

Local Positioning System

QualityAssist | PositionBox



“People can have the car in what ever color they want - as long as it's black.”

Henry Ford about Model-T

Challenges of modern production & industry 4.0:

- ✓ Customized products
- ✓ Flexibilized mass production
- ✓ Efficient support of increasingly complex tasks
- ✓ Connecting machinery, work pieces and automated systems

Unique customer quality requirements, strict regulations, and product liability risks all force manufacturers to find ways ensure consistent quality assurance throughout the complete manufacturing process. In addition, documentation must be available to prove that all relevant product features were accurate ex works. An obstacle to achieving 100% error-free manual work has always been the lack of good technology for detecting and minimizing human errors.

Up to now, no system on the market has been sufficient for 100% quality assurance at manual workstations. Either they are too restrictive, in that they slow down the natural flow of work and have a negative influence on motivation, or their setup and implementation are too complex and too time consuming to make them worth the investment. Enter Sarissa.

The Sarissa quality assistance system offers an ideal and efficient solution.

Local Positioning System

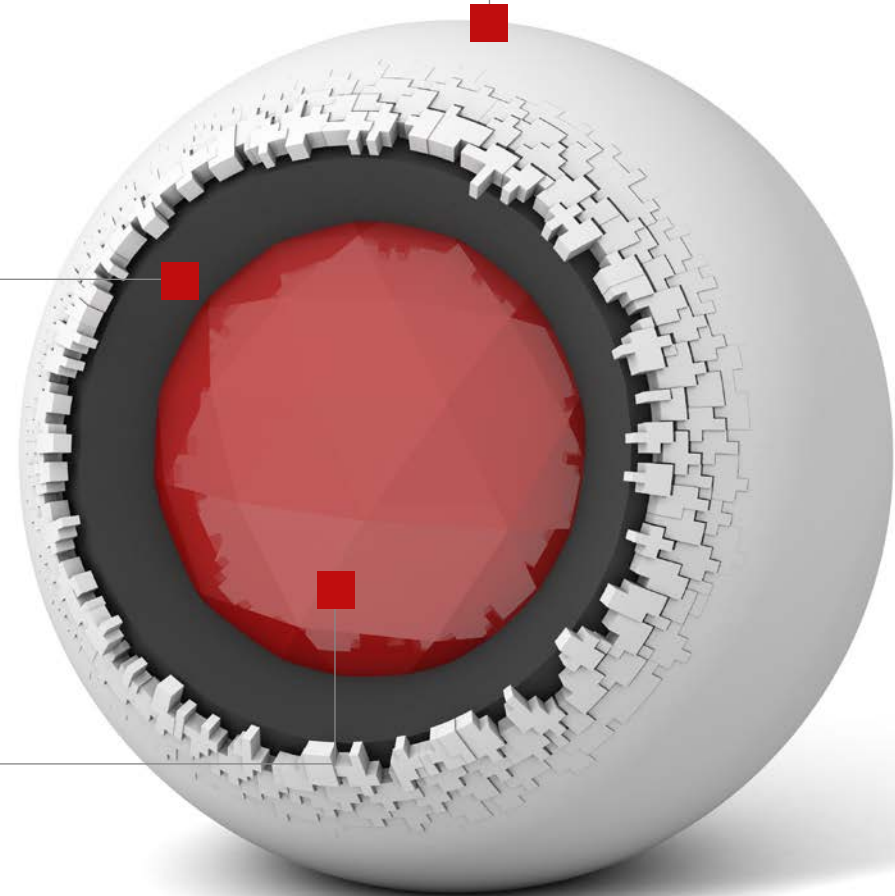
The Sarissa Local Positioning System (LPS) combines advanced ultrasound technology, easy-to-use software and a powerful, open interface architecture. It can be used as a high-performance, highly flexible assistance system or as a pure 3D coordinate supply for automation technology. Either way, the LPS is unique.

QualityAssist

The QualityAssist assistance system is a unique software solution for processing and utilizing the 3D spatial coordinates provided by the PositionBox. With the help of an intuitive user interface, work instructions for a variety of applications can be created quickly and easily.

PositionBox

The core of the Local Positioning System: the PositionBox is an innovative xyz coordinate sensor that calculates the spatial coordinates of tools, workpieces and hands. The PositionBox is based on ultrasound – without the need for any additional length and angle measuring systems.



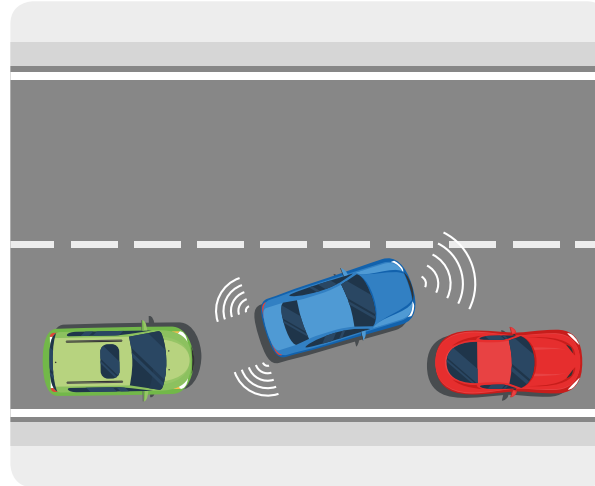
Local Positioning System: How it works



Position Determination

In the GPS satellite navigation system, the receiver calculates its current position by measuring the distance to several transmitters.

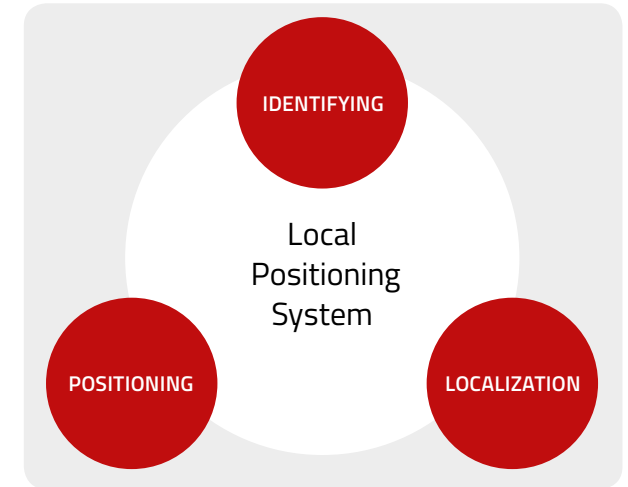
The LPS from Sarissa works differently: Several transmitters send their ultrasound signals from the wrist of a worker, a screwdriver or workpiece carrier into the work environment. Based on the run time of the signals, the receiver unit then calculates the exact position of each individual transmitter.



Ultrasonic Sensory Analysis

The performance and precision of the LPS exceeds by far common distance measurement technology, for example, the kind used in the parking sensors of cars.

The LPS is capable of identifying, locating the associated transmitter, and determining its position within millimeter-precision. With an accuracy of ± 1 mm, the spatial coordinates of the transmitter can be recorded and processed by the QualityAssist system or transmitted from the PositionBox in real-time.



Innovation

Utilizing the main functionality of the LPS, a large number of industrial applications are possible:

IDENTIFY

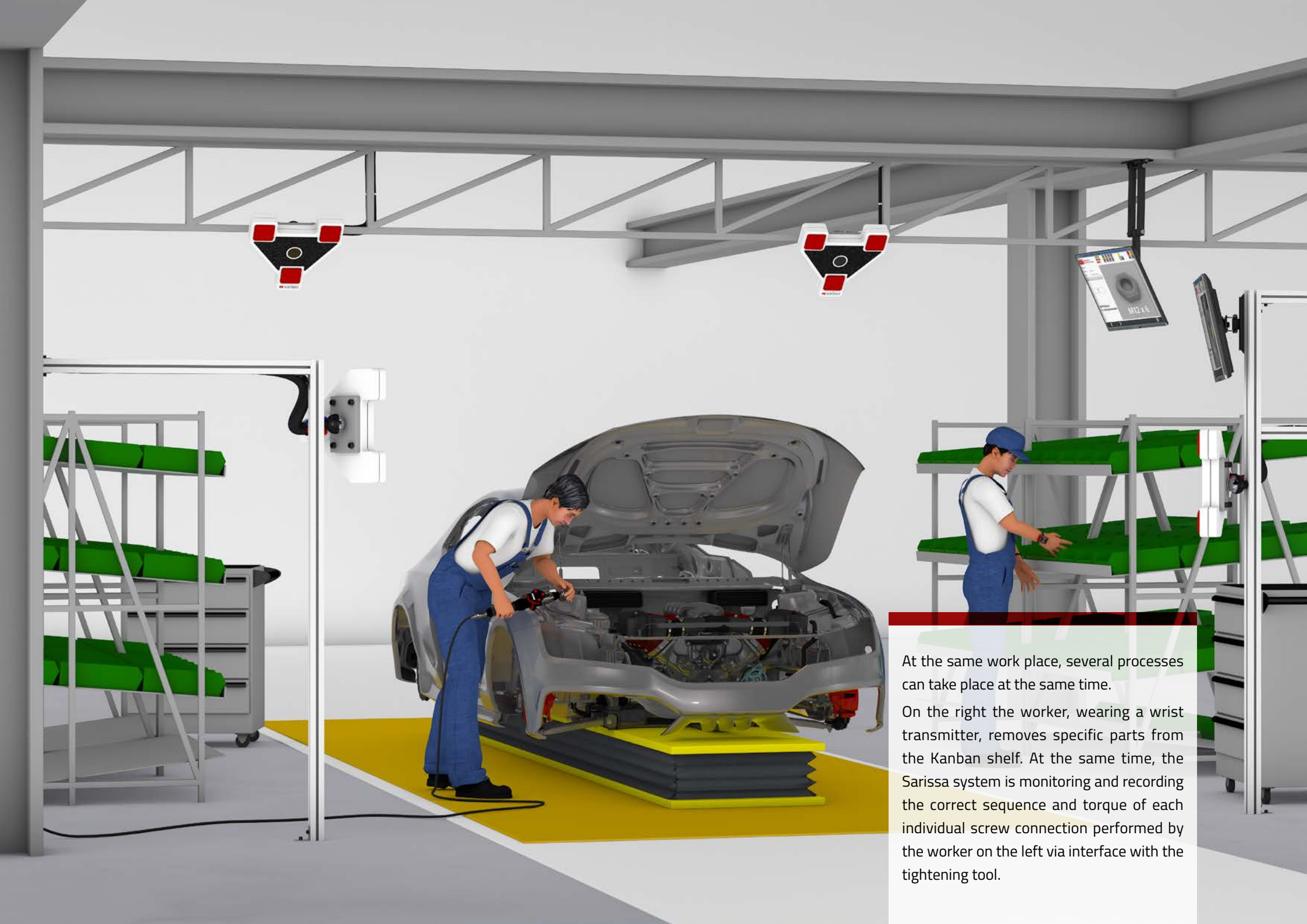
What & Who? What tool, which worker?

LOCATE

Which zone? Which workpiece, in what area?

POSITIONING

Where, exactly? Which screw, in what position?

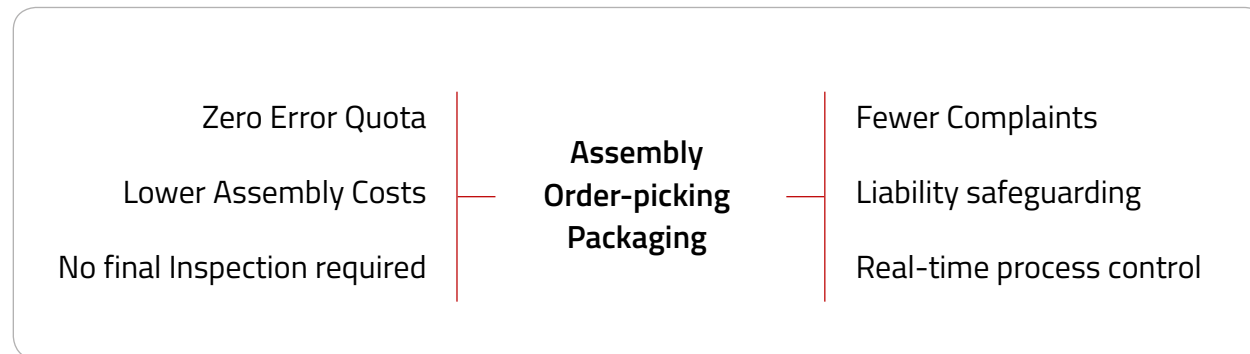


At the same work place, several processes can take place at the same time.

On the right the worker, wearing a wrist transmitter, removes specific parts from the Kanban shelf. At the same time, the Sarissa system is monitoring and recording the correct sequence and torque of each individual screw connection performed by the worker on the left via interface with the tightening tool.

QualityAssist: The Benefits

Error prevention during the value creation process



The operator decides. The assistance system verifies. Sarissa production assistance systems support the worker, facilitating actions and decision making. The systematic supply of information makes manual work processes safer. With Sarissa, one goal is foremost: to link the individual and the machine through intelligent task-sharing of their strengths.

The result: Poka-Yoke in its purest form.

The QualityAssist works like an electronic set of work instructions which ensure compliance. First, you simply teach in the 3-D positions of the work steps and then put them in the correct sequence. It's easy! Afterwards, all the quality-relevant hand movements of the operator, together with any tool positions, are monitored, guided, and corrected if necessary.

The QualityAssist stops mistakes from happening – before they can happen.

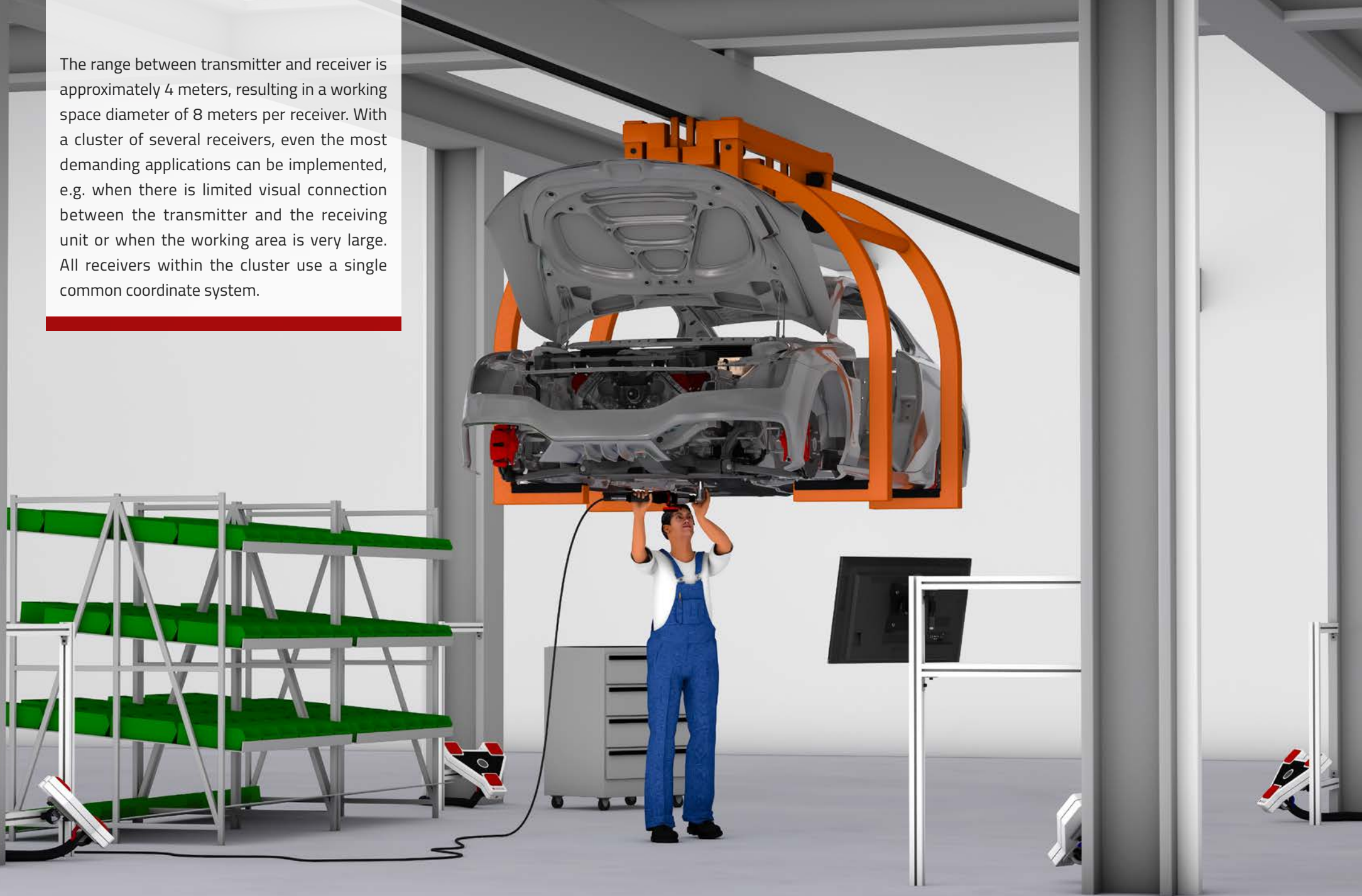
COST REDUCTION

- ✓ Reduction of assembly costs
- ✓ No final inspection
- ✓ Reduction of complaints

POSITIVE SIDE EFFECTS

- ✓ High customer satisfaction
- ✓ Zero error rate through "Zero Default System"
- ✓ Protection against product liability

The range between transmitter and receiver is approximately 4 meters, resulting in a working space diameter of 8 meters per receiver. With a cluster of several receivers, even the most demanding applications can be implemented, e.g. when there is limited visual connection between the transmitter and the receiving unit or when the working area is very large. All receivers within the cluster use a single common coordinate system.



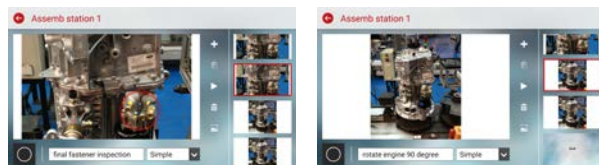
QualityAssist: Mobile and Desktop Application



EasyWorkflow

With the software "EasyWorkflow" from Sarissa, QA staff shoots photos of the planned workflow using a smartphone or tablet. The individual photos can then be supplemented by graphical elements, such as markers, circles, comments and important metadata for the work process.

When the sequence of the work steps has been defined and checked, the inputs are transferred directly to the QualityAssist software on the workstation PC. Here, the program is then finished, tested and provided for the respective workplace.

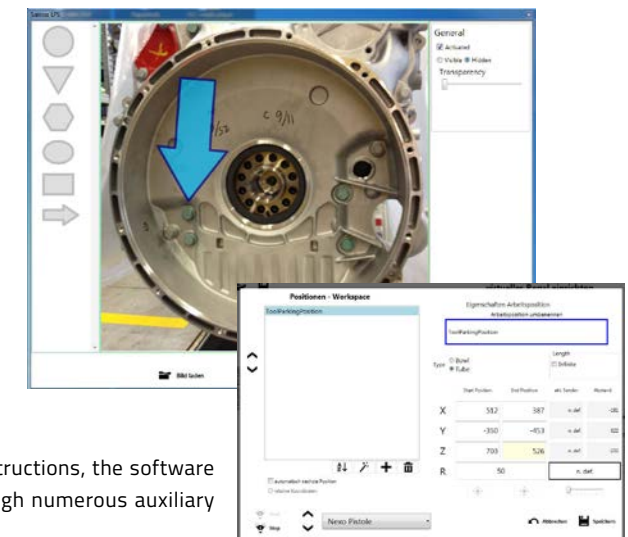


In the Quality Assist application, the work instructions can be easily generated, edited, managed and exported:

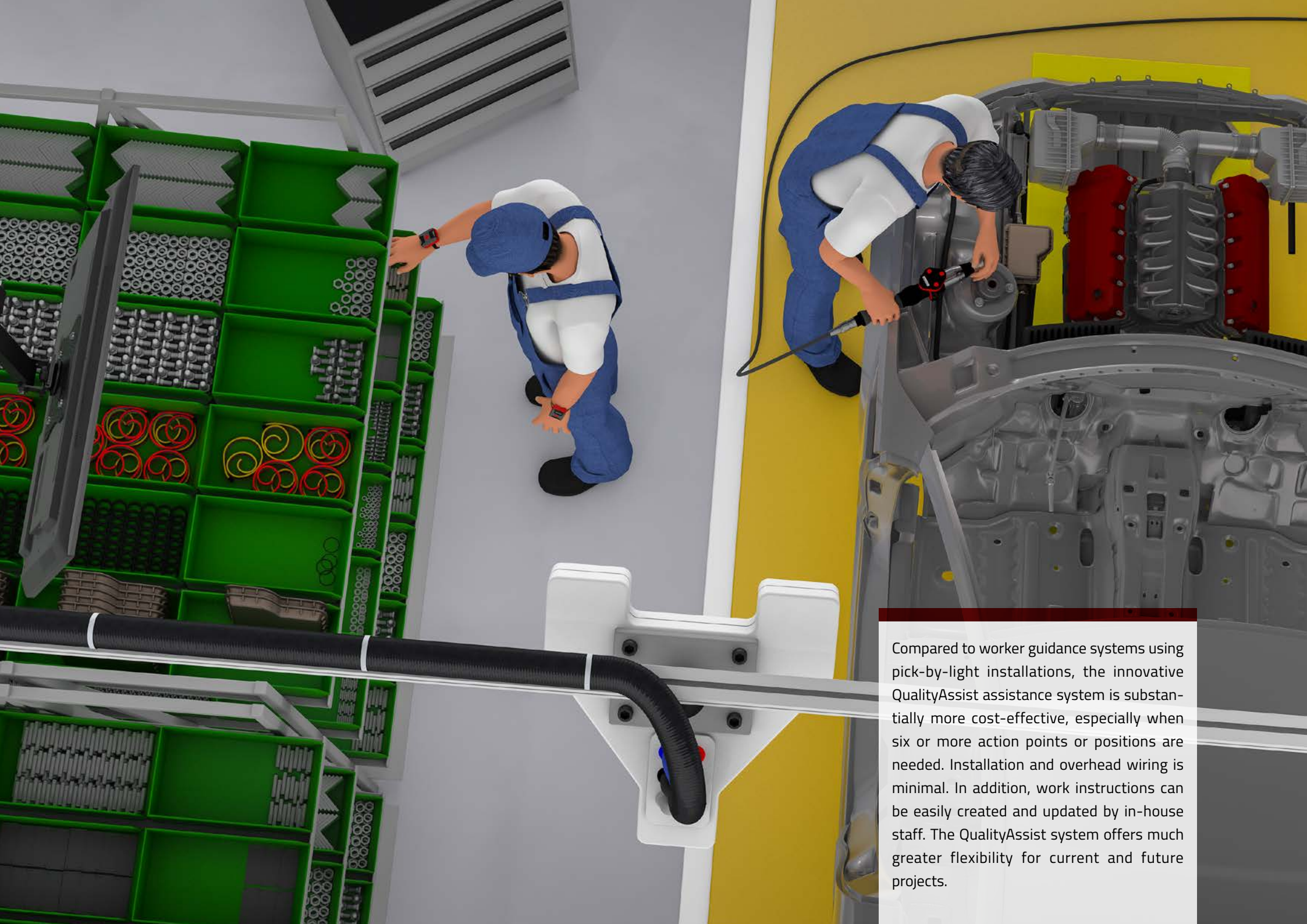
- ✓ Create and edit work processes
- ✓ Define and manage coordinate systems
- ✓ Module for screwing and riveting
- ✓ Images and video sequences can be stored
- ✓ Multilingual user guidance
- ✓ Open Protocol interface
- ✓ PLC interface (24 Volt I / O)
- ✓ TCP / IP interface for production control
- ✓ Protocols for documentation (PDF or CSV)

QualityAssist Software

- ✓ Intuitive, modern user interface and user guidance with various wizards
- ✓ Easy teach-in and clear visualization of positions and support of complex workflows
- ✓ User management with Wizard assistant functions
- ✓ Parameterization instead of programming
- ✓ Extensive software functions such as jumps, branching and timer
- ✓ Test functions for the transmitters as well as for the digital I/Os
- ✓ Visual work instructions can be supported via voice output
- ✓ Connection to CAQ and ERP systems possible



When creating work instructions, the software supports the user through numerous auxiliary functions



Compared to worker guidance systems using pick-by-light installations, the innovative QualityAssist assistance system is substantially more cost-effective, especially when six or more action points or positions are needed. Installation and overhead wiring is minimal. In addition, work instructions can be easily created and updated by in-house staff. The QualityAssist system offers much greater flexibility for current and future projects.

Sarissa Tool Module: Error-free control of tool processes

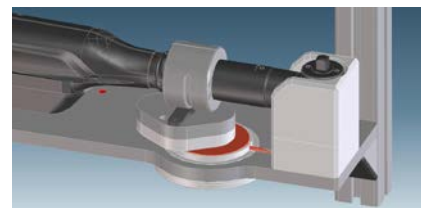


One of the main applications of the QualityAssist with Tool Module is achieving 100% quality assurance where tightening jobs are done

Adapted to the specific task of monitoring and controlling the exact position of a tool moving freely in space, the QualityAssist makes a significant contribution to 100% manufacturing quality assurance that is not possible by any other means with this high degree of flexibility.

No matter what the tool looks like – whether it's a screwdriver, a glue or grease dispenser, a welding gun, a punching tool or torque wrench – errors due to incorrect positioning, incorrect sequence of steps, too short or too long a

dwell time at one position: all these errors can be reliably prevented using the Sarissa QualityAssist assistance system with its unique tool module.



Suitable for any Tool

The ultrasonic transmitter can be mounted on almost any tool of any manufacturer. Numerous mechanical and software interfaces, facilitate integration into existing systems. The transmitters are already integrated into various tools or can be easily used with tools from various manufacturers, e.g.: Apex | ASI | DATAMYTE | Atlas Copco | Bosch-Rexroth | Cleco | CSP | Deprag | Desoutter | GESIPA | GWK | Ingersoll-Rand | Stanley | others on the way – just ask!

Easy Installation

Simply install the receiver unit, teach in the positions and work steps – done! With the help of the intuitive QualityAssist software, creating new recipes is quick and easy.

NEW: Wireless Tool

The wireless version of the tool transmitter reduces the installation work and enables comfortable, independent operation. When the tool is put down, the module's battery automatically begins charging by means of induction.



The worker is guided through the mounting sequence of the Class-A screwing operation on the suspension strut. In addition, the torques and other data of the screwing process are paired to the corresponding position data and time stamps are completely logged.

QualityAssist: Quality at manual work stations



Wireless HandSensor

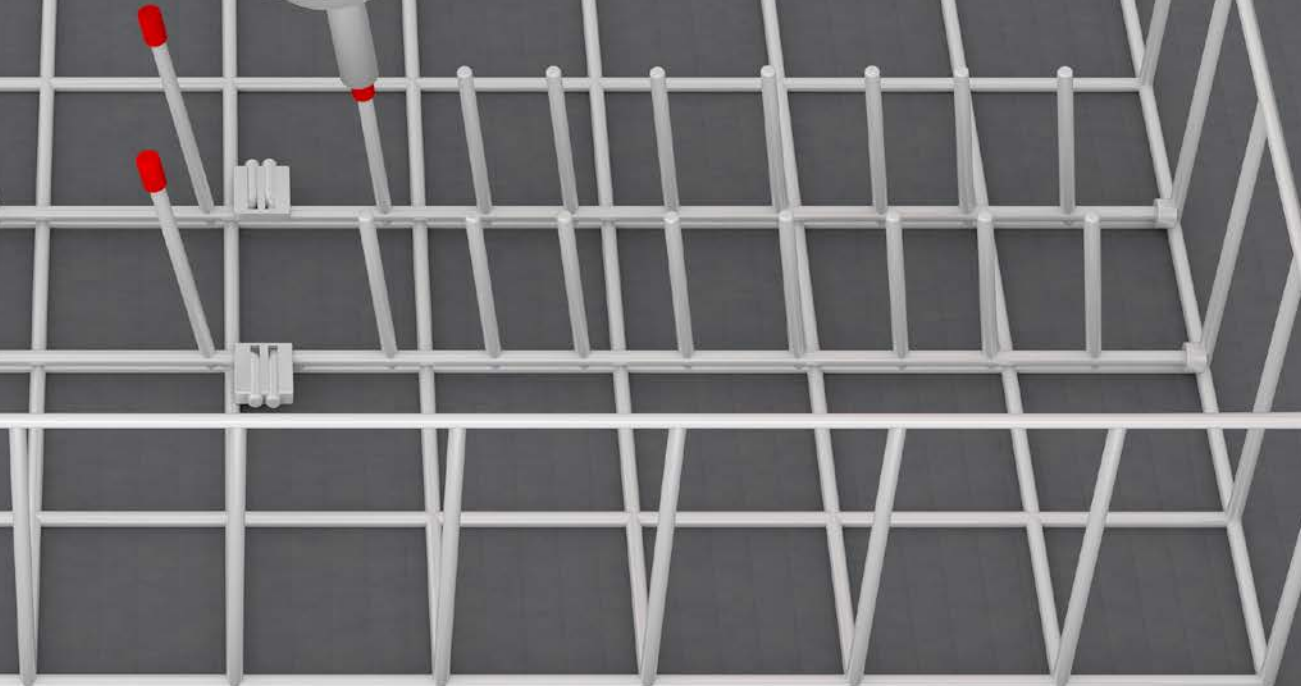
Wireless wrist transmitter with only 40 g of weight. Up to 14 hours of use thanks to rechargeable lithium-ion battery. For two-handed operations, QualityAssist can identify and separately track the right and left hand. Inductive charging and the absence of mechanical actuators ensure the necessary robustness.

QualityAssist benefits

- ✓ Cost reduction
- ✓ Active worker guidance with real-time HMI work instructions
- ✓ Avoidance of random errors
- ✓ 100% quality assurance during the value creation process
- ✓ Reduction of liability risks
- ✓ Poka-Yoke – error avoidance – in its purest form

The Ultrasonic-based QualityAssist Assistance System can accurately and reliably detect the position of objects moving freely in space. In millisecond intervals noiseless and physiologically harmless signals are emitted to track movements with millimeter precision. Adjacent work stations can be operated without any interference.

QualityAssist has been tested and approved
by the German Institute for Occupational
Health and Safety



The assistance system offers very comprehensive reporting functions for quality management.

	SystemID MotorMontageStation1	Workflow Name Reporting	
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PositionBox: 3D Coordinates for any Application

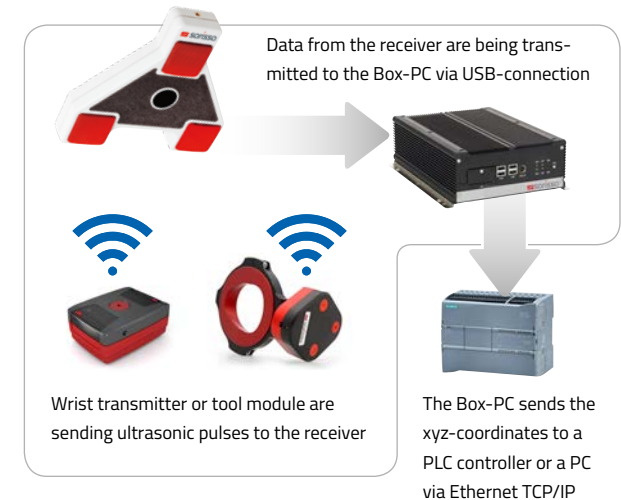


The Sarissa PositionBox is an innovative x-y-z coordinate sensor which makes it possible to determine the 3D position of handling devices or tools, without any additional length or angle measuring systems and with virtually zero wear-and-tear.

The PositionBox transfers the xyz position data in real time via an Ethernet TCP / IP connection. The evaluation and representation of the spatial coordinates takes place in the customer system. As an intelligent 3D sensor, the Sarissa PositionBox can be integrated into all production situations. Parameters of the system are set via TCP / IP and the

necessary location information of the tool, the workpiece or the hands can be queried and evaluated at any time. We are pleased to provide you sample software for Siemens S7 and .net applications to facilitate the development of drivers for 3rd party / customer systems quickly and efficiently.

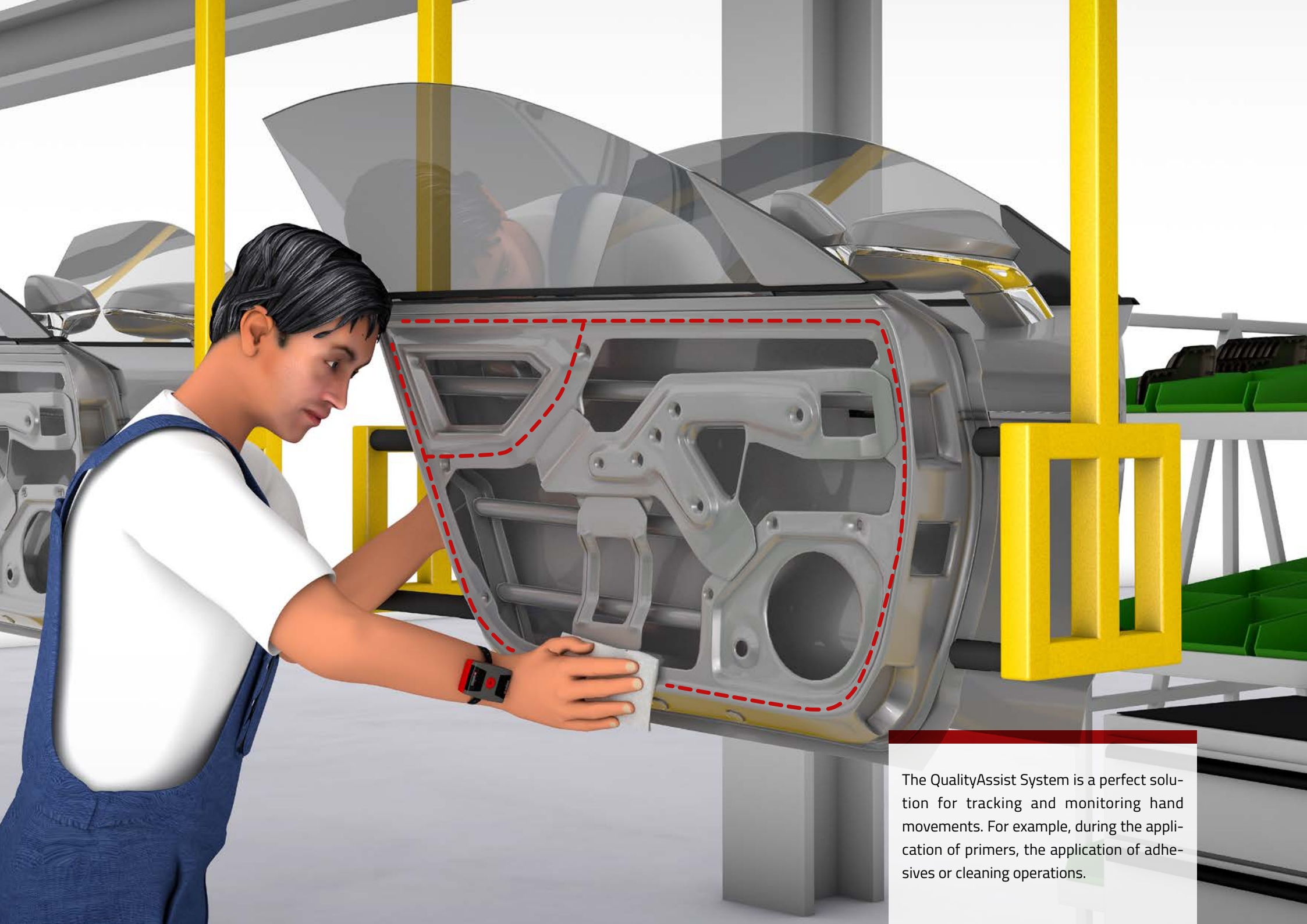
The tried-and-tested command set of the PositionBox enables you to start the master system by production control, to query results and to set digital outputs. Ask us for detailed technical documentation.



QualityAssist | PositionBox: Maximum Compatibility

Sarissa assistance systems fit perfectly into a networked production environment. In terms of Industry 4.0, the PositionBox and the QualityAssist provide exact, quality-relevant location information. Via TCP / IP connection and a real-time data protocol, the LPS communicates with higher-level controllers, whether PC or PLC. With powerful commands, the LPS can be remotely controlled. Work instructions can thus be put together in real-time from existing basic information generated by the production control of the user.

The result: a highly flexible control of the production of products according to customer requirements, true Batch Size One production. Human errors of neglect, omission, and confusion are no longer possible. In order to connect tools, the LPS has four open-protocol interfaces. Modbus-TCP to digital inputs and outputs completes the communication possibilities. For remote assistance or maintenance, the second network interface can be used with TeamViewer®.



The QualityAssist System is a perfect solution for tracking and monitoring hand movements. For example, during the application of primers, the application of adhesives or cleaning operations.



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