SQS3
Scalable Quality
Solution 3

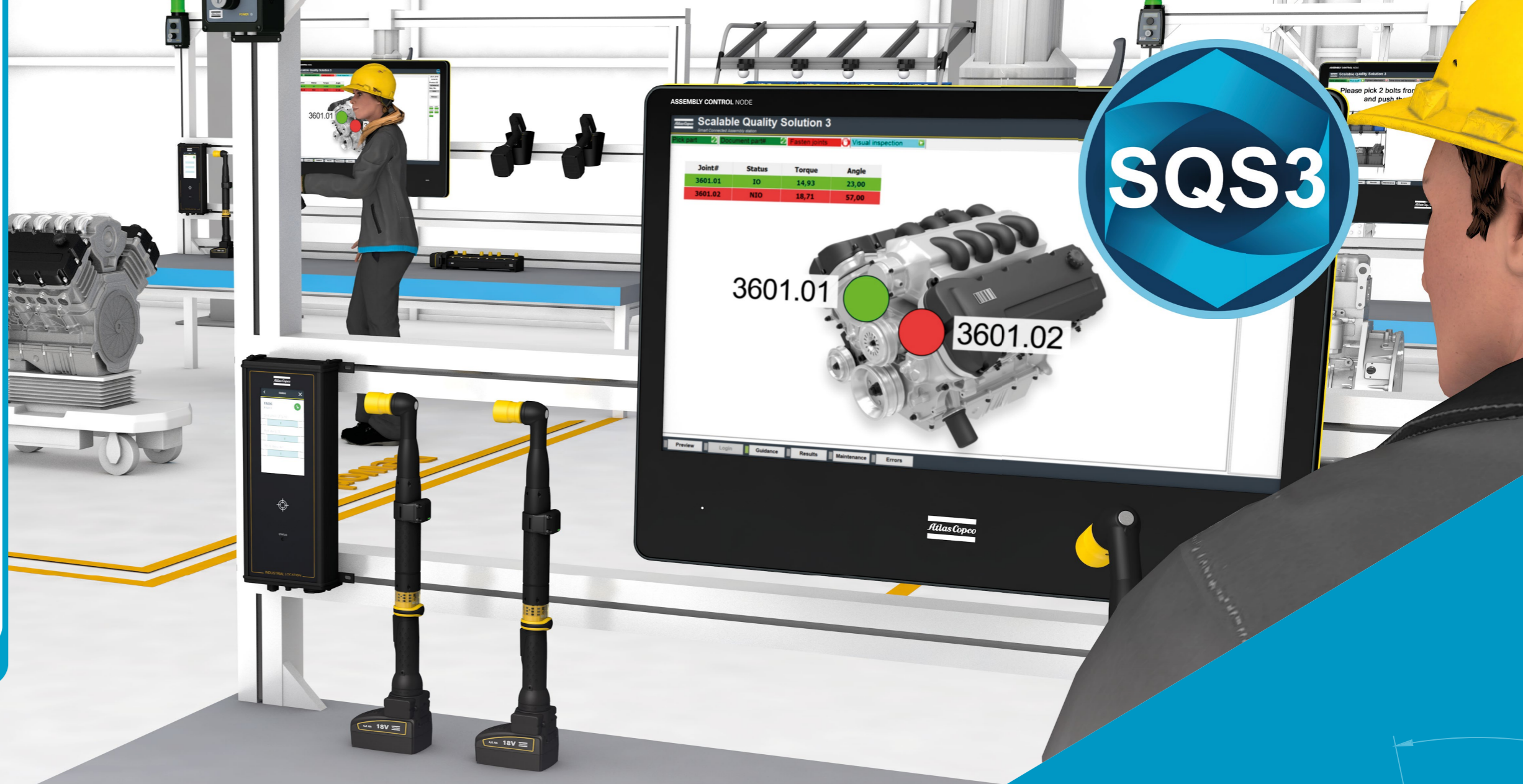The scalable software solution that error-proofs
your product assembly.

Error proofing drives productivity

The advent of Industry 4.0 brings rapid changes and new challenges.
To meet these challenges in industrial assembly Atlas Copco created the concept of "Smart Connected Assembly", combining software, hardware, smart tools and accessories to maintain process control in complex production systems.

One component is our error proofing software Scalable Quality Solution 3 (SQS3) which drives quality, process reliability, transparency as well as product safety.

Simply network your ERP or MES with this comprehensive process control solution to achieve zero defects and to reduce costs of rework, scrap or warranty claims. The whole assembly process gets traceable thanks to complex data collection, analysis and storage.

Discover more on error-proofing:
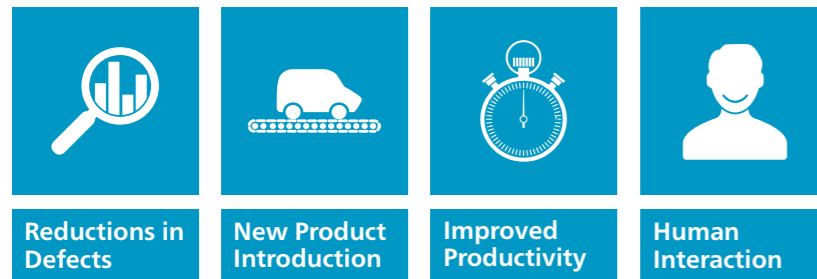**atlascopco.com/errorproofing**

Scalable to your needs: from stand-alone station to complete shopfloor.

The **Scalable Quality Solution 3 (SQS3)** prevents errors in product assembly regardless of whether you start with a single station, a production cell or whether you need to manage a complex assembly line with a high variety of product variants.

Many stations can be connected with a remote centralized configuration. All SQS features are scalable and easily reusable to fit your custom production needs.
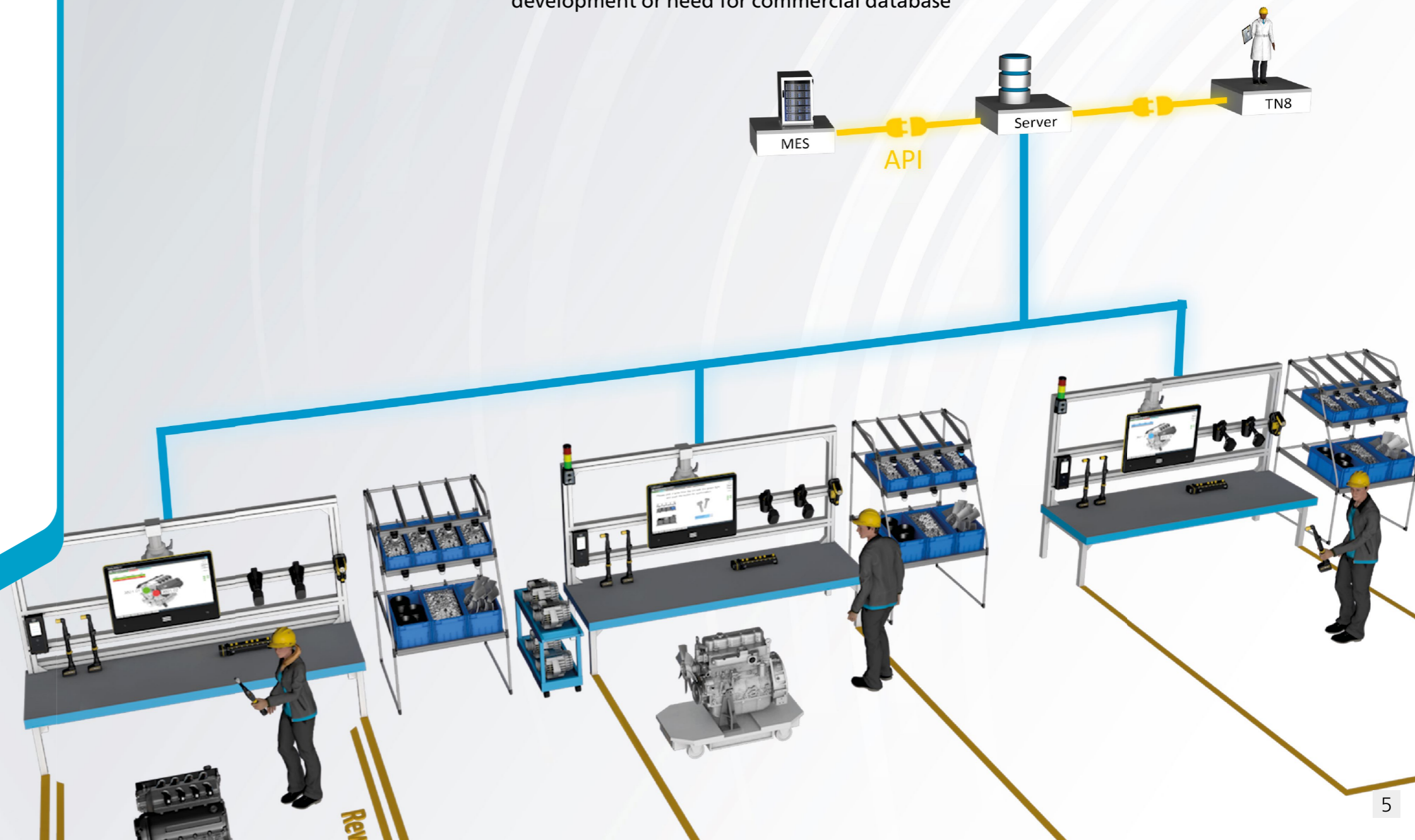
SQS3 ensures product quality, process reliability and transparency as well as product safety at each assembly station. It guides your operators through the assembly process leaving no room for error or oversight, even in a specific rework station.

Reductions in Defects	New Product Introduction	Improved Productivity	Human Interaction

Your benefits

By implementing SQS3 as process control system in your line, you gain

- **Step-by-step visual operator guidance as well as part and tool verification**
  → Zero defect strategy and less need for rework generate cost savings and improve productivity
  → Greatly reduces training time for new operators

- **Fully traceable rework ability and connection to MES system**
  → Any defect will be tracked and repaired at pre-defined rework stations
  → Synchronization of build and result data between MES and shop floor

- **Remote centralized configuration**
  → Update process changes and new product introductions to the line easily. Save time deploying and maintaining entire shop floor solution

- **Scalability at a low IT effort**
  → Connect several stations including pre-station check and rework without software development or need for commercial database

MES

API

Server

TN8

Centralized configuration
Organizes SQS3 functions of all workstations across the shopfloor from a single, easy configuration interface either on the shop floor or remotely.

Tool interlock **1**
Enables and disables DC tools and wrenches via the controller. Use automatic program or job selection.
Multspindle and PF6 FlexSystem support, as well as hand-held tools.

Digital I/O capability **2**
Enables easy connectivity of external I/O devices eliminating the need for a PLC.

Visual Operator Guidance **3**
Step-by-step interactive visualization assists operators to realize all assembly tasks right the first time, every single time.

Basic pick-to-light/pick-by-light **4**
Visually guides operators in picking parts from bins based on digital I/O capability.

Please pick 2 bolts from the bin with the green light and push the button for confirmation
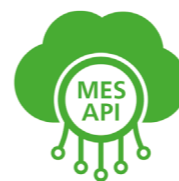
Pick 2 bolts

For a fully controlled assembly line:
the features of Scalable Quality Solution 3

With a centralized configuration you easily implement Scalable Quality Solution 3 and choose the error-proofing functionalities according to your needs and processes.
Pick-to-light, part-verification or operator guidance improve your whole assembly process and increase productivity as well as efficiency.

Do you use our **Smart Assembly Management System** (Smart AMS) for your tightening control?
Thanks to the integrated standard API you can easily upgrade your process control adding SQS3 in specific critical stations with high defect rate due to unclear or complex processes and human factors.

Combining SQS3 error proofing techniques with the benefits of our Atlas Copco **tool location verification solutions (ILG, ILT or ILS) you raise your assembly to a truly controlled level.** You track your tools and monitor that the correct bolts are tightened to specification and in the proper sequence.
Contact our error proofing experts for more information.

Advanced features

MES API
Integrated data exchange API

8
Data analyzing with ToolsNet 8

ILG
Tool location with ILG, ILT or ILS

smart AMS
Connectivity with Smart AMS

Support your rework or repair operators doing their job right the first-time

Today, high numbers of variants, parts and steps make error-free product assembly increasingly challenging. What happens if an assembly step fails and the product needs repair or rework?
Support your operators solving their repair tasks with zero defects by implementing our specific module **SQS3 Rework.** It enables easy and efficient process control, while storing all rework data for full traceability.

SQS3 Rework offers a clear target-actual analysis:
Where are the faults? What needs to be done?
Operators are guided doing all repair actions correctly using right tools and parameters with full **step-by-step graphical instructions** on the screen.

Thanks to **user identification** only trained and authorized operators will handle the job.
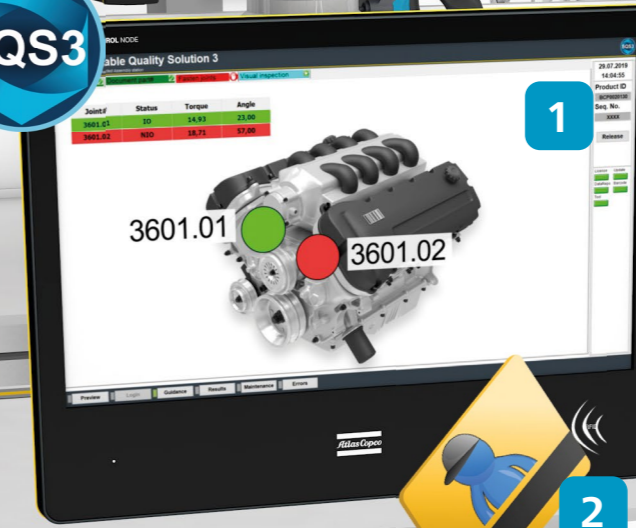
30 - 40% of recalls are coming from wrong repair!

Visual Operator Guidance **1**

Step-by-step interactive visualization assists operators to realize all assembly tasks right the first time, every single time.

User identification & access control **2**

Prevents unauthorized system access enforcing user roles and privileges. Thus, only trained e.g. rework operators are allowed to complete the task.
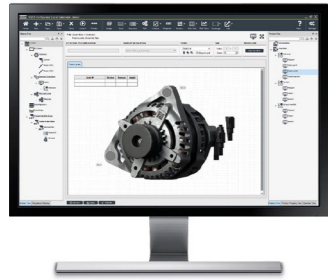
Part verification and documentation **3**

Identifies parts by means of serial numbers or product IDs to ensure the correct parts are being used to build a product.

Consolidated data collection

Traceability of all assembly actions (torque, parts, digital I/O, manual confirmation) and missed tasks from all stations/products. Easy and convenient access to collected data via web-based user interface.
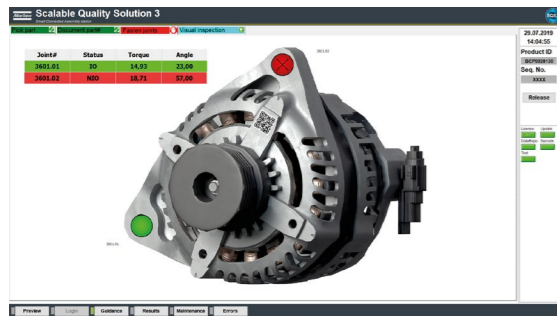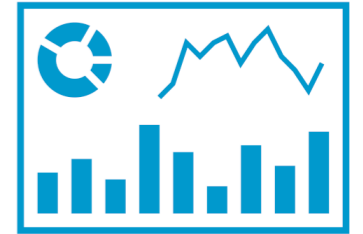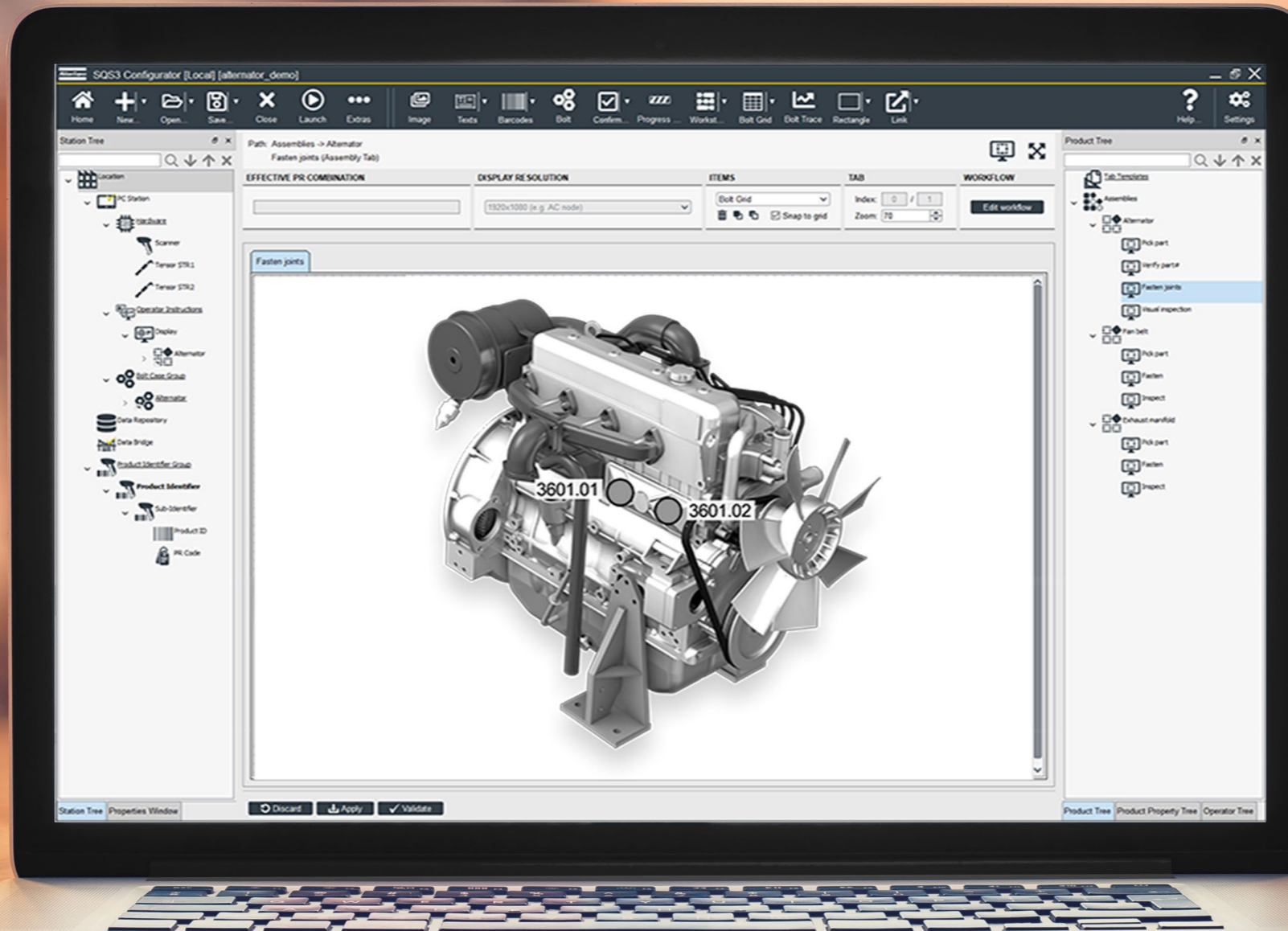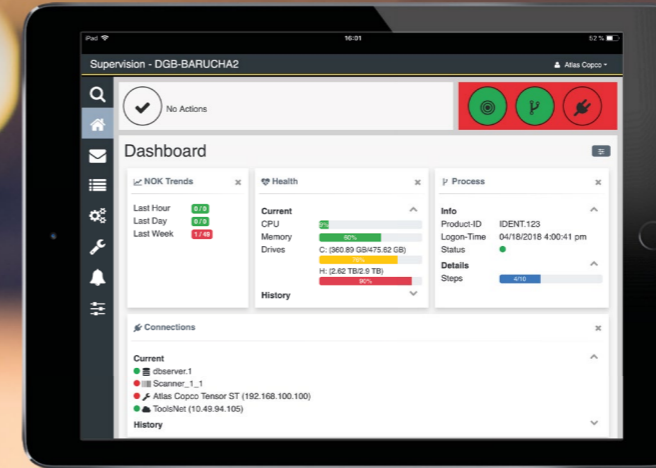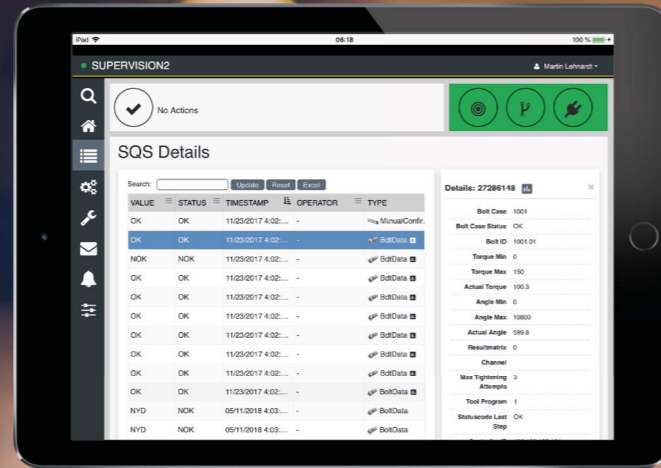
SQS3 Product Components

Configurator

The SQS3 Configurator is the graphical user interface used for building and maintaining assembly processes in SQS3.
All connected workstations and their devices can be configured through one single interface.
The configuration can be done either at the workstation on the shop floor or remotely, for instance from an office desk. Updated configurations can be applied to the work-stations immediately or at a scheduled time.

Operator Guidance

The SQS3 Operator Guidance drives the assembly workflow at the workstation.
It interlocks with tools and other devices, guides the operator and processes result data for traceability and product repair purposes.

Web UI for result data

The web user interface (web UI) of the Scalable Quality Solution 3 is the single point of access to all assembly data captured by SQS3 stations. It combines traceability for all products and across all workstations into one simple interface.
The web UI is responsive; suitable for desktop PCs, laptops, tablets and smartphones.

Dashboard

The web UI also offers you a dashboard for each SQS3 station, grouping and displaying its information in graphical tiles. The tiles show real-time information about the stations' health condition (processors, memory and drives), their connections and NOK trends, in case result data is being stored in the database of the Scalable Quality Solution 3.

Event Log

The web UI's event log lists critical station events, such as the loss of a connection to a device or when tightening tools get locked, because the operator has used up all of his tightening attempts.

Messaging

From the web UI, users can send messages to the operator guidance of any SQS3 station;
even to multiple stations at once.
Sent messages will be stored on the SQS3 station for reuse whenever needed.

Applications for SQS3

Assembly in complex processes

Challenge

- High assembly complexity with many steps at one station
- Frequent changes in product variants
- Tracking of result data on paper

Solution

- SQS3 stations for process control and operator guidance instead of printed hand-outs
- Consolidated collection of result data replaces manual recording
- Operator identification to track performance
- Pick-to-light for generic material selection

Benefit

- High product quality, rework rates reduced by 30%
- Saved time and reduced costs

$ 30% less rework approved by one of our CKD*-plant customers

Product rework or repair

Challenge

- No control of repair processes
- Quality issues due to wrongly repaired products

Solution

- SQS3 for error-proofing installed in the line to capture assembly results and product status
- Repair of NOK tasks right away or later repair in dedicated rework station
- Repair process is controlled as rigorously as the regular assembly

Benefit

- Avoidance of product recalls or field repair
- Reduction of line stops
- Guaranteed product quality
- Traceability in stations

* CKD = Completely Knocked Down

Applications for SQS3

Backup and training station

Challenge

- No backup solution in case of tool controller failures
- Product quality endangered
- Possibility of line stop if multiple controllers fail

Solution

- SQS3 mounted on a mobile cart
- All critical station processes configured into the SQS3
- Added traceability with operator login and barcode scanning
- Repair process is controlled with the same rigour as the regular assembly
- Implementation with EasyStart SQS Service Level Agreement

Benefit

- Reduction of line stops
- Traceability of every step
- Save time through standardized and traceable employee training

Prototype station

Challenge

- Tools used in the prototype area are often not the same as in the main line
- Product rework rate is high

Solution

- SQS3 at prototype station records process results, including tightening and manual operations
- Engineers test, improve and verify assembly process for prototypes before going into production
- Operators train new assembly routines

Benefit

- Reduction of line stops during production
- Increased product quality
- Less rework due to fewer operator errors
- Saved costs in operator trainings

70% reduction in tool related line stops approved by one of our customers

EasyStart SQS saves time and money

EasyStart SQS is a fast and efficient start of operations through a standardized and proven process from installation to training. We offer:

- Assessment of process configuration requirements

- System and process configuration check and optimization

- Configuration backup and documentation

- Operator training including certificate

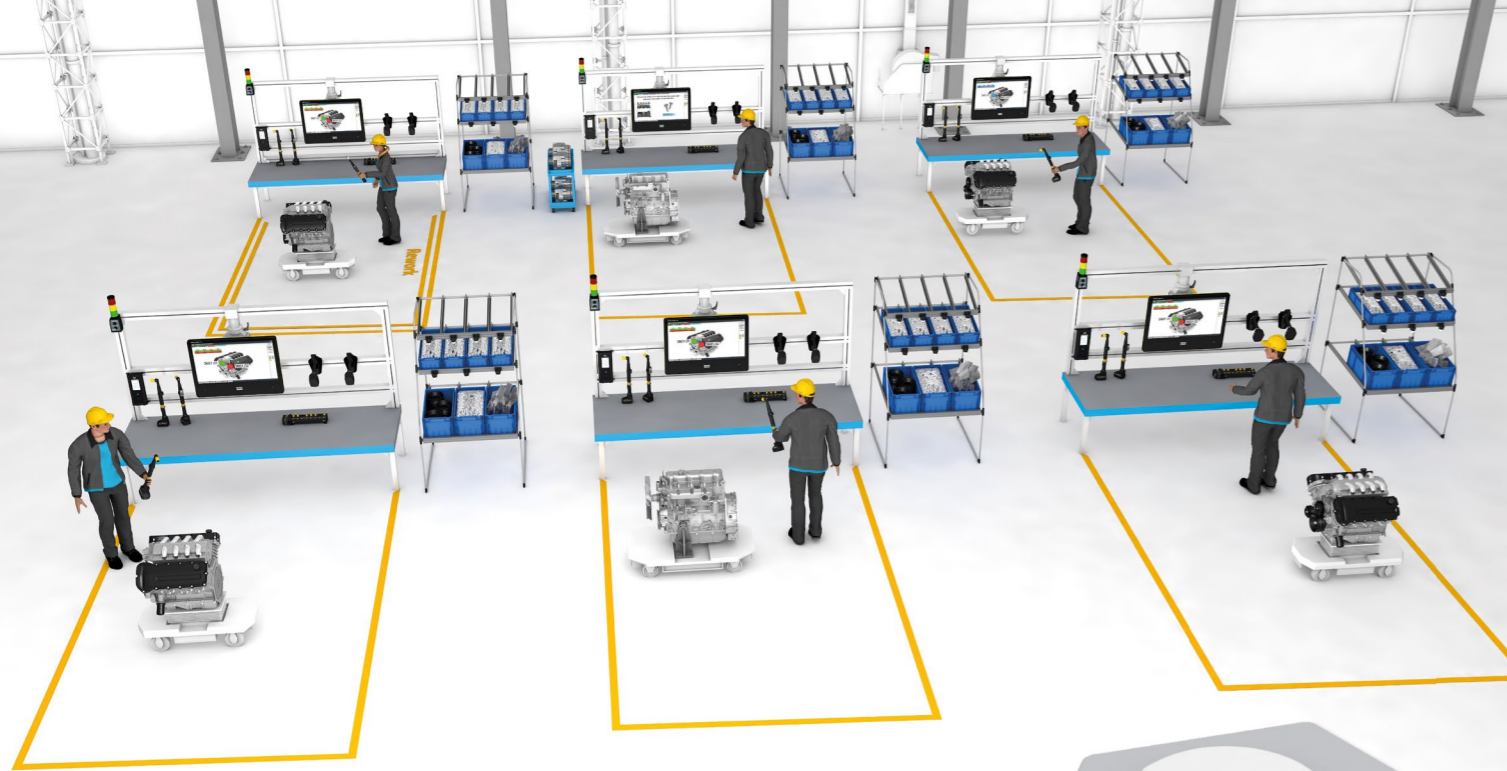- Additional services can be added

Time and cost saving

Right first time

Trouble-free and efficient start of operations

Minimizes risks in production quality

Globally standardized process for every step

Stabilize your software – Secure your system availability

TechCover - Service Level Agreement

With our TechCover software service offering you protect your investments in your error proofing production system and secure optimized system availability and productivity.

It provides proactive monitoring and remote solution expertise throughout the lifecycle of your production coupled with free access on software updates at fixed cost.

Your benefits

- ✓ **Greater system availability**
- ✓ **Guaranteed response times to issues**
- ✓ **Minimized risk of production stoppages**
- ✓ **Reduces production and data loss**
- ✓ **Free access to SQS3 software updates**

TechCover Protect

- Remote product support
- Product updates
- Problem- / root cause analysis / bug fixes / workarounds

TechCover Stability

- Remote product support
- Product updates
- Problem- / root cause analysis / bug fixes / workarounds
- **Remote database support & maintenance**
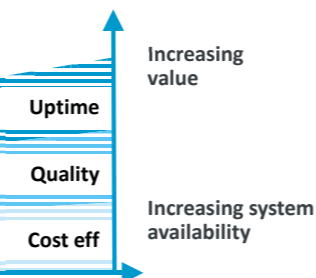- **Remote application support**

TechCover Uptime

- Remote product support
- Product updates
- Problem- / root cause analysis / bug fixes / workarounds
- Remote database support & maintenance
- Remote application support
- **On-site shift support**
- **Key performance indicator alignment & reporting**

Increasing value

Uptime

Quality

Cost eff

Increasing system availability

Protect your solution – improve your performance

Stabilize your solution – secure your system availability

Shield your solution – maximize your productivity

Comprehensive error-proofing solution

- ✓ **Step-by-step interactive operator guidance**
- ✓ **Clear rework process**
- ✓ **Advanced error-proofing features**
- ✓ **Out-of-the-box solution with minimal IT effort**
- ✓ **Service-level agreement**

Ordering data

Description	Ordering No.
SQS3 Standard software package, single license	**8434 2380 02**
SQS3 Standard edition, single license *(without software installation package)*	**8434 2380 03**
SQS3 Standard edition, 2 licences *(without software installation package, packed in a small box)*	**8434 2380 04**
SQS3 Tool *(electronic delivery)*	**8434 2380 09**
SQS3 Tool, single license	**8434 2380 10**
SQS3 Tool, 2 licenses	**8434 2380 11**
SQS3 PLC *(electronic delivery)*	**8434 2380 12**
SQS3 PLC, single license	**8434 2380 13**
SQS3 PLC, 2 licenses	**8434 2380 14**
SQS3 Connect *(electronic delivery)*	**8434 2380 15**
SQS3 Connect, single license	**8434 2380 16**
SQS3 Connect, 2 licenses	**8434 2380 17**
SQS3 Rework *(electronic delivery)*	**8434 2380 18**
SQS3 Rework, single license	**8434 2380 19**
SQS3 Upgrade *(electronic delivery)*	**8434 2380 20**
SQS3 Upgrade, single license	**8434 2380 21**
Service Offering	
EasyStart SQS	**9900 4206 15**
TechCover, software support contract *(provided by Service team)*	**9900 4264 58**

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