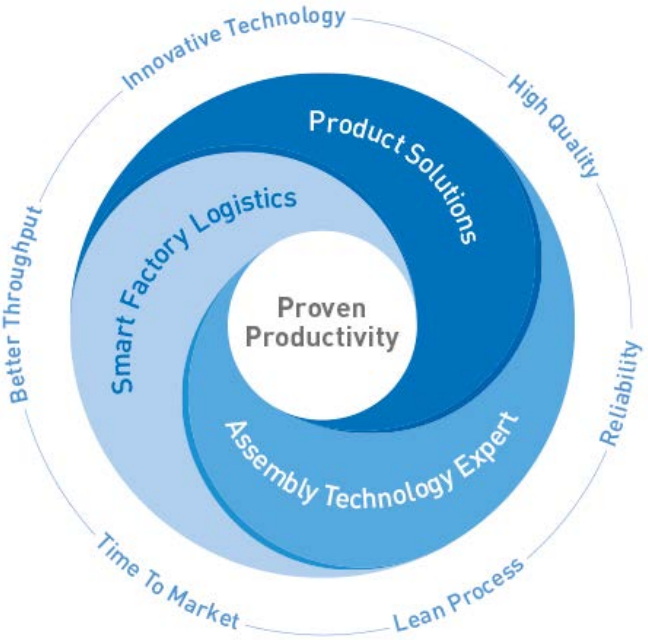
"Our enthusiasm was immediately sparked when EVZ introduced us to the Woman & Girls program," stated Peter Kammüller, the CEO of Bossard Switzerland. "We were already extremely familiar with the performance-focused culture, the professionalism and the passion of the entire EVZ organization from our existing involvement.

The decision to get involved with the Women's Team as a premium partner is therefore consistent with our ethos because Bossard supports gender equality in all areas of life as a matter of conviction."

The partnership with Bossard is a big win for Ibrahim Can, Head of Marketing & Sales at EVZ: "We have known the Bossard Group and have held it in high regard for many years as a loyal partner. It represents the same values we do and, together, we would like to live up to our positions as role models and advocate for equal opportunities in ice hockey."

PROVEN PRODUCTIVITY

Bossard: a strong partner by your side



In today's fast-paced world, optimizing production and logistics is a true driver of growth. With our long-standing philosophy of "proven productivity", we not only deliver B- and C- parts, but also examine things very carefully. We support you from construction and design to selecting suitable components and optimizing final assembly of your products.

Your success is our success

You can focus fully and completely on your core expertise, while we ensure that hidden costs are reduced.

Years of working with our customers have taught us what has a proven and lasting impact. We have identified what it takes to improve our customers' competitiveness, which is why we provide support in three core strategic areas.

1. Finding the best product solutions

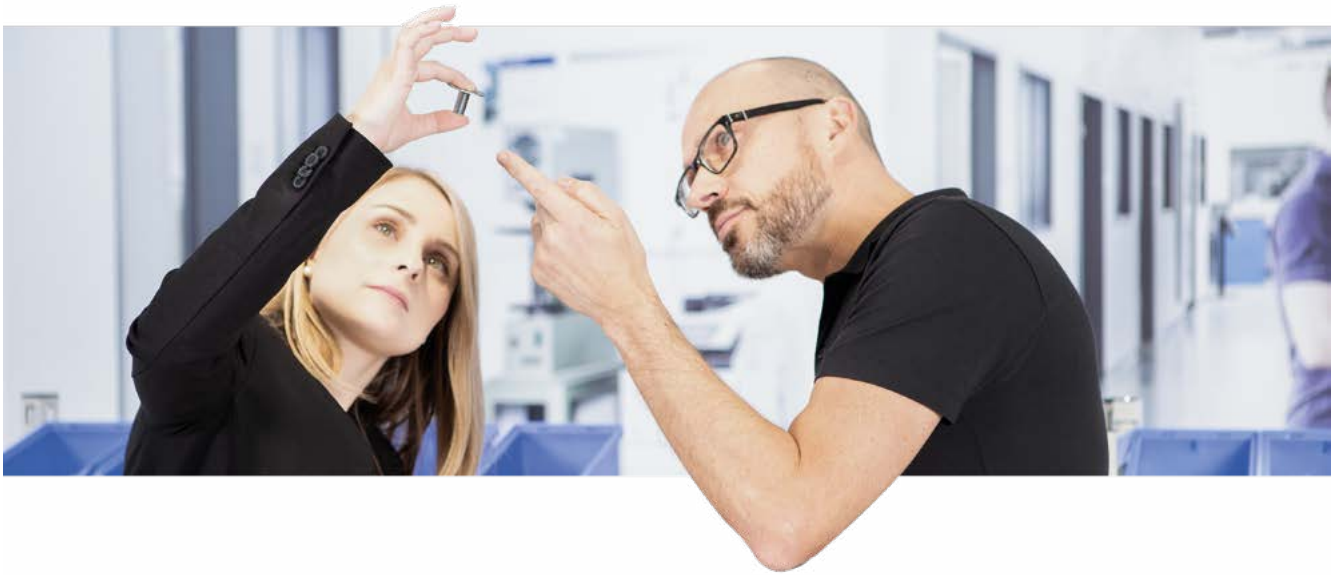
We find the best product solution for you – in other words, we help you when evaluating and determining the best fastening part for the relevant proposed function in your product.

2. Support during development

Our Engineering Services provide solutions for all challenges you might encounter when it comes to fastening technology – from developing a new product and optimizing assembly processes, to training your employees when it comes to the topic of fastening technology.

3. Moving toward Industry 4.0

With our Smart Factory Logistics, we optimize your B- and C- parts material management and intralogistics automation by means of last mile management. Smart Factory Assembly provides digital assistance systems for quickly setting up an efficient assembly process.



Time to market
Your products are available on the market more quickly – one of the key competitive advantages in a faster-paced global environment.

Leaner processes
Savings in terms of time, money and resources improve your overall cost calculation – and provide higher margins for you.

Faster throughput times
This is one of the key cost aspects when it comes to boosting effectiveness and improving efficiency in particular.

Top quality
Absolute dependability in terms of product, process and production reliability – and therefore less waste and fewer complaints.

Innovative technology
Extremely important from the customer's point of view, as only those who are open to new things are also prepared to break new ground where no competitors have (yet) dared to go.

Reliability
For you as a loyal customer, this means you can be sure that you can always rely on us and our long-standing employees, even over decades.

Our winning aspiration – added value for you

We are convinced that we can develop intelligent solutions that create long-lasting added value for you
by taking a holistic view of your products and your individual supply chain:

- Reducing the total cost of ownership (TCO)
- Supplier streamlining
- Consistent, tested quality
- Smart material management
- More free capital
- Security of supply
- Total transparency
- Automated assembly processes

SCAN ME

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