



Smart Factory Assembly

The digital transformation in assembly

“The pragmatic way to connect your assembly processes and make them process-reliable.”

ZIEHL-ABEGG SE – Production planner:

“Using the system, we can produce over 100 variants economically in a one-piece flow, easily add new variants and change existing variants, which is very important to us. The system acceptance among the employees is high and even new employees can be deployed on the production island without any problems.”

Smart processes for greater process reliability and productivity

Smart Factory Assembly provides optimal process control, control of tools and the traceability of production steps. Assembly is networked into a harmonised process.

The core of digital work instructions is the simple breakdown of the assembly process into single work steps. At each step the system intuitively guides the operator through the assembly process. In addition all relevant assembly tools can be connected to the system. This enables total process security and

the resulting data creates transparency in order to identify the potential for optimization and ensure the traceability of production data.



SMART FACTORY ASSEMBLY

Digital Assembly Workplace

The core components of Smart Factory Assembly at a glance.

Assembly operators are guided through each work step with interactive visuals. This will shorten the onboarding time and ensure constant quality. In addition, the production quality is ensured and traceable. Using Smart Factory Assembly, you can easily handle large numbers of product variants and produce them reliably in one-piece flow in paperless production.

We guide the way to industry 4.0 for you with the following core components:



1 Digital and interactive work instructions

The central creation and adaptation of digital work instructions makes it possible to master the complexity of the product variations and to make changes in an efficient manner. The digital work instructions can be visualized in production directly via touchscreens, data glasses or projectors. In this way, the assembly employee is guided through the assembly process and work steps are automatically evaluated and documented. Depending on the product or employee, the degree to which the system should intervene in the assembly process can be freely defined.

2 Connected smart tools and devices

Digital tools and devices are increasingly finding their way into the assembly process. However, these must also be networked and controlled in a targeted manner, i.e. they must be assigned tasks in the correct work step, read out and even parameterized. With Smart Factory Assembly, all relevant assembly tools, such as smart screwdrivers, pick to light, presses or measuring and test equipment, are connected and can interact with the system.

3 Traceability of quality data

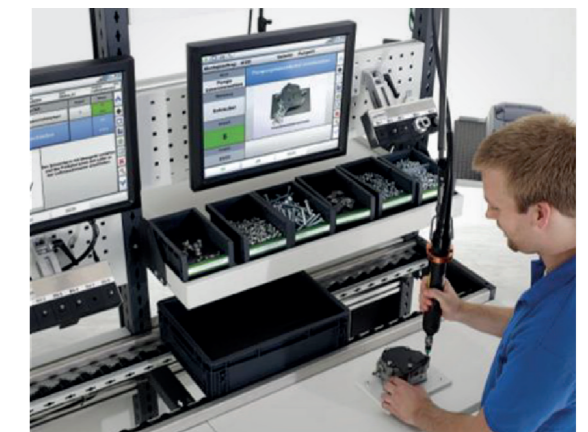
The production data can be traced at the product/order level and the corresponding data can be called up at any time.

4 Continuous process improvement

The transparency gained about the assembly process allows for quick and easy analyses about cycle times, work times, capacity utilization of the assembly stations, throughput times, yield per work station or employee and the error rate.

! Smart Factory Assembly in action

The employees are always informed about what needs to be processed, when, where and how. The needed tools for the job are automatically steered with the right parameters.

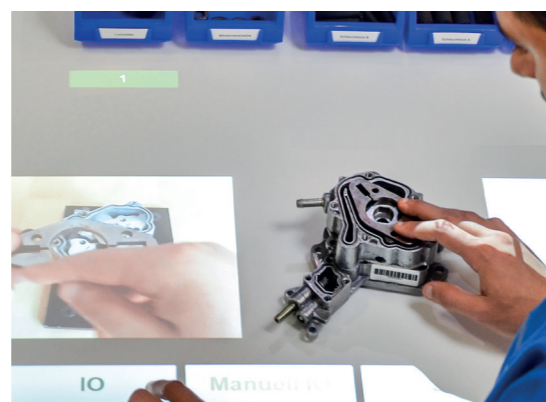


Digital and interactive work instructions

The advantage of digital and interactive work instructions is that employees are guided through the assembly process step-by-step based on their training and language. The work instructions can be issued through various technologies:



- 1 Screen**
Display on the screen and interaction via touch function
- 2 Projection**
Projection on the worktop and interaction via gestures
- 3 Virtual assistant**
Showing information/instructions in the data the employee's glasses



Connected smart tools and devices

The aim is to connect the assembly environment, which is parameterized and/or measured specifically for the respective assembly step.

The more assembly tools and testing equipment are connected with the system, the more one can leverage the following advantages:

- Faster setup of the work stations for the new order/product
- Correct parameterization of the tools based on the order
- Documentation of all relevant assembly and testing processes based on a product

Various tools and devices can be incorporated. Here are some common examples:

1. Position detection
2. Robots
3. Cameras
4. Pick to light
5. Nut changer / bit selector
6. Torque wrench
7. Testing and measuring devices
8. Printers
9. Presses
10. Scanners
11. Identification systems



Our broad knowledge of fastening technology allows us to provide competent advice on selecting the right tools for your needs.

In riveting and bolting technology in particular, we can provide objective advice and rely on a broad product range.



Smart riveting devices



Smart screwdrivers



Smart cordless screwdriver

Traceability of quality data

All production data is saved in a database and can be viewed at any time. Process deviations are immediately evident. The stored data corresponds to the specifications from the work instructions. If screwdrivers are controlled, for example, then the screw-related data is stored, such as the angle of rotation, tightening torque or screwdriving time. In addition, target values for screw connections can be specified and visualized using a screwdriving curve.

Messung	DS	Messstelle	Platz	M_UD	M Ist	M_OO	M_Einheit	W_UD	W Ist	W_OO	W_Einheit
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18.08.2010 18:05:17	DS	Schraubstelle_T2W	1	37	105.9	112	Nm	15	30	15	Grad
18.08.2010 18:03:46	DS	Schraubstelle_T2W	1	37	105.1	112	Nm	15	30	15	Grad
18.08.2010 18:03:37	DS	Schraubstelle_T2W	1	37	105.9	112	Nm	15	30	15	Grad
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18.08.2010 17:35:29	DS	Schraubstelle_S07	1	240	300	300	Nm	20	30	15	Grad

Continuous process improvement

The aim of any production is to maximize efficiency. This requires a validated basis of production data for evaluation. Smart Factory Assembly helps to quickly and easily evaluate and visualize all data. It does not matter whether an overview of the individual work stations or the entire production process is required. The data regarding all possible procedures, process points and also quality indicators is stored in the Smart Factory Assembly database and can be quickly and easily retrieved.



«From the work station to the assembly line – the functionality of an individual work station can be modularly expanded to an entire assembly line or operated together.»

CONNECTED AND NETWORKED PRODUCTION

Smart Factory Assembly in your production facility



Technical writer / industrial engineer

The central creation and management of digital work instructions makes it easy to control all variants and their versioning, which can be done at the work stations or lines right from the office. In addition, the modular setup makes it possible to adopt entire assemblies/work sequences directly from existing instructions and efficiently create the work instructions.

Quality engineer

All production and quality data is automatically documented and stored in a production life cycle file. This documentation can be quickly and easily accessed at any time and guarantees seamless traceability.

Production employees

The production employee is supported throughout the entire process in order to eliminate as many sources of errors as possible. The work instructions can be specifically adapted to the respective assembly employee with respect to language, level of training and level of detail.

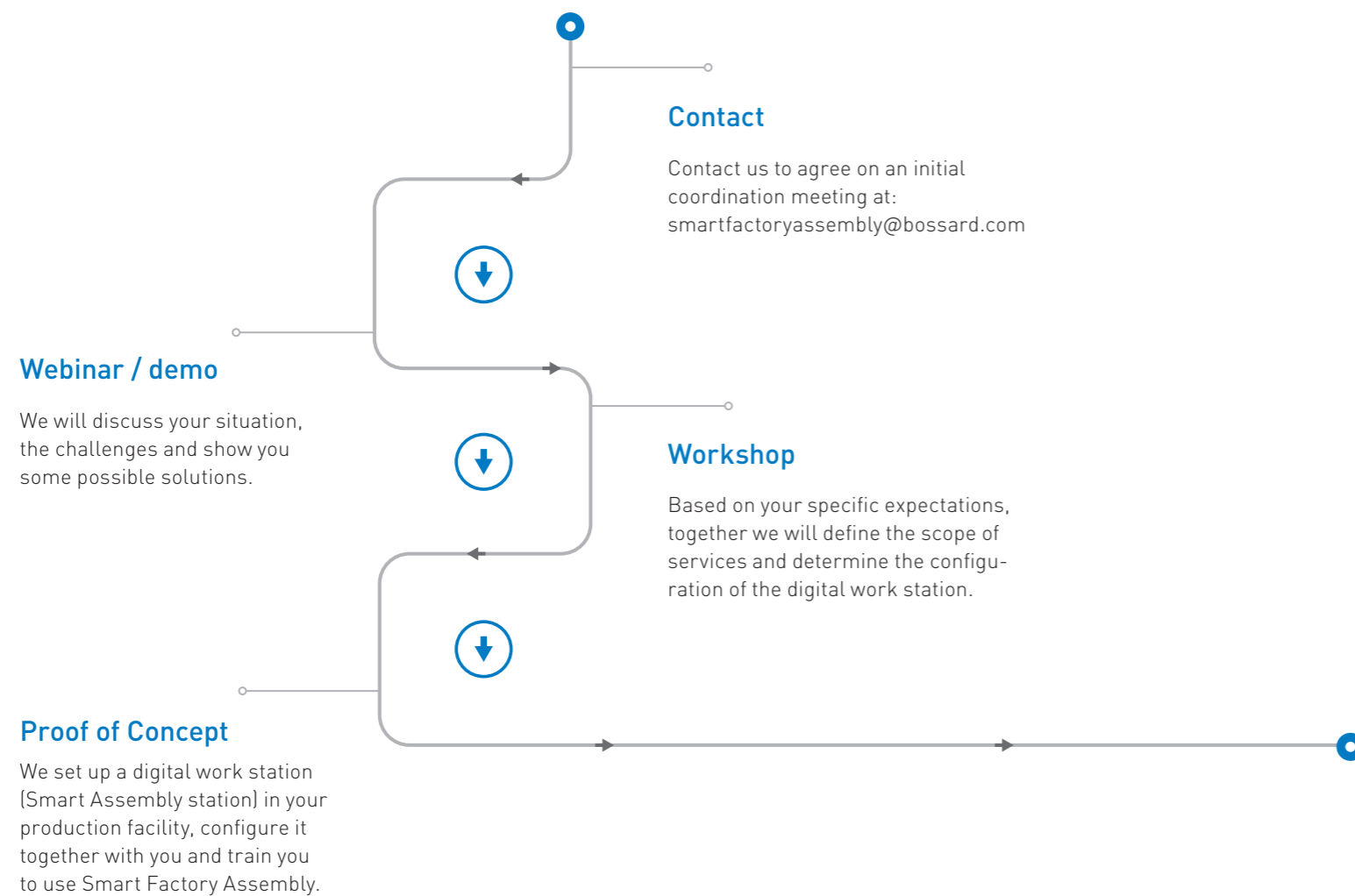
Production manager & operation excellence

The centrally-stored production data allows for a transparent and simple data evaluation of the production data. This way orders can be planned and tracked and processes can be optimized.

FOUR STEPS TO ACHIEVE THE GOAL

Just get started: Targeted, pragmatic and no risk

Discover the advantages of Smart Factory Assembly by testing our solution in your production facility. If the system is right for you, you can choose the version that best suits your needs.



OUR OFFER

Solutions tailored to your needs

	 Basic SMART FASTENING	 Pro SMART STATION	 Enterprise SMART ASSEMBLY
WORKSHOP	✓	✓	✓
SMART FASTENING TOOLS	✓	✓	✓
QUALITY DATABASE	✓	✓	✓
DIGITAL WORK INSTRUCTION	✓	✓	✓
PRODUCTION STATISTICS	✓	✓	✓
SMART TOOLS AND DEVICES		✓	✓
CONNECTED FASTENING SYSTEM		✓*	✓
NETWORK INTEGRATION		{ ✓ }	✓
CONNECTION TO ERP			✓
* max. 3 Workstations			
Decision Based on your initial experience, you are able to assess whether Smart Factory Assembly provides your production facility with the desired added value as well as the scope with which you would like to continue working with it.	 Basic SMART FASTENING	 Pro SMART STATION	 Enterprise SMART ASSEMBLY

BOSSARD AG

A brief portrait

Bossard is a world-leading provider of product solutions and services in industrial fastening and assembly technology. technology.



The product offering comprises over 1,000,000 connection elements and customized application solutions. Combined with services in the fields of Smart Factory Assembly and Technology Expert, Bossard allows its customers to sustainably increase productivity. The success can be measured: Proven productivity includes, among other things, optimizing processes and reducing inventories to increase the efficiency and productivity sustainably. In addition, Bossard is considered a pioneer in developing intelligent production facilities in line with Industry 4.0. Bossard is listed on the SIX Swiss Exchange.

**Smart Factory
Assembly –
An idea from
Bossard.**

IT IS PROVEN

A new service but many years of experience

Long-term experience

Our new service Smart Factory Assembly is actually based on many years of experience regarding the digitalization of assembly processes. Agile software and hardware development allows us to quickly and efficiently implement individualized customer requests. The system has proven its productivity already in a large number of projects in Europe and Asia.



www.bossard.com