Control your tightening: Smart Assembly Management System

The easy, flexible and scalable error-proofing system to control, trace and document the tightening process.

Improve your productivity and product quality:
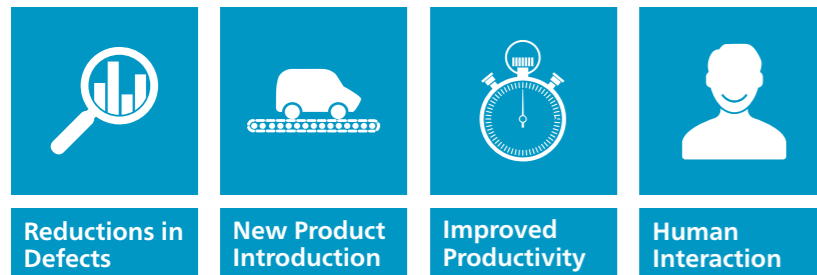
Smart Assembly Management System (Smart AMS)

With Atlas Copco's new **Smart Assembly Management System (Smart AMS)** you implement an effective and smart tightening process control software system to increase product quality while collecting all process data.
Enhance your competitiveness with this centralized management of all tightening processes in your stations, line or plant and drive digitalization.

The easy set-up, high degree of flexibility and simple maintenance facilitates your manufacturing enormously – saving costs in hardware, engineering as well as rework and repair.

Without need for industrial PCs (HMIs) in each station the **Smart Assembly Management System (Smart AMS)** is **a cost-efficient entry level** solution for process control.
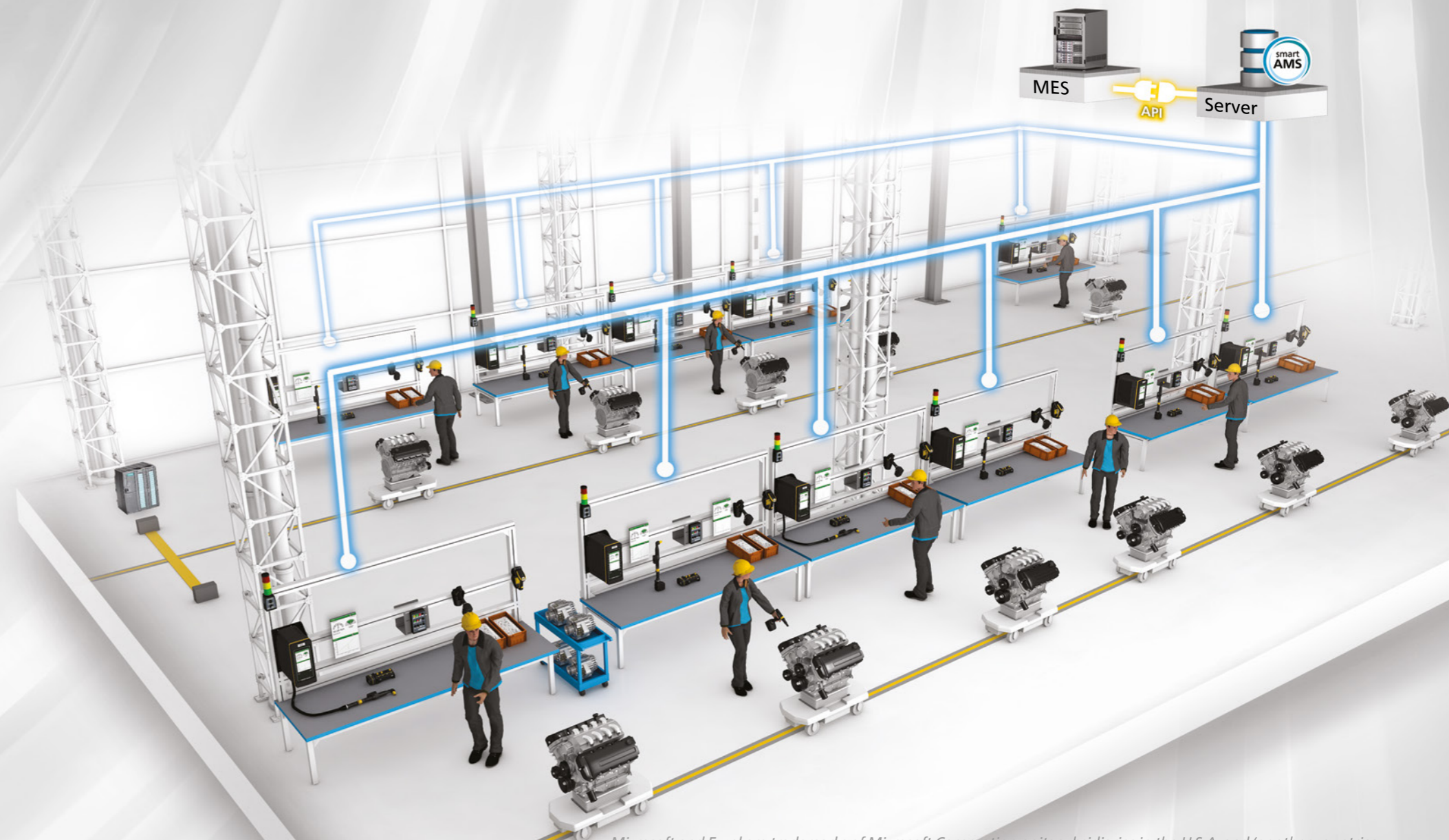
The easy expandability with further error-proofing features allows to invest step-by-step to full process control with a high return on investment.

| Reductions in Defects | New Product Introduction | Improved Productivity | Human Interaction |

Your benefits

By implementing Smart Assembly Management System (Smart AMS) as process control system in your line, you gain

- **Easy to use entry-level tightening control**
  → Manage your tightening stations with a server based solution. Minimized set-up: tools and controller combined with a server where Smart AMS is installed.

- **Simple integration to your production system**
  → Connect your MES and PLC system with an application programming interface (API)

- **Fast and centralized configuration**
  → Direct configuration from a Microsoft® Excel® file to the server

- **Huge scalability**
  → Upgrade your Smart AMS system step-by-step from a single tightening control solution to a full assembly process control. Add further error-proofing features like operator guidance, pick-to-light or part verification according to your needs and budget.

Controlling and supporting the tightening process

Easy and scalable workflow with Smart Assembly Management System

The easy to use Smart Assembly Management System (Smart AMS) enables a set-up without need for industrial PCs in the shopfloor area.

Smart AMS controls the whole tightening process, while your Manufacturing Execution System (MES) drives all areas of the manufacturing process like production management and sequencing. Reduce engineering and maintenance effort using only one interface between Smart AMS and your MES to exchange build information and to send production results for the complete station.

Thus, the scalability from one station to the complete production facility becomes extremely effortless.

Exemplary solution architecture and work flow set-up

1 Smart AMS requests and gets the build data from your MES.

2 Operator scans the product barcode and controller sends the product ID to Smart AMS. Product information and position can also be determined via RFID or PLC.

3 Smart AMS determines tightening steps by the configuration via Microsoft Excel® and activates or switches the correct tightening program in the controller.

4 After finishing the tightening task the tool sends all tightening data (OK/NOK) and the product status to the Smart AMS.

5 Smart AMS sends all tightening results to your MES.

Smart Assembly
Management System
(Smart AMS)

Manufacturing
Execution System (MES)

smart AMS

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

Easily expand Smart AMS with further error proofing techniques

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:
Add the software module SQS3 Rework as well as an industrial PC like the AC Node to a specific rework station in your assembly line to grant efficient, clear processes as well as storing all rework data to your build process.

SQS3 Rework offers a clear target-actual analysis:
Where are the faults? What needs to be done?
With full step-by-step graphical instructions on the screen operators are guided doing all repair actions correctly using right tools and parameters. Thanks to user identification only trained and authorized operators will handle the job.

⚠ 30 - 40% of recalls are coming from wrong repair!

Your benefits of error-proofed rework

✓ Zero tightening defects in repair or rework, reduction of line stops

✓ Full traceability and transparency: full data collection of every assembly step and result

✓ Faultless products and fewer warranty claims

Visual Operator Guidance
1 Step-by-step visual operator guidance guarantees that everything is done 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.

Pick-to-light solutions

Visually guide operators in picking parts from bins based on digital I/O capability.

Part verification and documentation

SQS3 identifies parts by means of serial numbers or product IDs to ensure the correct parts are being used to build a product.

Profit from tightening result data to upgrade critical stations as much as needed

Add further mistake proofing techniques to facilitate processes

Once implemented **Smart AMS** you get clear insights in all tightening results. You discover critical stations and in which more defects are produced due to unclear processes and human factors.

These insights help you to improve the assembly processes by adding further error proofing features like pick-to-light and part-verification.
Combining **Smart AMS** as single-contact and interface to your MES with Scalable Quality Solution (SQS3) as an error proofing software solution, you prevent errors in the assembly process and get full process control.

Your benefits of error-proofed stations

✓ **Efficient processes, less training time for operators**

✓ **Full traceability and transparency: full data collection of every assembly step and result**

✓ **Faultless products and fewer warranty claims**

Main features of
Smart Assembly Management System:

Basic tightening process control and documentation offering options to easy implement advanced error-proofing features

Smart interface to MES and Atlas Copco controllers

Smart AMS communicates with your MES system via an application programming interface (API) to get relevant product data.
Atlas Copco controllers PF4000, PF6000 and PM4000 are fully supported by Smart AMS.

MES

API

Server

smart AMS

Easy interface to PLC

Smart AMS provides a default PLC interface via TCP IP communication to line PLC using Smart AMS PLC Product Trace Protocol for status of product log in / log out. Customization upon request.

Remote log-in to Smart AMS Manager for system monitoring

User-friendly interface for remote server log-in and clear health status overview on the station or line. Dashboards and event log facilitate monitoring.

Emergency mode & failure strategies

Smart AMS supports emergency mode in case of unexpected errors like controller errors, missing jobs etc.
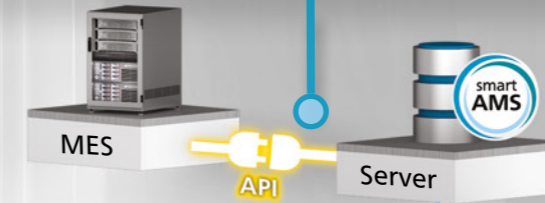
If an error occurs, an error indication is set via digital output bit. The operator can switch to manual mode via key switch. The tool is unlocked with pre-defined PSet or select manual PSet in case an Operator Panel is adapted.

Distributing and activating single station tightening tasks

The configuration contains a mapping of product variables and tightening tasks. Smart AMS automatically selects tightening tasks (number of defined PSets) and unlocks the tool for tightening.

Centralized installation and configuration

All Smart AMS configurations are easily realized with a defined Excel® file, including station configuration, accessories, function options and process recipes.

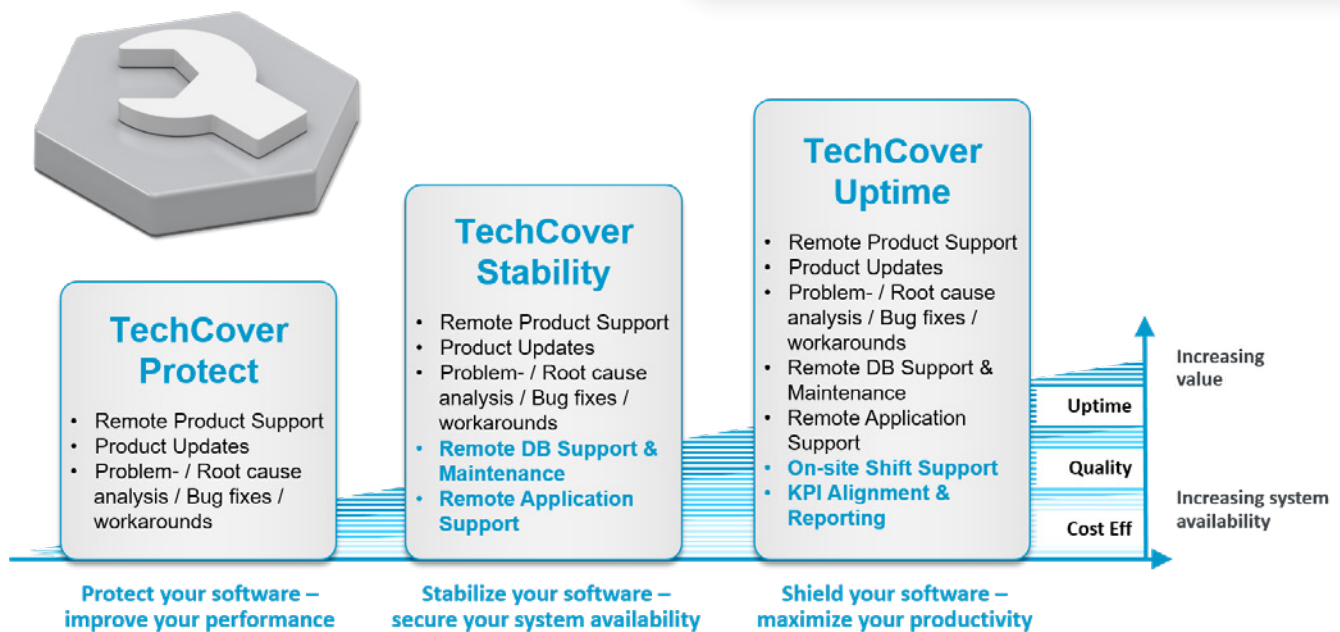# Stabilize your software – Secure your system availability

TechCover - Service Level Agreement

With TechCover software service products 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**

TechCover Protect

- Remote Product Support
- Product Updates
- Problem- / Root cause analysis / Bug fixes / workarounds

Protect your software – improve your performance

TechCover Stability

- Remote Product Support
- Product Updates
- Problem- / Root cause analysis / Bug fixes / workarounds
- **Remote DB Support & Maintenance**
- **Remote Application Support**

Stabilize your software – secure your system availability

TechCover Uptime

- Remote Product Support
- Product Updates
- Problem- / Root cause analysis / Bug fixes / workarounds
- Remote DB Support & Maintenance
- Remote Application Support
- **On-site Shift Support**
- **KPI Alignment & Reporting**

Shield your software – maximize your productivity

Increasing value

| Uptime |
| Quality |
| Cost Eff |

Increasing system availability

Ordering details

Description	Ordering No.
Smart AMS, single tool licence (electronic delivery)	**8434 2380 30**
Smart AMS, single tool license	**8434 2380 31**
Smart AMS, 10 tool licenses	**8434 2380 32**
Smart AMS, 50 tool licenses	**8434 2380 33**
Service Offering	
TechCover, software support contract (provided by Service team)	**9900 4264 58**

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