ansomat

Operator Guidance & Assembly Solutions

Human-centered technology for zero-defect manufacturing

Introduction

Ansomat is a family-owned business with nearly **30 years** of experience delivering trusted tooling and assembly solutions.

Since our founding in **1996**, we have specialized in bespoke tightening and fastening solutions for manufacturers throughout the Benelux and the United Kingdom.

In **2016**, we launched our Operator Guidance platform, driven by a vision to eliminate shop-floor mistakes and enable error-free manufacturing. Ever since we've expended into other European, North & South American and North Africa countries.

Rethinking automation in function of humans

At Ansomat, we believe the role of the operator is indispensable. By equipping operators with the right tools, we enable them to follow work instructions, assemble components, and perform tightening tasks with minimal friction and without errors.

We support manufacturers in developing processes that are smooth, intuitive, and scalable, helping them manage the ever-increasing number of product variants.

Why manufacturing became so complex

1 The area of Mass Production: efficiency above all

For decades, manufacturers embraced automation and robotization to create highly efficient shop floors. The objective was clear: reduce human involvement, standardize processes, and improve quality by eliminating variability.

Mass production emerged in the early 20th century with Henry Ford and his revolutionary assembly line. Its core assumptions were:

- Standardized products
- Long production runs (often 24/7)
- Highly routinized work
- Low unit costs through economies of scale

The goal was simple: maximize efficiency.

The trade-off, however, was a severe limitation in variety and personalization. Products were designed to fit the factory, not the individual customer. As Henry Ford famously stated, customers could have any color Model T they wanted, as long as it was black, a remark that perfectly captures the dominance of efficiency and uniformity over choice and individual preference during this era.

1920

2025

2 The shift towards Mass Customization demand

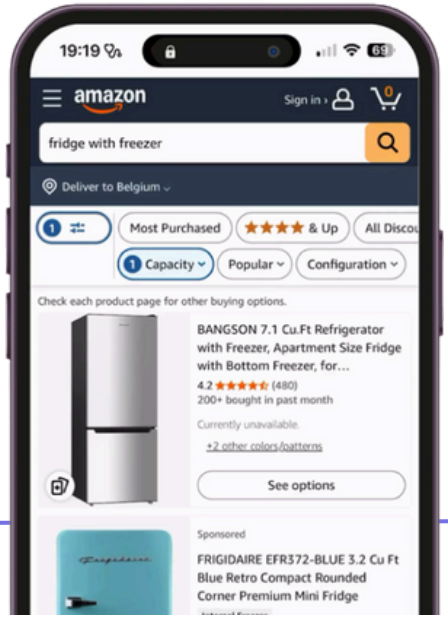
The primary driver of change has been the growing demand for customization and personal experience. A car today is no longer just a means of transportation. Customers expect a wide range of options: heated seats, parking assistance, advanced audio systems, large touchscreens, adaptive cruise control, and more.

This trend has expanded across many industries:

- Hundreds of configuration options in home appliances
- Personalized shoes and apparel
- Custom-built laptops and electronics

This evolution gave rise to mass customization, often described as high-mix, low-volume production, not only in automotive sector but far beyond.

Customers configure products, frequently online, and manufacturers are expected to deliver. The vision is a product “designed by the customer, produced by the manufacturer.”



100+ of options when searching for perfect product fit online

Full automation meets its limits

1 Machines struggle in environments where tasks change frequently

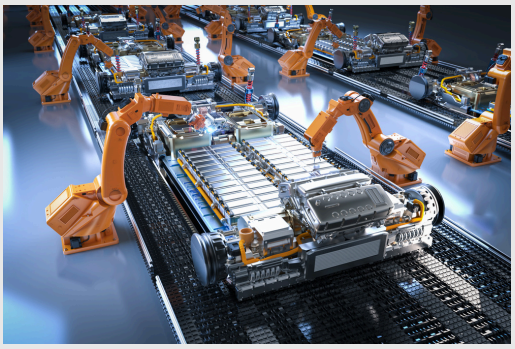
Mass customization poses a major challenge for automation. Robots excel at repetitive, standardized tasks, but struggle in environments where tasks change frequently.

Key limitations include:

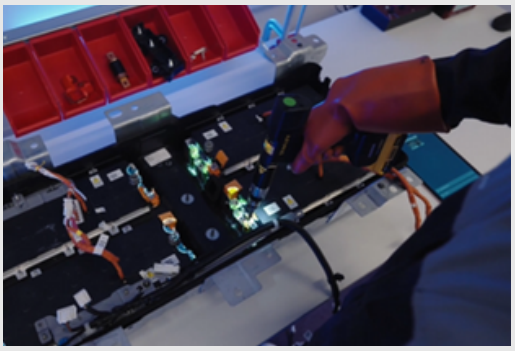
- Frequent reprogramming required for new variants
- High dependency on engineers to adapt automation systems
- Time-consuming and costly changeovers

Involving engineers to reprogram robots for every product variant is often impractical and erodes the financial benefits of automation. As a result, the return on investment is uncertain, especially in high-mix, low-volume environments.

Humans, by contrast, bring tactility, creativity, and adaptability, qualities that are essential when handling variability. Humans do not need to be programmed, can respond to unexpected situations, and can switch between tasks with ease. In this sense, humans represent the most adaptable form of automation.



Automated Line



Human Guidance

2 Robots have high investment, no guaranteed ROI

Automation and robotization involves a substantial initial investment for implementing such systems. This upfront cost can be a barrier for many companies, particularly small to medium-sized enterprises, and requires careful financial planning and justification.

Moreover, once automation systems are in place, ongoing maintenance and monitoring are essential to ensure optimal performance.

In-house engineers are often required to continuously monitor and reprogram robots, especially when new products are introduced or modifications to existing processes are made. This demands a skilled workforce capable of troubleshooting issues and adapting automation systems to evolving requirements.

Despite the potential for increased efficiency and cost savings, there is no guarantee that the business case for automation will yield positive results in every scenario.

Conclusion: Labor-driven manufacturing will remain

Humans represent the most adaptable form of automation. They can easily switch between tasks, possess creativity and can swiftly adapt to process uncertainties. Unlike machines, humans are not preprogrammed.
Hence, manufacturers are starting to recognize **the importance of semi-automation, where humans play a pivotal role**.

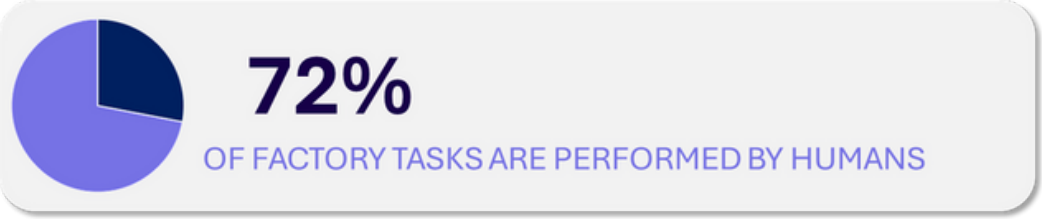
Human-driven production comes at a cost

1 Humans make mistakes

Mistakes are an inevitable part of any process, stemming from various sources, with human errors being among the most unpredictable and common.

Human errors contribute significantly to unplanned downtime. Factors such as skill gaps, memory, alertness, and fatigue all play a role. However, the primary cause of mistakes is distraction, whether from a coffee break or a shift change. Once someone is disrupted, it's difficult to recall where they left off, especially when they lose their flow.

Another major factor is "habits." People are often resistant to change, making it difficult to adopt new methods of working, even when the old ways are no longer the most efficient.



2 Growing labor shortage and knowledge loss

Manufacturers today face significant labor shortages. Staffing challenges lead to missed deadlines, production downtime, and revenue loss. At the same time, the workforce is aging, creating a widening skill gap between experienced operators and younger employees.

A critical challenge lies in tacit knowledge, the know-how that exists only in people's minds:

- Aging workforce nearing retirement
- High employee turnover
- Skill gaps among new hires
- Knowledge that is intuitive and difficult to document
- Lack of centralized knowledge management systems

3 Operational consequence of Mass Customization

While mass production maximized efficiency, mass customization aims to maximize relevance, producing what customers want rather than what factories can produce cheaply.

This shift dramatically increases operational complexity. Manufacturers must now manage:

- A growing number of components and product configurations
- Constantly shifting production schedules with frequent changeovers
- Highly complex and fragmented inventories
- Assembly processes that are more detailed, variable, and difficult to manage

Customization fragments demand into smaller batches, fundamentally altering the economics of manufacturing. Instead of producing large volumes of identical products, manufacturers must now handle shorter production runs with frequent changeovers, increased setup times, and greater coordination across planning, procurement, and production.

This fragmentation weakens traditional economies of scale, where efficiency and cost advantages were achieved by spreading fixed costs over high volumes.

The Growing Operational Gap on the Shop Floor

Mass production

- Standardized products
- Long production runs (often 24/7)
- Highly routinized work
- Low unit costs through economies of scale

Mass customization

- Large number of parts and variants
- Frequently changing production schedules & setup times
- Complex inventories
- More intricate assembly processes

Most common worker mistakes are driven by..

.. a broad range of factors that introduce significant variability into the production process. These factors disrupt consistency, increase cognitive load, and make it more difficult for operators to perform tasks reliably.

01. Skill gap

The search for skilled labor and proficient operators is a daunting task, worsened by a significant skill gap between younger and older generations. The knowledge transfer between these age groups is often hindered, leaving valuable expertise trapped within the minds of experienced workers. Meanwhile, the scarcity of engineers capable of spearheading digital initiatives further compounds this challenge. Despite the emphasis on STEM education, not every individual is suited to pursue a career in engineering. Some prefer routine tasks over while other seek more stimulating challenges.

02. Human fallibility

Human fallibility is another critical concern in manufacturing operations. Operator mistakes, whether intentional or unintentional, can occur at any moment, after a coffee break, during a chat with a colleague, or between shifts when fatigue sets in. These distractions can lead to errors that jeopardize both productivity and product quality.

03. Lack human traceability

Compounding this issue is the lack of real-time visibility into operator activities on the shop floor. Unlike machines, which can be monitored and analyzed for performance data, operators' actions remain largely vague, making it challenging to ensure consistency and adherence to protocols.

04. Ineffective training

Another obstacle lies in shop floor training. Although training programs strive to improve skills, their efficacy can fluctuate, and there's always the chance that employees will depart after receiving the investment. Moreover, the delivery format of training can be dubious. Lengthy classroom sessions can cause operators to lose focus and fail to fully comprehend the material. Additionally, supervisors may invest excessive effort in overseeing operators, rather than engaging in more value-added tasks, due to concerns about potential errors.

05. Globalization

Globalization introduces another layer of complexity, particularly in culturally diverse work environments where language barriers and differences in expectations can impede communication and collaboration. Operators may struggle to fully grasp the nuances of their tasks or the broader objectives of the manufacturing process, leading to misunderstandings and inefficiencies.

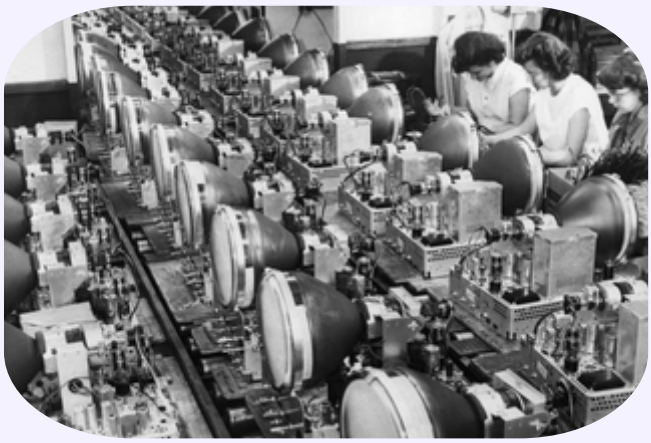
06. Complexity production

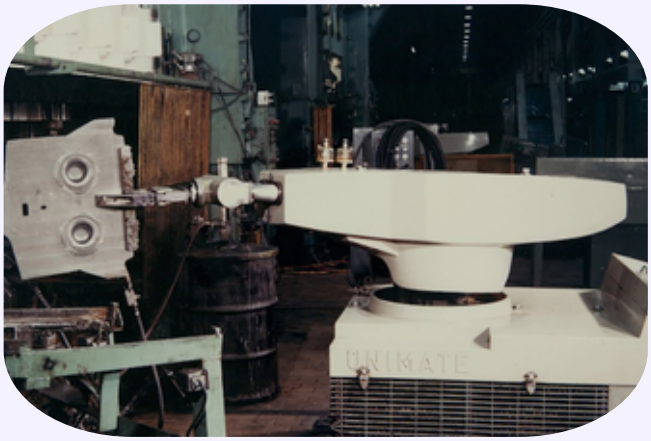
This places a considerable burden on operators who must navigate the complexities of ever-changing tasks and processes.

From Foundation of Automation to Human-Centric Production

Pre-1960
Foundation of Automation

Before robots, automation began with mechanical control systems, relay logic, and early mass production concepts. Innovations such as the assembly line, statistical quality control, and basic electromechanical automation laid the groundwork for later robotization by standardizing work and processes.





1980-1990
Robotization starts

Robotization starts with the first industrial robot arms entering factories. In 1961, the first industrial robot was deployed at a General Motors car plant, marking the beginning of modern automation. The primary goal was to remove humans from monotonous, heavy, and dangerous tasks, especially in welding and material handling.

1980-1990
Acceleration of Automation

Automation expands rapidly with the widespread adoption of CNC machines and increasingly automated automotive assembly lines. At the same time, computers begin supporting production planning and control, leading to early ERP systems that connect manufacturing with business operations.

1990-2000
Digital Networked Factories

PCs and industrial networks start controlling machines and processes. Programmable Logic Controllers (PLCs) become the standard control platform in factories, enabling reliable, repeatable automation. This period establishes the foundation of “factory automation” as it is still understood today.

2000-2010

Smart robots & IT integration

Robots gain improved sensing, machine vision, and processing power, allowing more flexible and precise automation. Human–robot collaboration begins to emerge, introducing early cobots. Production systems become increasingly integrated with IT and supply chain software, improving transparency and coordination.

2010–2023

INDUSTRY 4.0

Industry 4.0 was built on the promise of maximum automation, where robots, machines, and software take over repetitive and standardized tasks. Factories were designed to operate continuously with minimal human intervention, focusing on full automation, 24/7 machine operation, extensive data extraction from production equipment, and highly standardized processes. This approach delivered major productivity gains, particularly in highly automated environments such as paint shops and body shops, and proved extremely effective for high-volume, low-variant production.

2023 - NOW

INDUSTRY 5.0

As products become more complex and customer demand shifts toward personalization, the limits of full automation are increasingly visible. Industry 5.0 represents a clear shift from technology-first thinking to human-centric, semi-automated production, where humans are no longer replaced by technology but empowered by it.

Rather than aiming for maximum autonomy, systems are designed to keep people in control, supported by intelligent tools. AI accelerates rapidly to assist operators, engineers, and planners through decision support, automated engineering tasks, and intuitive interfaces. These operator-focused technologies guide people through their work, reduce complexity, and eliminate errors to the highest possible degree, combining human flexibility and intelligence with the strengths of automation.

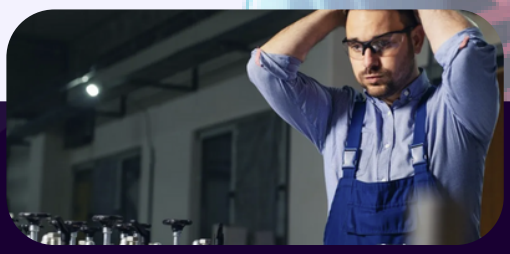
Technology in function of humans

Humans as the backbone of a factory

1

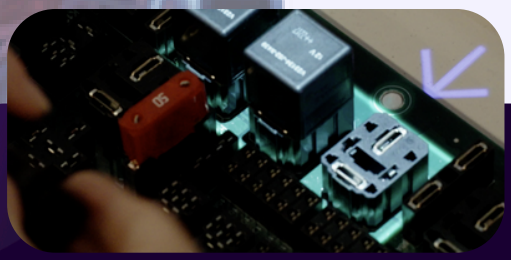
Guidance on the job for any skill

2



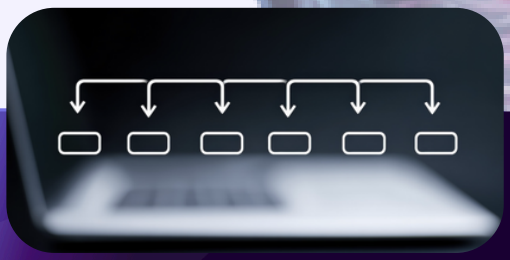
Eliminate worker mistakes & reduce rework

3



Facilitate training on-the-job

4

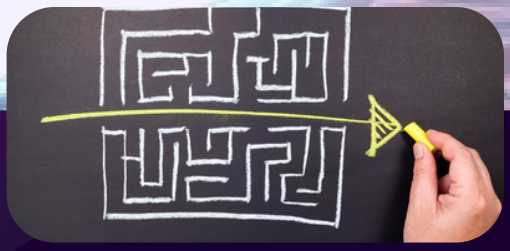


Dynamic work instructions changing with variant

5

Paperless factory

6



Easy to configure and adjust instructions

7

Broader workforce employability

8

Full transparency human actions on the shop floor

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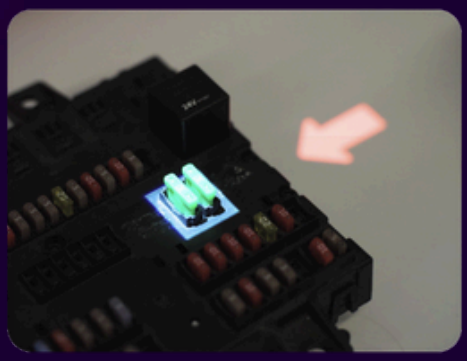
Operator Guidance Software

Work Instruction Solutions

Digital Work Instructions



Augmented Reality

Companion App

Digital Work Instructions

The backbone of operator-assisted operations

In a world where manufacturing processes are becoming increasingly complex, the need for accurate, efficient, and up-to-date instructions has never been greater. Digital work instructions are rapidly replacing outdated paper manuals, static PDFs, and PowerPoint slides across shop floors. These modern, interactive instructions transform the way operators perform their tasks, reduce errors, and bring consistency to manual operations.

Whether you're managing high-mix low-volume production, onboarding new staff, or trying to eliminate costly mistakes, digital work instructions offer a scalable solution that aligns with your digital transformation goals.

99% ↓
paper manuals

99% ↑
worker action traceability

What are digital work instructions?

Digital work instructions are interactive, often visual, step-by-step instructions delivered through a pc screen. They break down complex tasks into manageable steps, providing visual cues, guidance, and checks that make it easier for operators to complete their work correctly and efficiently.

By moving away from printed manuals and outdated files, manufacturers ensure that operators always follow the latest version of the process, increasing standardization and reducing human error.

What are the benefits?

Up-to-date and consistent instructions

Paper-based instructions can easily get lost require revision and become obsolete. With digital-based instructions, you always have the latest and up-to-date version at hand. By moving away from printed manuals and outdated files, manufacturers ensure that operators always follow the latest version of the process, increasing standardization and reducing human error.

Comprehensive instructions

Wrong understanding of instructions can have serious consequences. Digital work instructions are a proven productivity builder. Using images, video's, symbols, drawings, complex procedures are communicated in a more comprehensive way. Typically, these are built by more experienced workers to capture tribal knowledge leading to operator mindfulness and limits stress for younger, unexperienced operators.

Paperless factory

Transform your factory into a fully paperless environment where workers are guided through every manual process using digital, step-by-step work instructions. By reducing the need for paper-based instructions, digital work instructions can help reduce paper waste and contribute to sustainability efforts

Skill-dependent instructions

Display tailored instructions based on each worker's skill level, experience, and language preference. Automatically track and update skill proficiency over time, accounting for both improvement and degradation based on actual performance.

Cope with unlimited number of variant products

Present comprehensive customized instruction sets for each product variant without the requirement of creating separate instruction sets per variant, thanks to intelligent built-in algorithms.

Skill Competence Matrix
Enable dynamic recipe creation based on user skills.

Variant Management
Manage thousands of product variants efficiently through intelligent algorithms.

Version Control & Approval Flows
Maintain full version history with approval processes and rollback options

User Management
Define user roles and permissions to control access.

Media Library
Centralized storage for all images and visuals, with annotation tools.

Flexibe Step Types
Diverse instruction formats: images, videos, checklists, data input fields,...

Multi-Operator Collaboration
Support for multiple operators working simultanuously

Real-Time Alerts & Messaging
Instantly notify users of important events or when worker acquires assistance.

Companion app

The backbone of operator-assisted operations

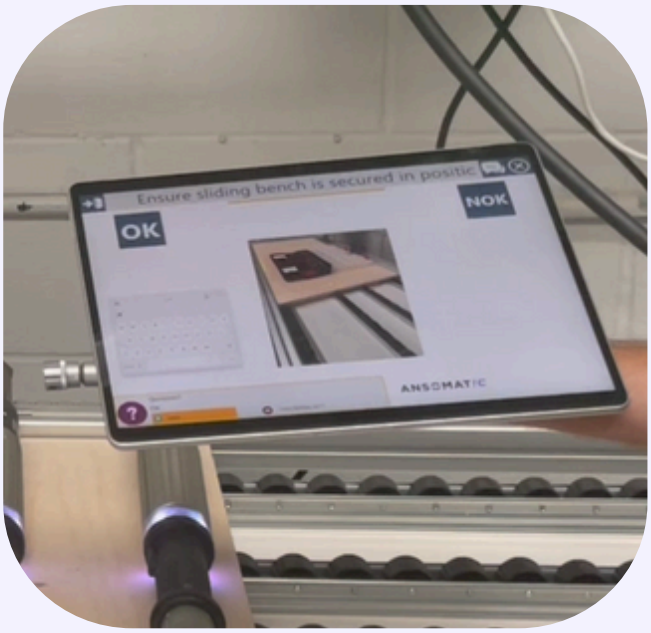
Mobile and tablet-based work instructions offer the same clear and detailed information you access on your PC screen; however, they add powerful advantages such as portability, touch-friendly navigation, and instant on-the-go accessibility.

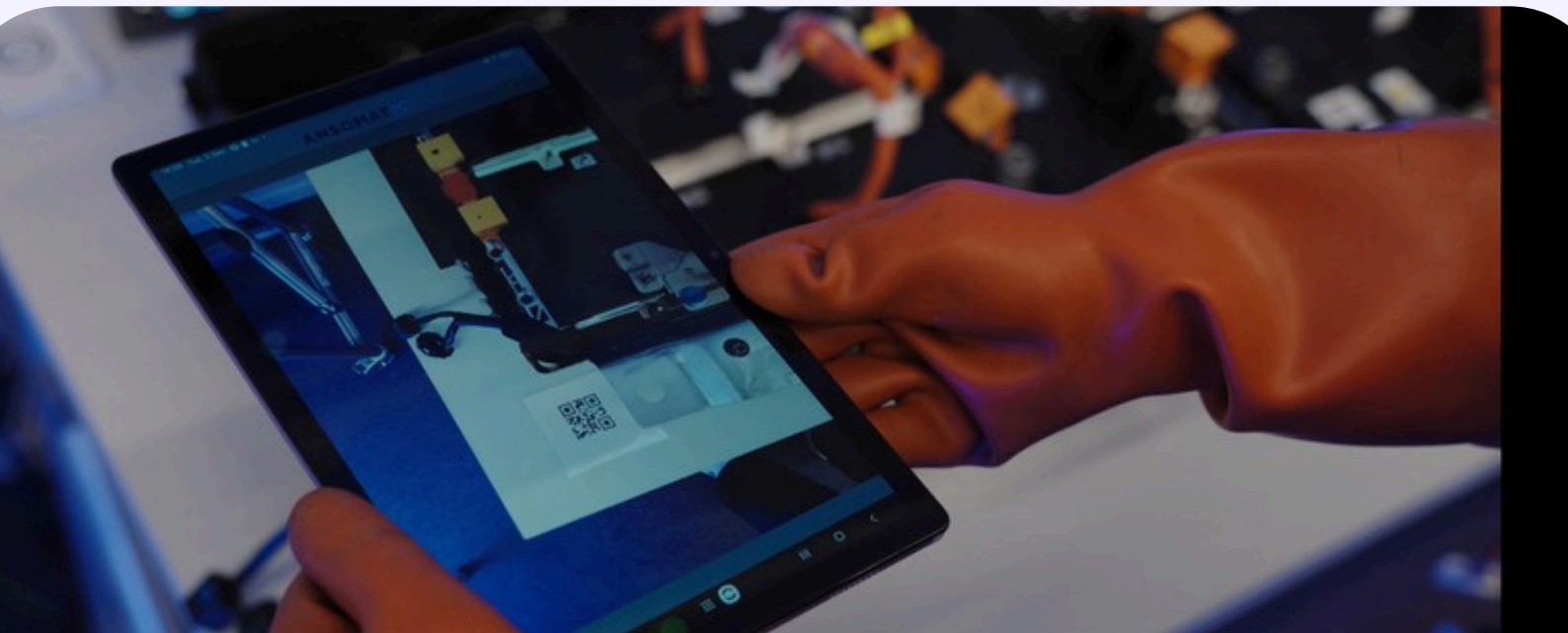
With these digital tools, operators can quickly reference procedures, confirm each step in real time, and capture critical data directly from the workspace, all while moving freely between tasks.

When to go mobile?

If any of these apply to your shop floor, it’s time to consider a mobile-first approach:

- Your work **area is too large** for a single static display.
- Some parts are **difficult to access** (e.g. underneath or inside vehicles).
- Operators **frequently move** across workstations and need mobile confirmation.
- You need to **capture pictures for traceability**, ensuring accurate documentation and quality assurance throughout the process.





What are the benefits?

Always have the right information at your fingertips

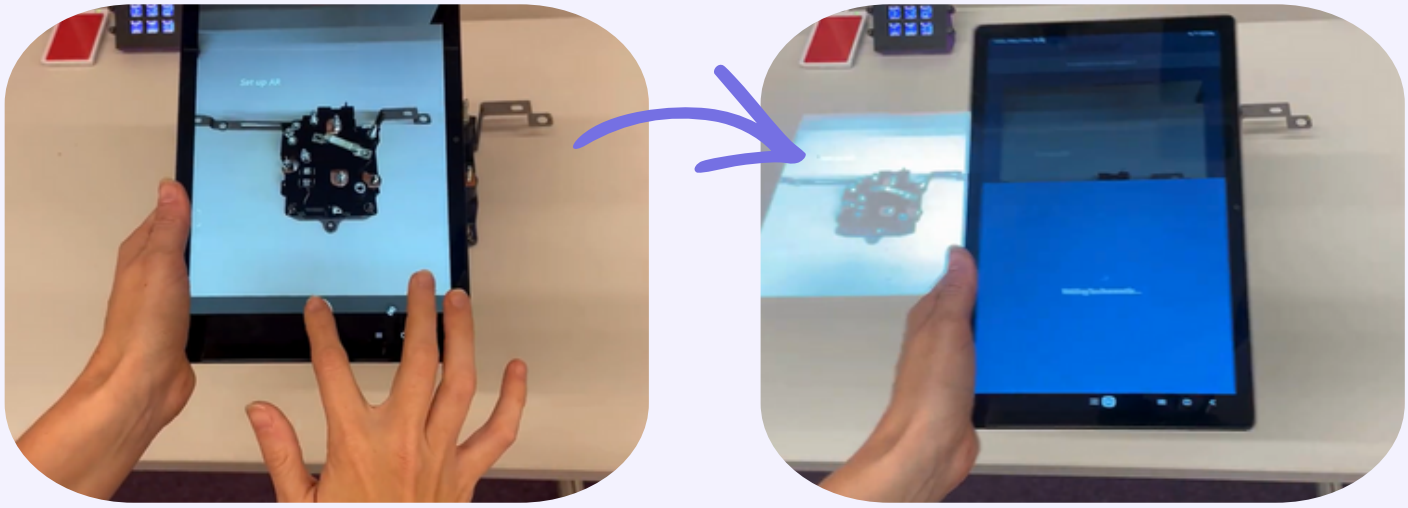
Empower your operators with real-time, interactive work guidance, anytime and anywhere. The Companion App delivers step-by-step instructions directly to your team. Therefore, it's perfect for complex builds, large assemblies, and dynamic operations where static screens simply can't keep up. As a result, your workforce stays focused, informed, and productive at all times.

Seamless access in hard-to-reach areas

In confined or hard-to-access spaces, switching between devices or returning to a workstation can disrupt workflow. However, with the mobile Companion App, operators can view, complete, and confirm tasks instantly on their device. This means no interruptions, no barriers, and no lost momentum, even in the most challenging environments.

Reduce instruction setup time

Creating work instructions can be time-consuming. Fortunately, the Companion App automatically captures process images and uploads them to your media library. These can also be instantly projected onto the work area. Consequently, your team can generate ready-to-use visual work instructions in just minutes. In addition, this automation minimizes manual documentation and speeds up setup, allowing you to maintain efficiency and consistency across operations.



Take picture with app

instantly projected onto work area

Built-in Barcode Scanning

Scan and analyse barcodes directly, replacing traditional scanners.

Seamless Step Confirmation

Operators can confirm step completion or input values directly through the app, reducing friction and increasing productivity.

Picture Capture for Traceability

Operators can take pictures of each part, automatically stored for full traceability and quality assurance.

Automatic Instruction Generation

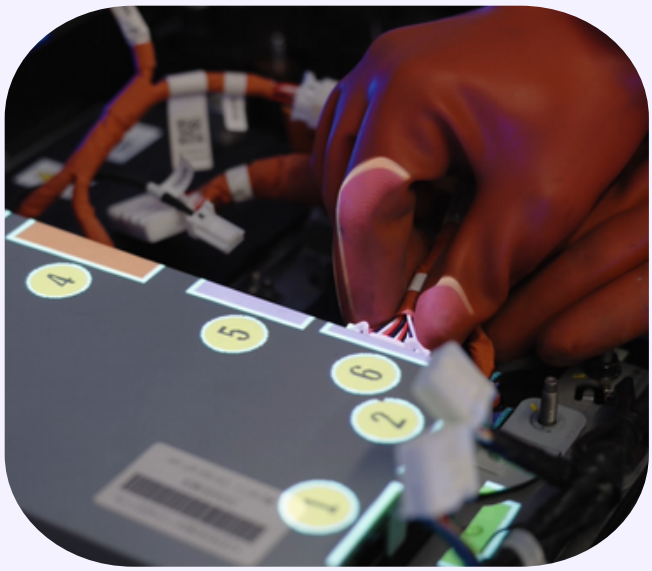
Take pictures that are automatically uploaded to the media library

Augmented Reality

AR is set to reshape how manufacturing operates

Augmented reality (AR) instructions using a projector involve projecting step-by-step guidance, visuals, and markers directly onto the physical workspace or components. Instead of relying on manuals or screens, workers see instructions overlaid precisely where actions need to be performed. This makes tasks like assembly or quality checks more intuitive, as the projected information highlights exact locations, sequences, and actions in real time.

By turning the work surface itself into an interactive guide, projector-based AR reduces errors, speeds up workflows, and improves accuracy without the need for wearable devices.

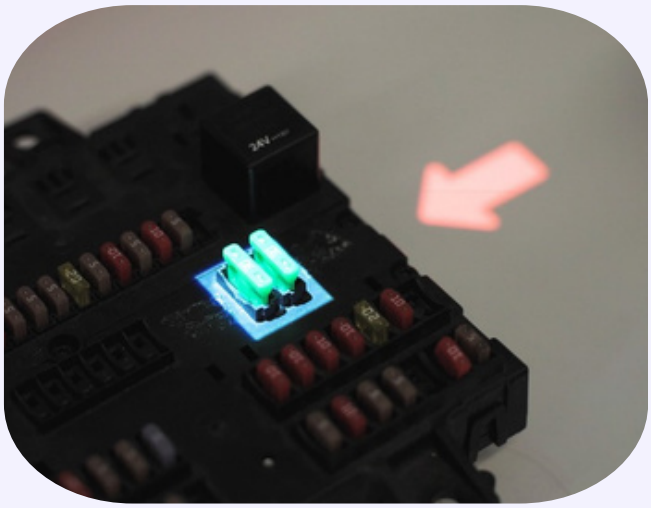


39% ↑
worker confidence boost

50% ↓
training time

55% ↓
worker mistakes

When to consider Augmented Reality?



If these situations sound familiar on your shop floor, it may be the right time to adopt AR:

- **High staff turnover** - You have lots of turnover of employees and you want to onboard new hires quicker
- **High product variation or frequent changeovers** - when operators need to assemble many variants or adapt to new processes quickly, AR reduces complexity and onboarding time.
- **Mixed skill levels among operators** – You want to support less experienced workers with clear, step-by-step visual guidance so they can perform at a higher level with confidence.

What are the benefits?

Visuals tell more than a 1000 words

Humans are naturally visual learners. Images, graphics, and animations communicate complex ideas more clearly than text alone, making it easier for shopfloor people to absorb and retain information. With projection-based augmented reality, visual instructions are brought to life in real-time, right where the work happens.

100% training on the job

Traditional classroom training separates learning from real work, slowing adaptation and lowering confidence. Augmented enables on-the-job training with real tasks and tools, speeding up learning through hands-on experience.

Fresh hires match the performance of experienced members

New hires can become productive more quickly, and seasoned workers can learn new processes without stepping away from their stations. Digital work instructions are customizable based on skill level, ensuring that each operator receives the right amount of support, exactly when it's needed.

Eliminate guesswork

The intuitive guidance eliminates guesswork, reduces hesitation, and increases focus. The immersive nature of AR enhances confidence and accuracy, leading to faster task completion and fewer worker errors.

Better ergonomics

Projection-based AR improves ergonomics by keeping instructions directly in the operator's line of sight, reducing neck and wrist strain caused by repeatedly looking away at screens or manuals. It also minimizes unnecessary movements by projecting guidance onto the workspace, allowing operators to stay in natural, comfortable postures.

Project Any Type of Visual
Pictures, videos, 3D model, shapes, color, text,..

Drag & Crop Interface
Speed up AR-instruction creation through drag&drop onto the work area.

Instant Picture Upload
Picture taking from phone directly projected.

Skill-Based Projection
Project more or less visual cues depending on operator skills.

Use a common projector

ansomat

Operator Guidance Software

Tools & Decive Connections

Machine Vision

3D sensor

Real-time location system

Electric screwdrivers

Other

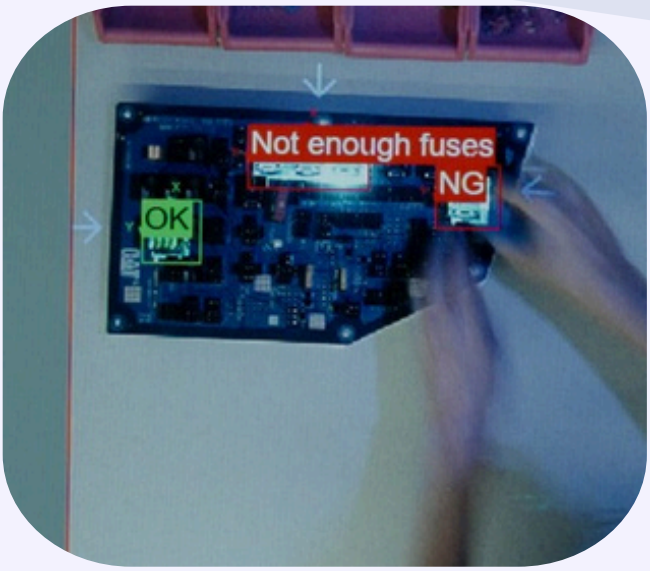
Machine Vision

Doing work right. Every time.

Digital work instructions are essential for guiding operators to do the right thing. But while they define what needs to be done, they don't always guarantee that each step is executed correctly.

That's where vision systems play a vital role, validating every step of the process to ensure consistent, error-free execution. It's not just about doing the right work, it's about doing the work right.

Using 2D image capture and pixel-level processing, vision systems can monitor and validate operator actions, inspect products for shape, color, or surface irregularities, and verify the exact position and orientation of components in real time.

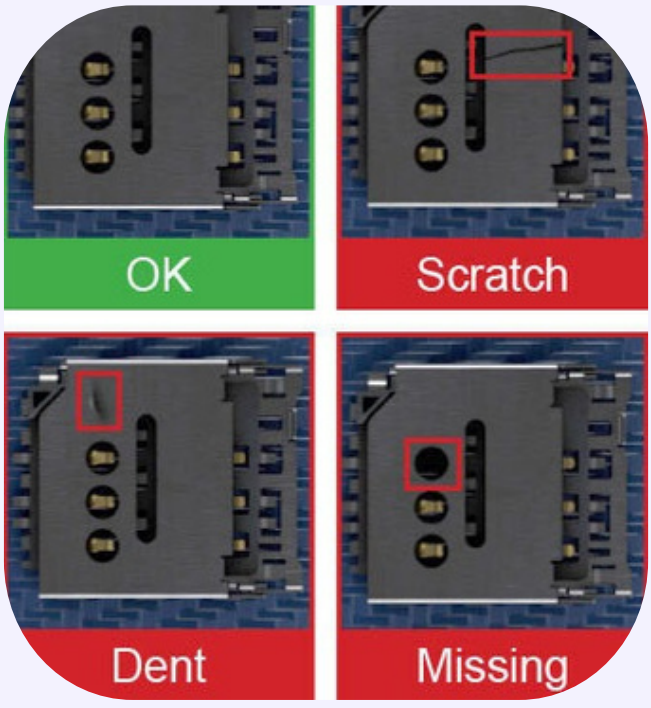


90% ↓
operator error reduction

39% ↑
peace of mind

26% ↓
need supervision

When to consider Machine Vision



If these situations sound familiar, your production line could greatly benefit from vision-based error-proofing:

- You **aim to improve first-time-right performance**, ensuring operators complete each task correctly from the start.
- You need to **verify the presence** or absence of **components** before the assembly moves to the next stage.
- You want to **inspect products** in fine detail, using rule-based or **AI-driven judgment** to detect shape, color, or surface irregularities.
- You seek to **eliminate subjective human judgment** and establish objective, repeatable monitoring mechanisms.
- Your process involves **moving or dynamic objects**, requiring reliable 2D tracking and validation in real time.

What are the benefits?

Monitor operators and eliminate human error

Even the most skilled operators can make mistakes, often with costly consequences. Vision systems drastically enhance operational accuracy by continuously monitoring manual actions using computer algorithms.

Detect errors at the source

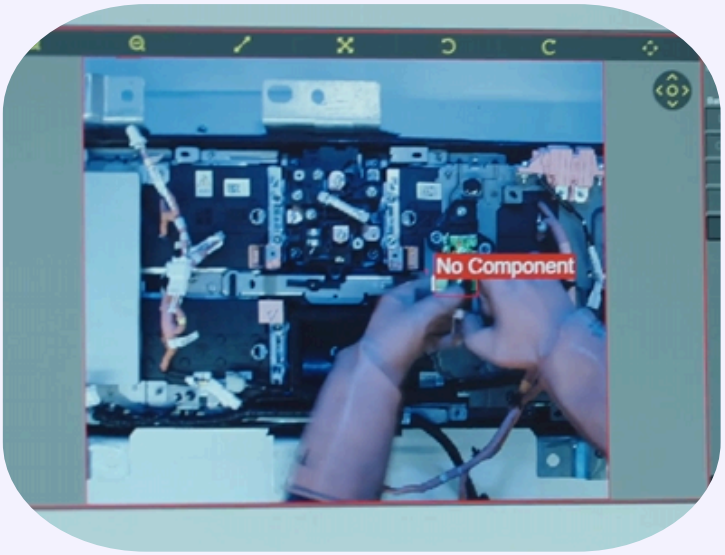
The earlier an error is caught, the lower its impact. Vision systems detect flaws at their origin, whether in base materials, component misplacements, or assembly mistakes, preventing issues from propagating downstream.

Automate process flow

With vision verification, operators no longer need to manually confirm each step. Once the system detects correct completion, the process advances automatically, increasing efficiency and maintaining a smooth workflow.

Give real-time feedback on potential mistakes to operator through AI tools

Advanced, AI-powered vision systems can provide real-time feedback on the cause of a detected error. This enables operators to understand what went wrong, take corrective action immediately, and resume production without delay.



AI-Powered Tools
Provide clear reson codes and corrective guidance when errors occur.

Auomated Repair Flow
Repair flow is triggered if system fails to detect required action

Real-Time Vision Feedback
Live video feeds from the vision system to increase transparency actions taken

Follow moving objects
Vision system that tracks and validates moving objects

3D Sensor

Automate process workflows

Sensors are a powerful tool to automate process confirmation. Instead of manually clicking a button to confirm each completed step, a sensor can automatically detect that an action has taken place.

This enables hands-free operation and guided process flow, allowing operators to move through steps seamlessly and efficiently.

When to consider 3D sensor?

If any of these apply to your shop floor, it’s time to consider a mobile-first approach:

- **Hand gesture confirmation** - Ideal for recognizing hand movements or confirming operator actions without physical contact.
- **Virtual confirmation** - Define virtual buttons that allow operators to proceed through instructions simply by moving their hand within a sensor-defined zone.
- **Picking confirmation** - Guide operators to the correct bin or component location and automatically confirm when the item has been picked.

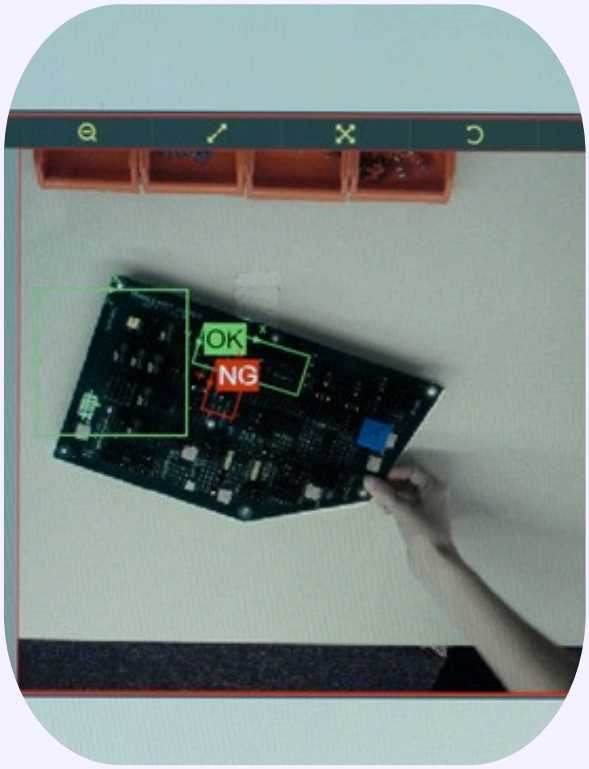
ADVANTAGES

3D Sensor

- **Hands-free operation** - Operators can progress through steps without touching buttons. Perfect for tasks that require both hands to remain free.
- **Time savings -** Eliminates the inefficiency of manually confirming each action, especially when confirmation buttons are not easily accessible.

TRADE-OFFS

- **No inspection capabilities** – Sensors detect motion or distance but cannot visually inspect parts.
- **Limited accuracy** – They provide confirmation, not detailed analysis.
- **Not Self-learning** – Sensor systems don't adapt or improve based on outcomes.
- **No position control or automated adjustments** – Sensors cannot correct or compensate for shifted parts or misalignment.



ADVANTAGES

Machine Vision

- **Enhanced precision and accuracy** - Computer algorithms continuously monitor and verify manual actions, ensuring consistent execution.
- **Self-learning capability** - Vision systems can be trained to distinguish between "OK" and "Not OK" through pixel-based recognition and advanced measurement algorithms.
- **Reveal the Invisible** - Detect what the human eye might miss, surface defects, irregularities, or subtle color deviations.
- **Position adjustment** - Vision systems can automatically adjust for parts that are misaligned or slightly shifted, ensuring precise handling.

TRADE-OFFS

- **Overkill for simple applications –** When only basic gesture or presence confirmation is needed, full vision systems may be unnecessary.
- **Requires higher expertise** – Implementation and calibration demand more setup time and technical knowledge.

Tightening Tools

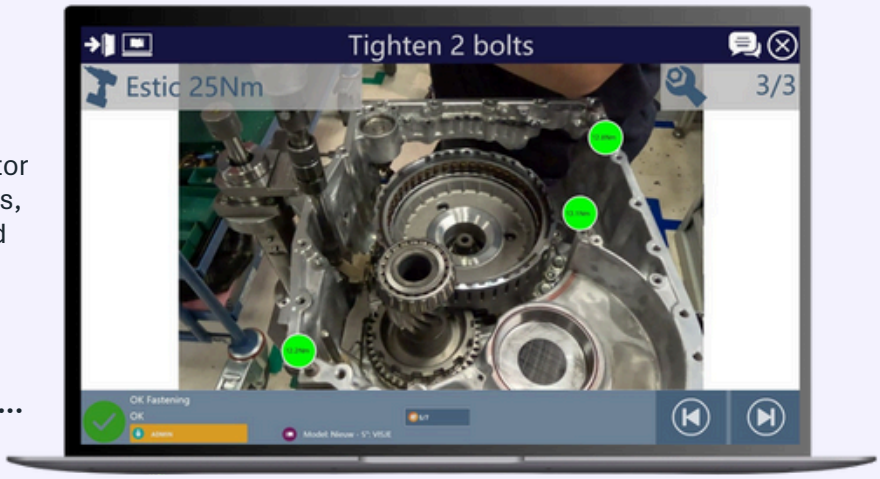
Driving assembly precision with smart tools

For over 30 years, Ansomat has developed extensive expertise in tightening technology, thus these tools hold no secrets for us.

That's why we excel at integrating our operator guidance systems with smart tightening tools, ensuring superior accuracy, traceability, and process reliability.

What is it about?

Check Ansomat Assembly Solutions page...



Tightening tools in combo with Operator Guidance

You should consider smart tightening with operator guidance when:

- Safety-critical or quality-critical joints must be tightened
- Torque and angle results need to be monitored, verified, and recorded
- Multiple product variants or options are built on the same station or line.
- Error-proofing (Poka-Yoke) is needed to prevent missed or wrong fasteners.
- Automatic tool program selection is required based on product ID, barcode, RFID or selected socket
- Traceability and documentation of each tightening result are mandatory.
- Process interlocking is needed, next step is allowed only after a successful tightening (OK signal).

What are the benefits?

Visual bolt sequence guidance

Clear, on-screen visualizations display the correct tightening sequence with real-time torque and angle feedback.
Operators instantly understand the required order and receive confirmation for each completed step.

Automatic repair flows

If a bolt isn't tightened correctly, the system can block progression or trigger a repair workflow.
You define what happens next - for example:

- How many retries are allowed
- Whether all bolts should be re-tightened
- Or if supervisor intervention is required

Traceability & Birth Certificates

Every tightening event is automatically recorded, linked to the product's serial number and operator ID, ensuring full traceability and audit readiness.

Integrates with 99% tools on the market

Our operator guidance solution integrates seamlessly with nearly all tightening tools available on the market.

We take a **brand-agnostic** approach, ensuring full flexibility and integration across your production environment.

Live Torque & Angle Display

AR Bolt Sequence Projection

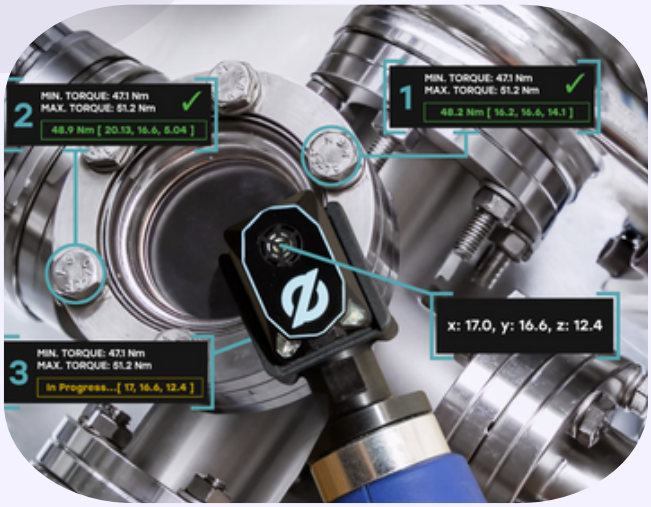
Tool Calibration Tracking

Smart Socket Selector & Program Linking

Tool Position Control via arms, RTLS, Machine Vision

Real-time location systems

Track any action in 3D space with RTLS



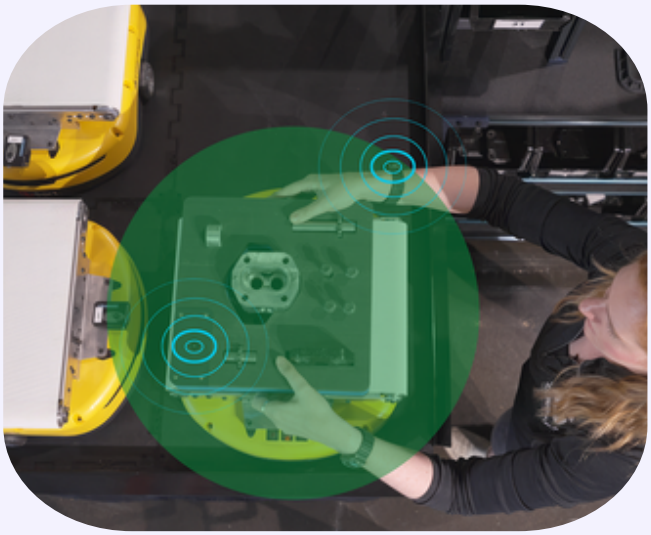
In modern manufacturing environments, precision and visibility define performance. Real-Time Location Systems (RTLS) enable ultra-accurate 3D tracking, delivering real-time insight with precision down to 1.5 mm.

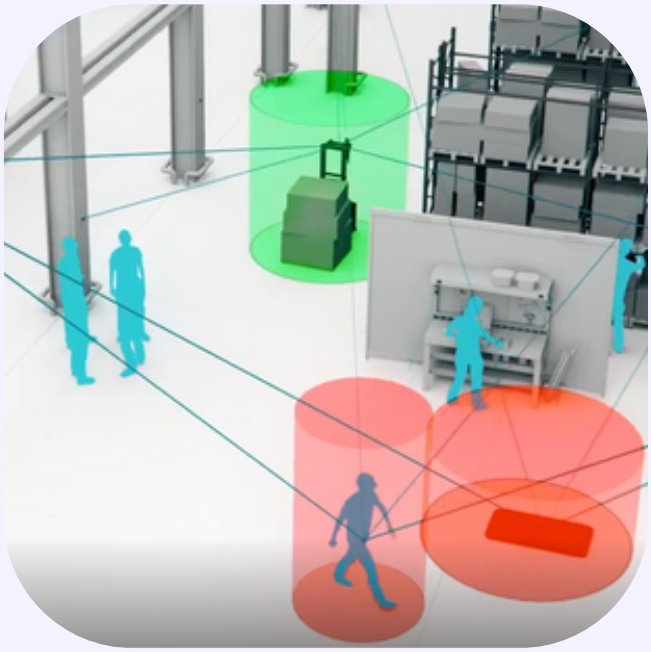
Designed for factory-scale operations, this advanced technology allows manufacturers to track, monitor, and verify every critical event with confiden

What is RTLS about?

A Real-Time Location System (RTLS) creates a digital twin of your shopfloor, constantly monitoring the 3D position of tagged objects. Using advanced ultrasonic technology, strategically placed anchors across the facility capture the exact spatial location of each tag with hyper-accurate precision.

Consequently, manufacturers can track tool movements, verify worker actions, and optimize material flow and this all in real time.





When to consider RTLS

If your shop floor faces any of the following challenges, it's time to use RTLS solution:

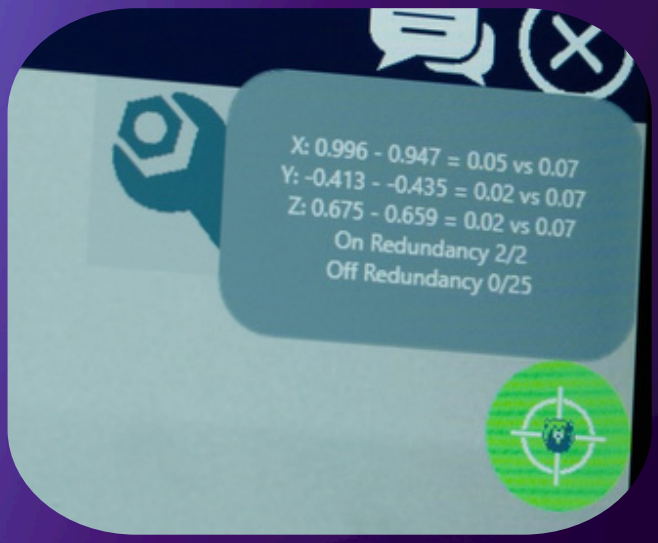
- Eliminate wasted time searching for misplaced parts or tools.
- Ensure perfect assembly accuracy, with bolt and torque sequence verification, even at 1.5 mm precision.
- Automate process verification by confirming worker actions such as picking, kitting, or tightening without manual input.
- Reduce operator errors through guided workflows and intelligent position-based instructions.

Use Cases & Value Explained

Horizontal & Vertical Tool Position Control

RTLS tracks tools in full 3D, providing complete spatial awareness on the shopfloor. Unlike conventional systems with limited viewpoints, it continuously measures exact tool position in any orientation, ensuring consistent accuracy whether the operator works upright, angled, or inverted.

This delivers reliable data for torque control, sequence validation, and uniform assembly quality, minimizing human variability and enabling micron-level precision across all workstations.



Position Tracking in Challenging Areas

RTLS provides reliable position tracking across the entire shop floor, even in obstructed or hard-to-reach areas where camera-based systems lose visibility. Because ultrasonic anchors aren't limited by line of sight, coverage can be expanded easily by adding more anchors, without complex recalibration or lighting requirements.

This flexibility ensures consistent accuracy and improves productivity, process control, and quality across the facility.

Picking & manual handling confirmation

RTLS can validate manual actions like picking or kitting, adding automation and traceability to human-driven processes. Paired with projection-based guidance, RTLS enables "virtual buttons," where operators confirm steps simply by moving their hand through a projected area while wearing a lightweight tracked bracelet.

This creates a hands-free, ergonomic, and hygienic confirmation method that replaces physical buttons or scanners while maintaining full process verification.

3D Tool Position Control

Asset & Material Tracking

Hyper-Accurate Measurement (up to 1.5 mm accuracy)

Picking & Kitting Confirmation

Comparison Machine Vision vs. RTLS

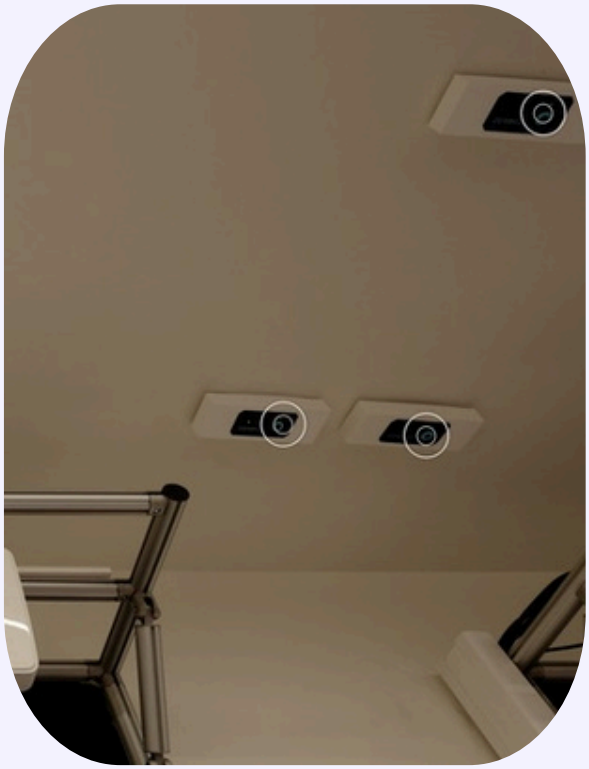
ADVANTAGES

Machine Vision

- **Non-contact system** - no need for mechanical attachments or tags on the tool
- Provides **traceability** through **image documentation** and picture capture
- Can support additional applications such as component verification, part presence detection, or visual quality inspection

TRADE-OFFS

- Requires **good lighting conditions and clear visibility** of the working area
- **Obstructions or operator** movement can temporarily **block the line of sight**
- **Limited by the camera's field of view**, additional cameras may be needed for large or complex workstations
- Provides **2D position control only, not full spatial (3D)** tracking



ADVANTAGES

RTLS

- Achieves position **accuracy within a few millimeters**
- Enables **position control in all orientations, horizontal or vertical**
- **Scalable for additional use cases** such as part picking, operator movement tracking, and asset management, all using the same core technology
- Suitable for **factory-level tracking by adding more anchors to expand coverage beyond individual workstations**

TRADE-OFFS

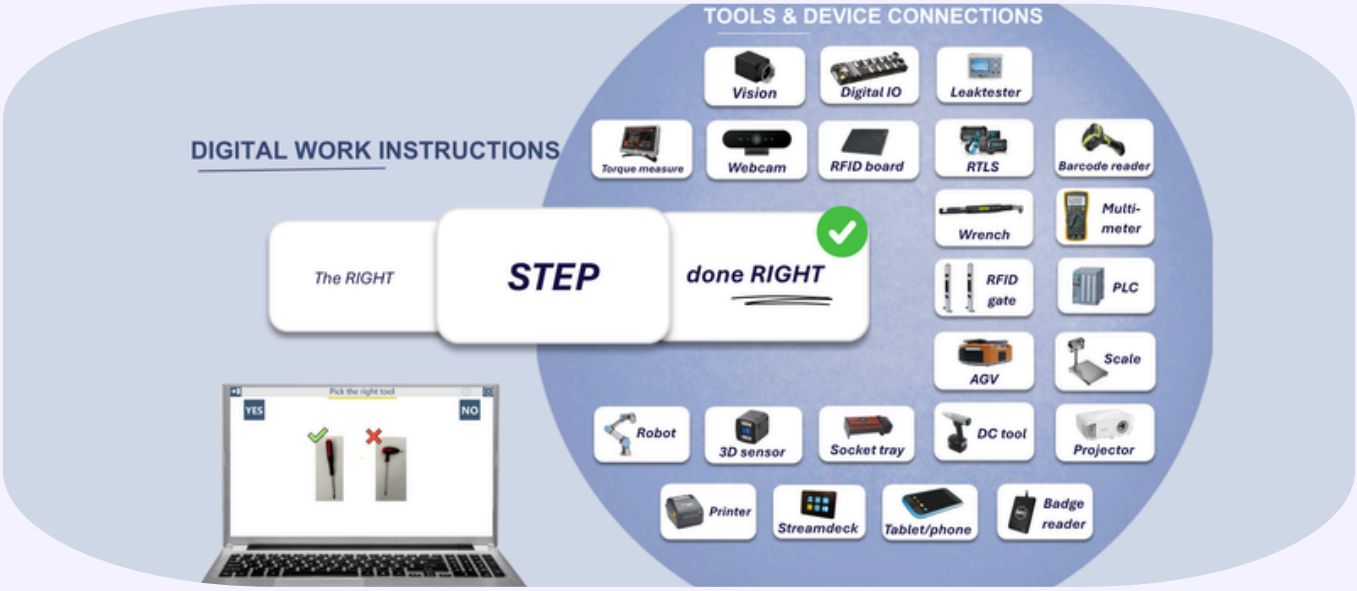
- **Accuracy may decrease if line-of-sight is obstructed**
- **Physical obstacles between transmitters and receivers** may require additional anchors to maintain precision

Other

The future of connected production

In manufacturing, success depends not just on doing the right thing, but on doing it right, every single time. Digital work instructions make that possible by guiding operators step by step through each process, ensuring quality, consistency, and repeatability.

However, when you connect your devices directly to those digital instructions, you elevate your operations to a new level of automation, validation, and traceability. That's where connected devices come in, bridging the gap between digital guidance and physical execution to minimize human error and drive process excellence across your production line.



What are connected devices?

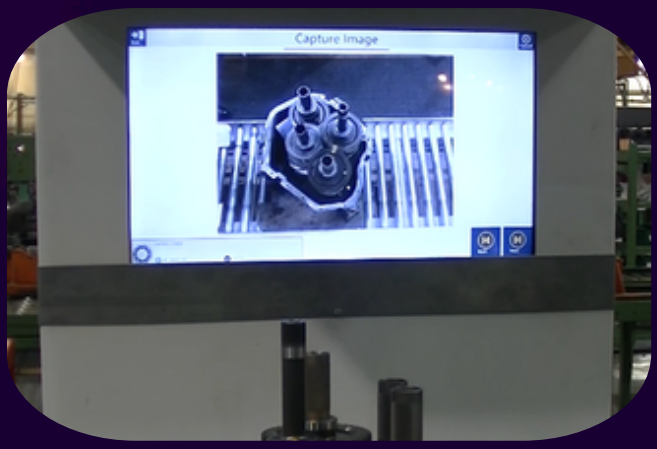
Across industries, manufacturers are already seeing the benefits of connecting high-runner error-proofing tools such as vision systems and fastening devices to their digital workflows. These proven technologies deliver measurable results, but the possibilities extend far beyond them.

Today, there are hundreds of devices that can be seamlessly integrated into our Operator Guidance System, transforming your shopfloor into a smart, connected, and data-driven environment. From webcams and leak testers to digital calipers, barcode readers, printers, streamdecks, stack lights, AGVs, PLCs, and business systems, every connection adds another layer of control, insight, and efficiency.

Moreover, our platform is brand-agnostic, meaning you're free to use the tools you already trust, no restrictions, no lock-ins. This ensures maximum flexibility while maintaining a unified, fully connected workflow.

Webcam: take photos for traceability

Even a low-cost webcam can strengthen your process, automatically capturing and storing images of each assembled product or step for traceability and quality documentation. No more manual uploads or uncertain records; every image is securely linked to its job or batch.



Streamdeck: more than just buttons

Replace the standard one-function pushbutton with a Streamdeck, a compact console offering up to 6 programmable buttons. Operators can confirm OK/NOK results, navigate steps, or trigger custom actions with a single touch.

Printer: print custom labels

Generate fully customized labels that fit your exact process needs. Whether you're labeling components, packaging, or finished goods, you can design templates with all the right fields, from serial numbers to barcodes, and print them automatically at the right step in your workflow.

Pick-to-light sensors: bin picking

Pick-to-light systems use hardware-mounted sensors on storage bins that illuminate to indicate which bin to pick from, and many also include small displays showing the exact quantity to be picked.

RFID: tool board & gateway

Each tool is equipped with an RFID tag and must be taken from the tool board when needed. Before proceeding to the next step, the tool must be returned to its designated position on the board, ensuring proper tracking and process compliance.

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Operator Guidance Software

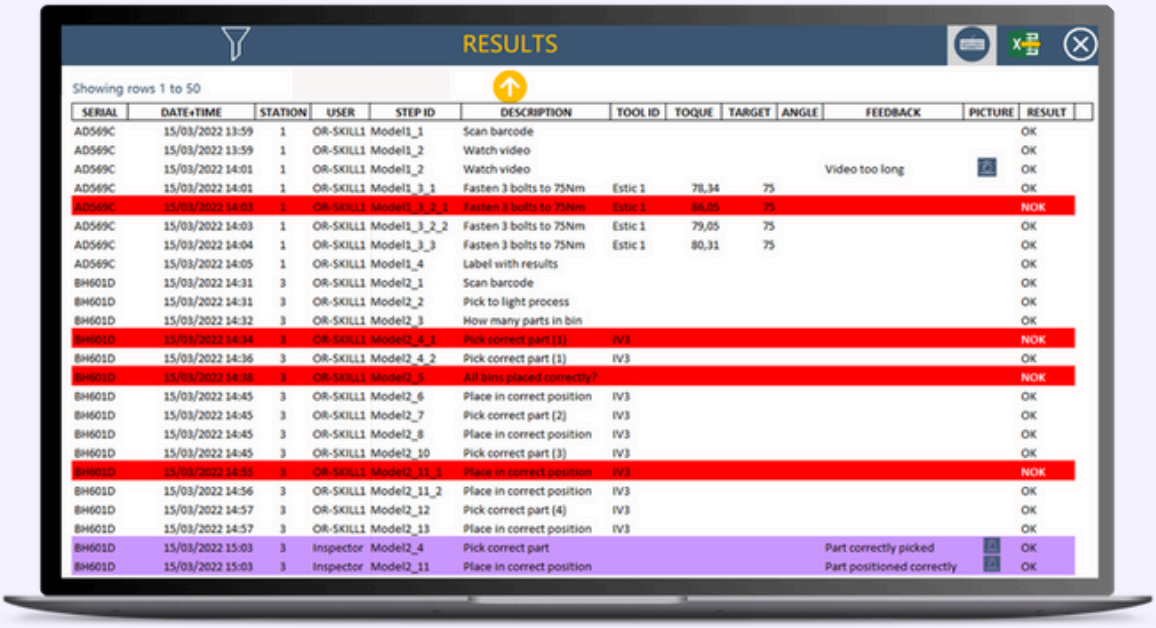
Human Performance Traceability

Data capture & traceability

Full shop floor transparency of human actions

Studies shows humans perform nearly 75% of factory-floor tasks, yet their work remains largely invisible to analytics. Improving visibility into human operations unlocks improvement opportunities far beyond machines. Operator guidance systems not only prevent errors but also capture detailed process data, creating a digital record of every build, what was done, by whom, and when.

This data resolves disputes, reveals bottlenecks, uncovers patterns, and even predicts issues. With tools like Power BI, it becomes actionable insight that drives smarter decisions and continuous improvement.



SERIAL	DATE+TIME	STATION	USER	STEP ID	DESCRIPTION	TOOL ID	TOQUE	TARGET	ANGLE	FEEDBACK	PICTURE	RESULT
AD569C	15/03/2022 13:59	1	OR-SKILL1	Model1_1	Scan barcode							OK
AD569C	15/03/2022 13:59	1	OR-SKILL1	Model1_2	Watch video							OK
AD569C	15/03/2022 14:01	1	OR-SKILL1	Model1_2	Watch video					Video too long		OK
AD569C	15/03/2022 14:01	1	OR-SKILL1	Model1_3_1	Fasten 3 bolts to 75Nm	Estic 1	78,34	75				OK
AD569C	15/03/2022 14:03	1	OR-SKILL1	Model1_3_2_1	Fasten 3 bolts to 75Nm	Estic 1	86,05	75				NOK
AD569C	15/03/2022 14:03	1	OR-SKILL1	Model1_3_2_2	Fasten 3 bolts to 75Nm	Estic 1	79,05	75				OK
AD569C	15/03/2022 14:04	1	OR-SKILL1	Model1_3_3	Fasten 3 bolts to 75Nm	Estic 1	80,31	75				OK
AD569C	15/03/2022 14:05	1	OR-SKILL1	Model1_4	Label with results							OK
BH601D	15/03/2022 14:31	3	OR-SKILL1	Model2_1	Scan barcode							OK
BH601D	15/03/2022 14:31	3	OR-SKILL1	Model2_2	Pick to light process							OK
BH601D	15/03/2022 14:32	3	OR-SKILL1	Model2_3	How many parts in bin							OK
BH601D	15/03/2022 14:34	3	OR-SKILL1	Model2_4_1	Pick correct part (1)	IV3						NOK
BH601D	15/03/2022 14:36	3	OR-SKILL1	Model2_4_2	Pick correct part (1)	IV3						OK
BH601D	15/03/2022 14:38	3	OR-SKILL1	Model2_5	All bins placed correctly?							NOK
BH601D	15/03/2022 14:45	3	OR-SKILL1	Model2_6	Place in correct position	IV3						OK
BH601D	15/03/2022 14:45	3	OR-SKILL1	Model2_7	Pick correct part (2)	IV3						OK
BH601D	15/03/2022 14:45	3	OR-SKILL1	Model2_8	Place in correct position	IV3						OK
BH601D	15/03/2022 14:45	3	OR-SKILL1	Model2_10	Pick correct part (3)	IV3						OK
BH601D	15/03/2022 14:55	3	OR-SKILL1	Model2_11_1	Place in correct position	IV3						NOK
BH601D	15/03/2022 14:56	3	OR-SKILL1	Model2_11_2	Place in correct position	IV3						OK
BH601D	15/03/2022 14:57	3	OR-SKILL1	Model2_12	Pick correct part (4)	IV3						OK
BH601D	15/03/2022 14:57	3	OR-SKILL1	Model2_13	Place in correct position	IV3						OK
BH601D	15/03/2022 15:03	3	Inspector	Model2_4	Pick correct part					Part correctly picked		OK
BH601D	15/03/2022 15:03	3	Inspector	Model2_11	Place in correct position					Part positioned correctly		OK

When to consider human action recording?

Key Challenges:

- **Lack of transparency:** there is often no detailed tracking of human activities on the shop floor, such as which operator performed a specific task, on which serial number, at what time, and with what result. This lack of traceability makes it difficult to identify root causes when issues arise.
- **High variability**: human performance fluctuates, creating inconsistencies in quality and output.
- **Limited data for improvement**: absence of detailed operator data hinders effective and measurable continuous improvement initiatives.

What are the benefits?

Only way to get insights into human performance

With an operator guidance solution, every step of the production process is automatically recorded. Key identifiers such as user ID, tool ID, station ID, and step ID are captured, along with detailed results like OK/NOK status, measured values, operator feedback, and photos. This ensures full visibility of what was done, when, and by whom, creating a solid foundation for traceability and accountability. shorter

Avoid costly recalls

When defects are occurring, there is no way of tracing it back to particular stations, shifts, skills, VINs, teams,.. Until now. Improving data visibility on human tasks will empower manufacturers to prevent or even predict mistakes and potential injuries.

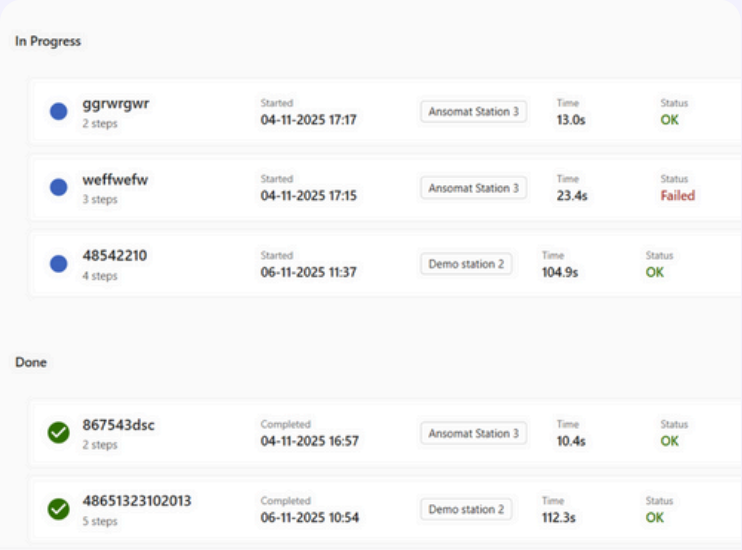
Structured data collection

All process information is stored in a central, organized data structure, making it easy to access and analyze historical records. By consolidating both human and machine data, manufacturers gain a complete picture of operations, connecting product quality, process performance, and operator activity in one unified system. shorter

Digital birth certificates

Each assembled product automatically receives its own digital birth certificate - a comprehensive record of all process data, operators involved, tools used, and test results.

This guarantees end-to-end traceability from assembly to shipment, ensuring compliance, simplifying audits, and providing a reliable quality history for every unit produced.



- Recording Of Every Action
- Digital Audit Trial “Birth Certificates”
- Outlier Warning & Analytsis
- Review Recorded Process Steps When Quality Issue Occured
- Complete Traceability Linked To Unique Serial Number
- Reveal Root Cause Of Operator Mistakes
- Data-Driven Decision Making
- Operator Accountability & Performance Tracking

Dashboards & KPIs

Real-time KPI monitoring & data analytics

When to consider ?

- You face **costly rework** but lack clear visibility into **what's causing it**.
- You don't have a **deep root cause understanding** of recurring issues. For example, whether they stem from skill levels, specific teams, shift changes, or missed tightening steps.
- You want to establish benchmarks and measure performance trends (e.g.number of mistakes per week or per shift).
- You're ready to analyze beyond simple product OK/NOK results, and instead measure at a step-by-step level to gain a competitive edge.
- You want to quantify the cost of errors and the savings achieved through improvement initiatives.

Provide live view shopfloor performance

Bottleneck & trend detection

Enable data-driven decision making

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Management System

One Central Hub for all your work instructions

Ansomat Management System

One central platform to create and manage work instructions

Central instruction deployment

Build, maintain and deploy work instructions from a single hub

Central monitoring & control

Full shopfloor transparency across processes, people and performance

1 Monitor your operator guidance workstations

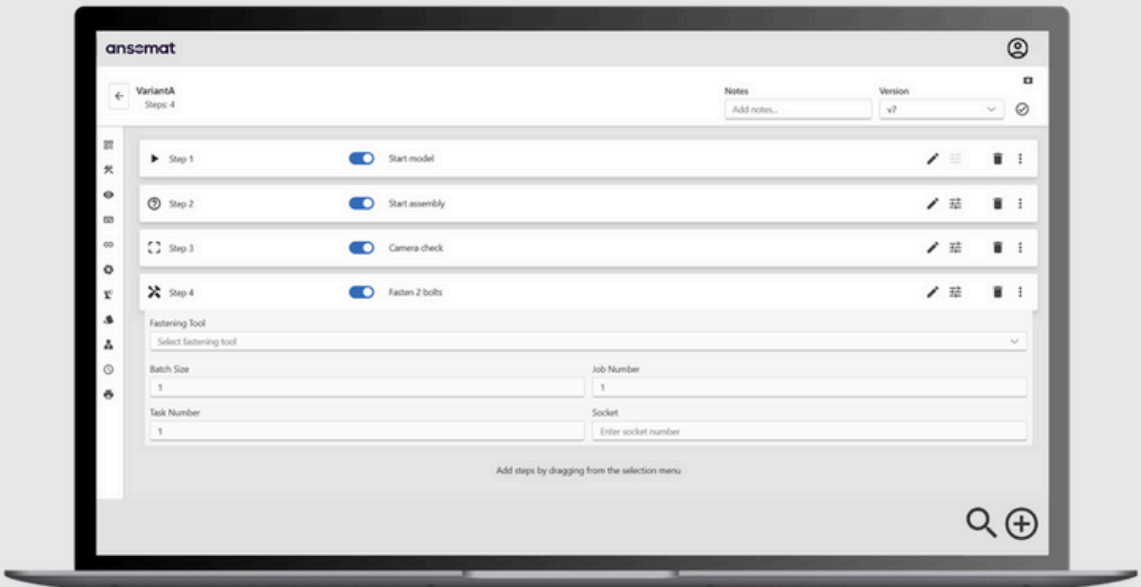
Remotely, efficiently and at scale

Connect all your operator guidance stations and monitor real-time status (active, inactive, issues,...).

Browser-based: easily accessible from anywhere.

2 Central instruction creation

Kept in real-time sync with stations



- Create and update instructions from central platform
- Drag & drop creation of work instructions
- Versioning & release of new instructions
- Advanced authoring & user management

What are the benefits?

Reduce instruction creation time
Create instructions from behind your desk rather than on the shopfloor and push to anywhere.

Enterprise-wide deployment
Move beyond a station-based approach and easily scale your operations across the entire factory.

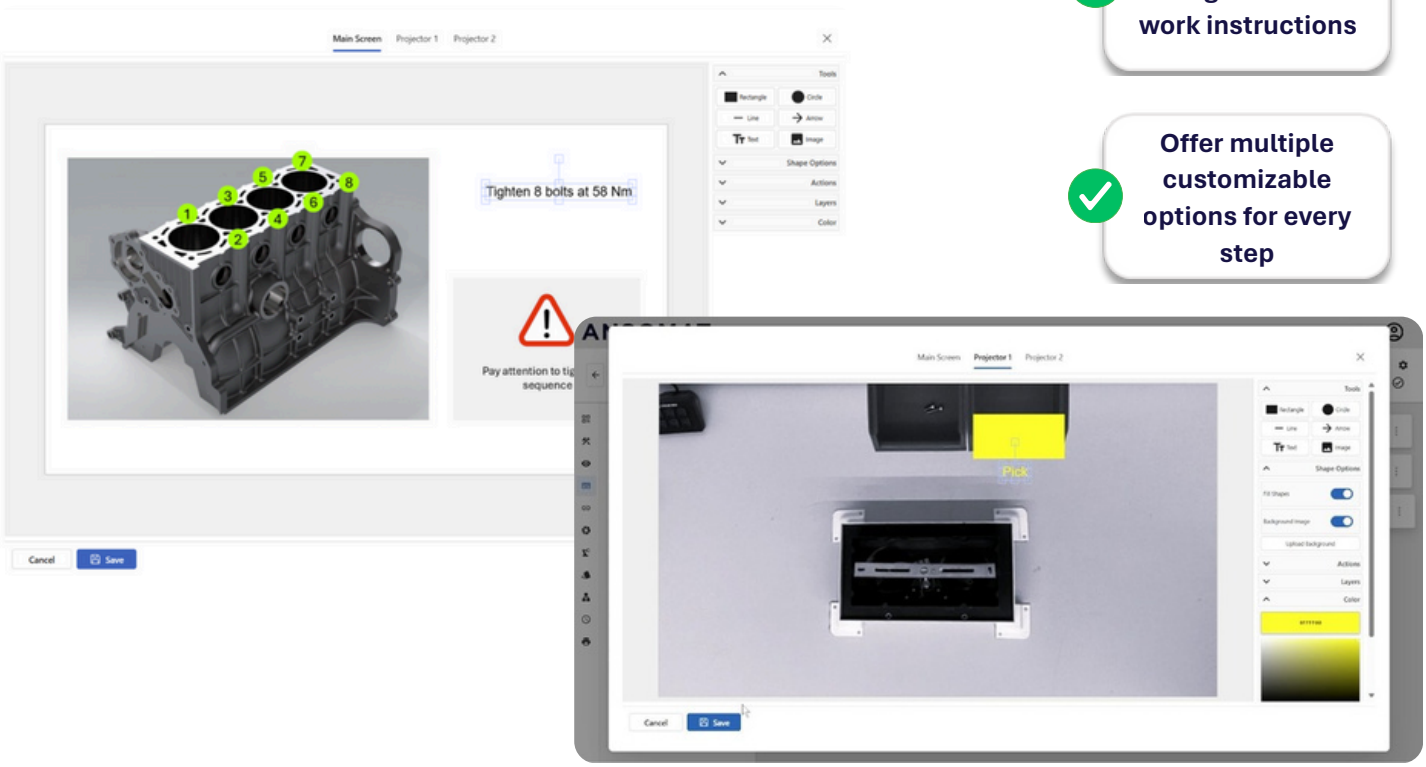
Prepare anywhere, anytime
Don't wait until production downtime to adjust work instrutions, simply work from anywhere.

Centralize instructions, users, results
Gain a centralized overview and real-time monitoring of all instructions, tools, users, and results, fully accessible anytime, anywhere.

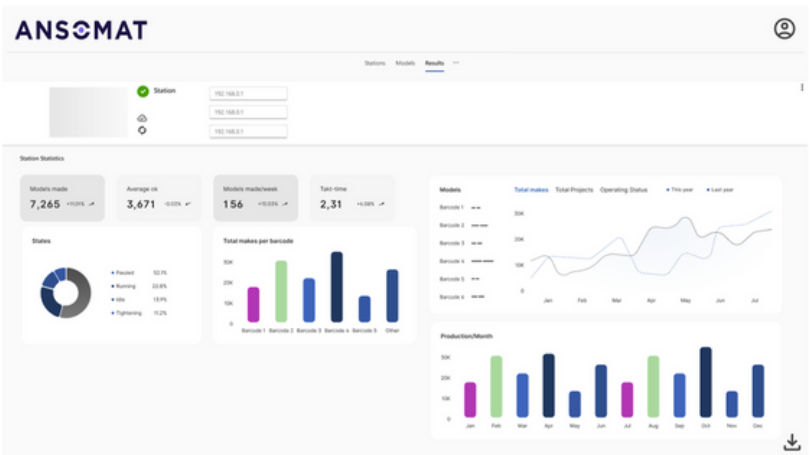
3 Produce unique visuals efficiently
Custom, flexible

Individually designed visual work instructions

Offer multiple customizable options for every step



4 Central hub for results to drive key decisions
Instant insights into shopfloor performance



Central recording of all operator actions.

Real-time KPI dashboards provide complete visibility into any issues.

Offering transparency into all actions performed on the shop floor across all stations.

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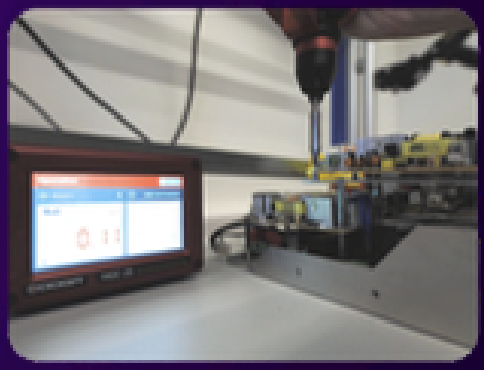
Tightening Tools

Smart Assembly



Electric Screwdrivers

Electric Nutrunners

Pulse Tools

Digital torque wrenches

Rivet Tools

Electric Screwdrivers & Nutrunners

Advanced tightening tools for high-precision assembly

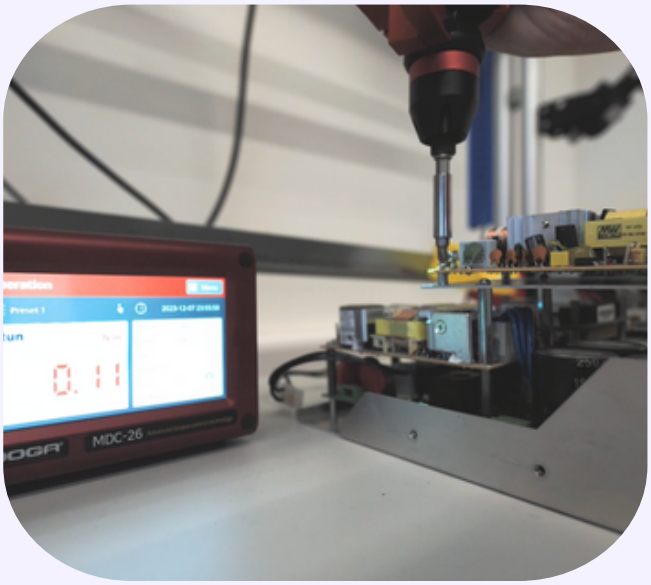
Both electric screwdrivers and electric nutrunners use an internal motor to automatically generate torque, offering far greater speed and consistency than manual tightening tools. They are essential in modern production environments where process reliability, repeatability, and documentation are critical.
The key distinction is simple:

- Use an **electric screwdriver** for **small, low-torque joints**
- Use an **electric nutrunner** when **joint integrity, accuracy, and traceability are essential**.

Electric Screwdrivers

Electric screwdrivers are built for low-torque precision fastening (typically under 10–15 Nm), focusing on accuracy, ergonomics, and repeatability for light assembly work. They are available in corded versions for maximum consistency at fixed stations and battery versions for mobile applications. Typical industries include electronics, medical devices, small appliances, and automotive interiors.

- Torque range: Smart Cabled **0.2–15 Nm**, Smart Battery **1–50 Nm**
- Designed for M1–M6 fasteners, compact and lightweight
- Mechanical clutch or electronic shut-off, minimal reaction force, no torque arms required



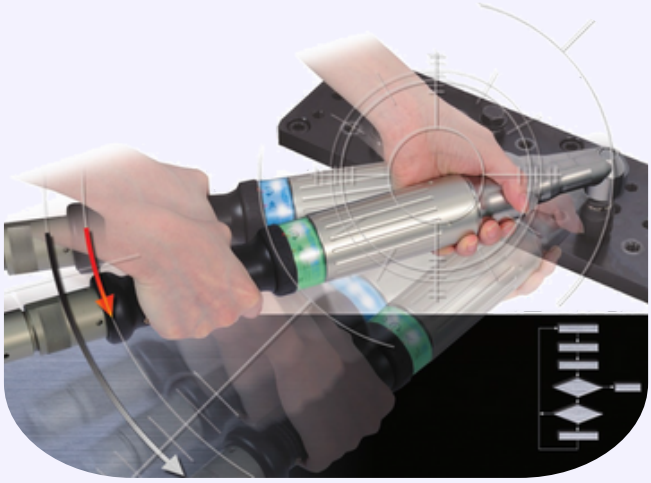
Electric Nutrunners

Electric nutrunners are industrial tightening systems for medium- to high-torque, safety-critical joints, typically DC tools with controllers that deliver advanced measurement, monitoring, and error-proofing. They are used for structural applications from about 15 Nm up to several hundred Nm in sectors such as automotive chassis, powertrain, aerospace, and heavy machinery.

- Torque range: **15 Nm to 800+ Nm**, suitable for M6–M30+ fasteners
- Closed-loop torque & angle control via transducers or advanced current sensing
- Reaction arms or fixtures required, with full digital monitoring, error-proofing, and data logging

Pulse tools

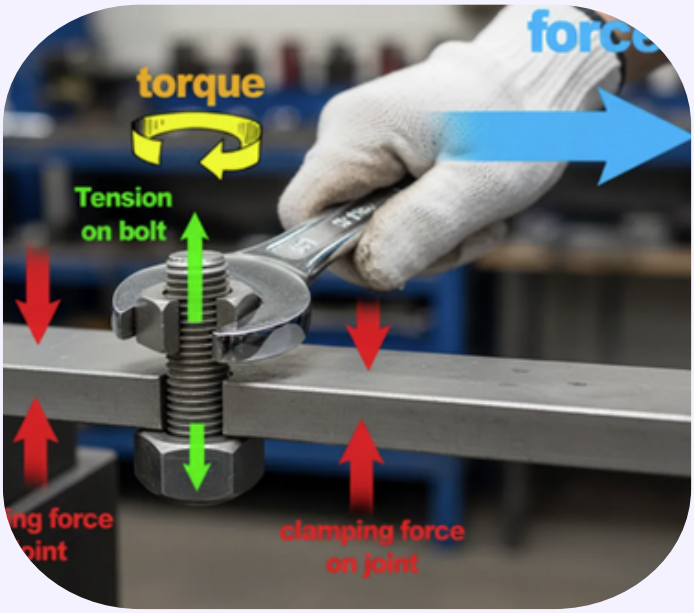
Minimize reaction force & improve ergonomics



With conventional direct-drive DC tools, operators must withstand reaction forces of about ±7 Nm for pistol nut runners and ±40 Nm for angle nut runners; beyond these limits, costly and bulky manipulators are required to absorb the torque. ESTIC's patented motor-control system dramatically reduces these operator reaction forces. Their pulse-fastening DC tools tighten with intermittent impact impulses? similar to hammer strikes, which produce far lower reaction forces for the user than continuous-motion tightening.

Key Advantages

- **Significant reduced reaction forces**: torque is delivered in controlled bursts, releasing stress between pulses.
- **Improved ergonomics & operator safety**: Lower reaction forces reduce fatigue and the risk of musculoskeletal injuries.
- **No more heavy torque arms or manipulators**: this saves space, installation time and maintenance costs.
- **Increased productivity**: Without reaction arms, operators move faster more easily.
- **Higher tightening accuracy**: pulse tools maintain torque precision comparable to direct-drive systems.
- **Lower Total Cost of Ownership**: fewer accessories, less maintenance, higher throughput, and improved ergonomics all combine to reduce overall system cost.



Myth: Pulse tools are less accurate than DC tools

Torque doesn't actually hold a joint together, bolt stretch (clamping force) does. Torque is only an indirect guess at that force.

Pulse tools tighten in tiny elastic loading cycles, measure how the joint responds, and stop when the bolt is truly stretched correctly. This avoids the huge ±50% clamping-force variation you can get when tightening only to a torque value.

Direct-drive tools stop when torque "looks right." Pulse tools stop when the bolt is actually clamping correctly.

Digital Torque Wrench

Minimize reaction force & improve ergonomics

Modern manufacturing demands absolute fastening accuracy, full process traceability, and maximum operator safety. Our range of digital torque wrenches delivers precise, repeatable tightening for safety-critical industrial applications where traditional tools are no longer sufficient. Each digital torque wrench is equipped with advanced electronic measurement technology to verify every tightening operation in real time, ensuring that every joint meets the required specification while providing clear OK / NOK feedback to the operator.

Key Advantages

- **Higher tightening accuracy**: Real-time immediate feedback eliminate guesswork and reduce over- or under-tightening caused by operator reaction time..
- **Built-in error prevention**: Visual, audible, and vibration alerts guide the user to stop exactly at the target torque, preventing overshoot common with mechanical click tools.
- **Full traceability & quality control**: Tightening results can be stored, time-stamped, and exported, enabling 100% verification, audits, and compliance with quality standards..

RIVET TOOLS

A smart rivet tool (such as those from STANLEY Assembly Technologies) is a blind-rivet installation tool with built-in sensors and electronics that monitor force and pull-distance during each rivet set, automatically verifying that the rivet was installed correctly rather than just pulled.

It provides instant OK/Not-OK feedback, detects wrong rivets or bad stack-ups, stores installation data for traceability, and can connect to quality or manufacturing systems, turning riveting into a controlled, error-proofed and fully documented process.

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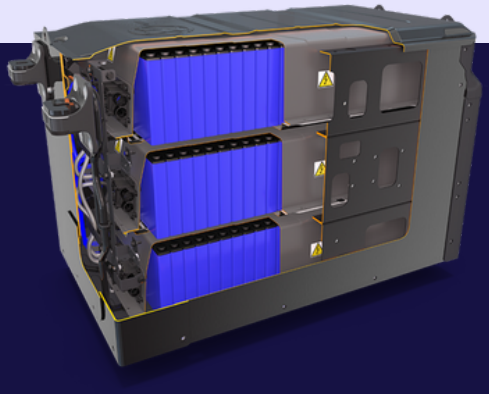
Use Cases & References

EV Battery Assembly

LEYLAND TRUCKS
A PACCAR COMPANY



Problem

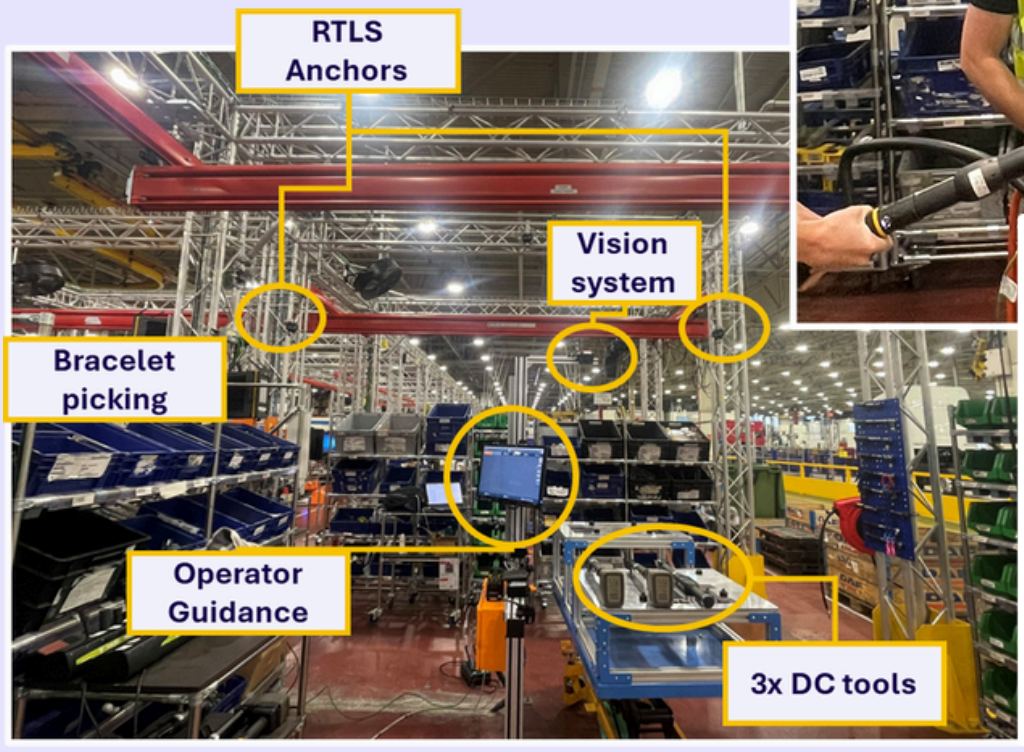
- New EV product → needs flexible configuration
- Many fastening points & screw variants
- No full errorpoofing nor traceability

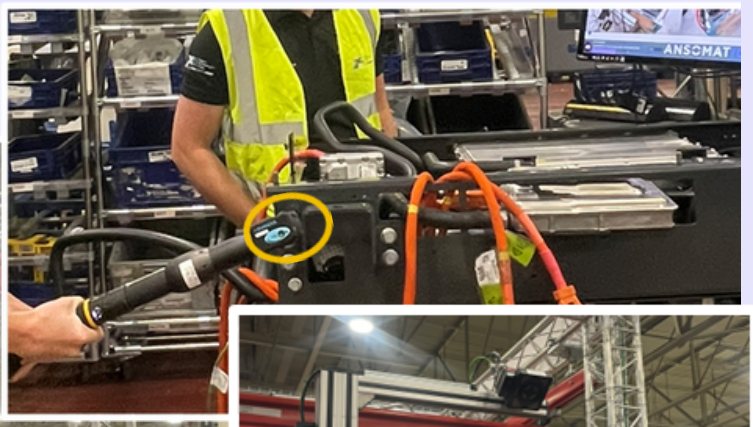
SOLUTION → NO FAULT FORWARD NEW EV BATTERY

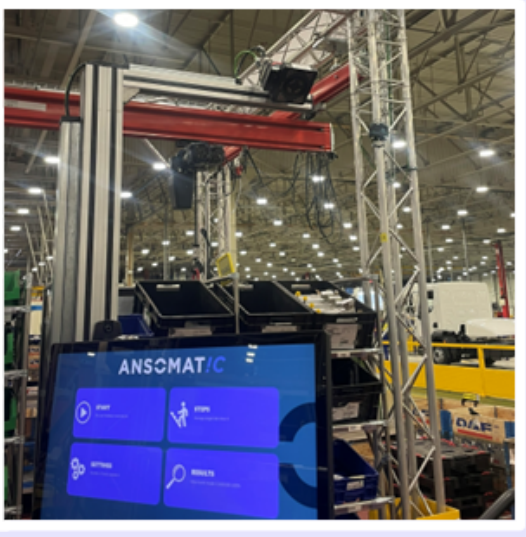
« Progress only after correct execution»

- **MES integration** to automatically trigger production order
- **Digital step-by-step guidance** for all variants
- **Machine vision** for process validation (KEYENCE)
- **DC fastening tools** with torque and angle control
- **RTLS-based precise tool positioning**
- **Bracelet-based picking** to replace conventional pick-to-light hardware

- 92% First-time right
- Strond reduction **rework & scrap**
- **Faster NPI ramp-up** & operator **training**







Engine Assembly

AUTOCRAFT Solutions Group

Problem

- OEM supplier contract awards increasingly depend on Tier-1 supplier's ability to prove consistent quality control
- Proving process standardization and repeatability is challenging when relying on manual operations

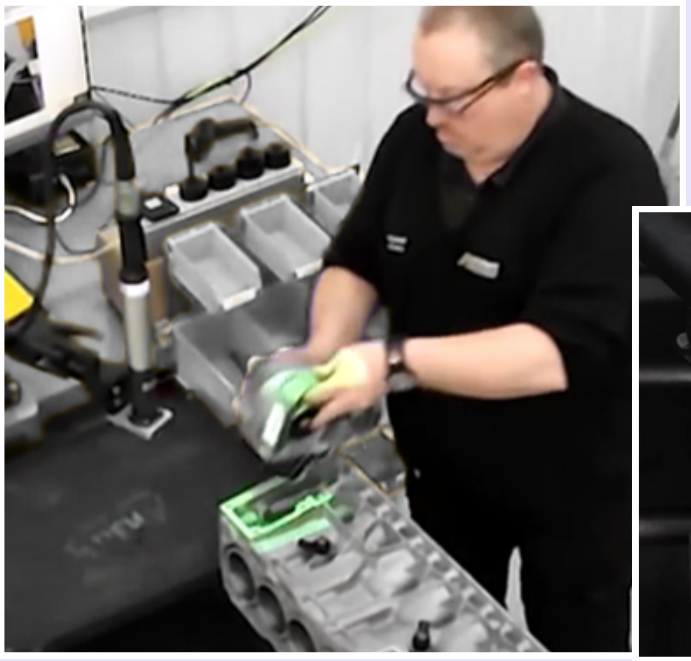
SOLUTION → NO FAULT FORWARD ASSEMBLY

« The flexibility of a human combined with repeatability of a machine! "

99% first-Time-right

- **Project work instructions (AR)** onto engine
- **DC tools with socket selection** control (ESTIC)
- **RTLS-based positioning** to ensure precise fastening
- **Machine Vision** workflow verification (KEYENCE)
- **In-process image** capture for traceability
- **Pick-to-light** bearing selection (SICK)
- **Digital birth certificate** per engine

> Thanks to Ansomat solution we can reduce training time from 3 months to 1 week
>
> **Simon Warburton – CTO**



Our ARIA - Augmented Reality Interactive Assembly system controls the build sequence

Powertrain Assembly

AISIN

Problem

- Comply to Japanese quality standards (Toyota way) to ensure in-line quality control of and best ergonomics
- Repeatable tightening operations with the highest torque accuracy

SOLUTION → STREE-FREE TIGHTENING

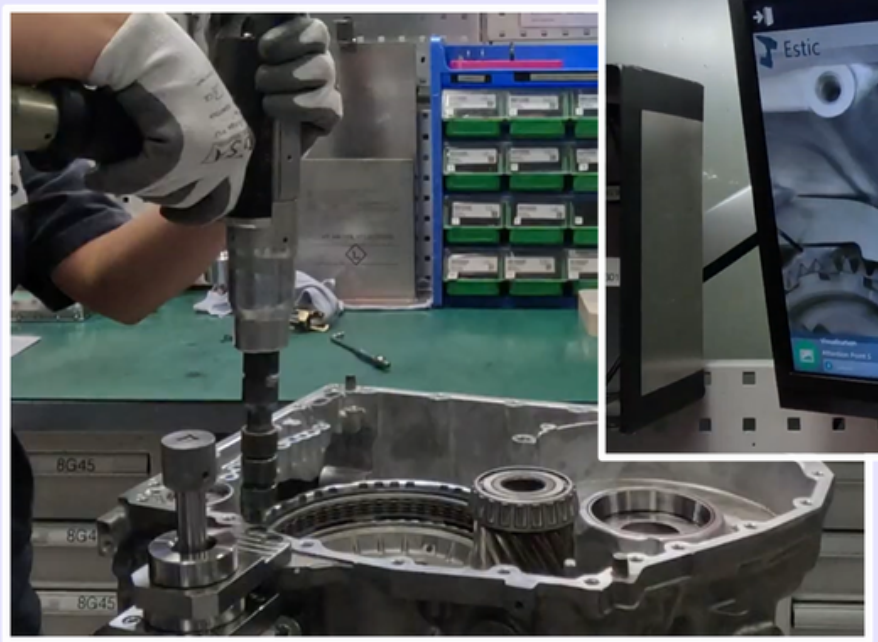
« Achieve more than double the output per shift while maintaining assured quality"

Speed increase from 40 to 110 products a day

- **Barcode scanning** to **select** right **program**
- **ESTIC pulse tools** to **reduce strain** on operator (ESTIC)
- **Visualize bolt sequencing** on screen
- **Label printing** with results after each built

"After nearly four years of production and various programming tasks, I can affirm that the Ansomat product is exceptionally reliable. Its repeatability and robustness make it an indispensable tool for our company.

Mickael Vilain - Senior Process Engineer



Fuse Board Assembly

CATERPILLAR

Problem

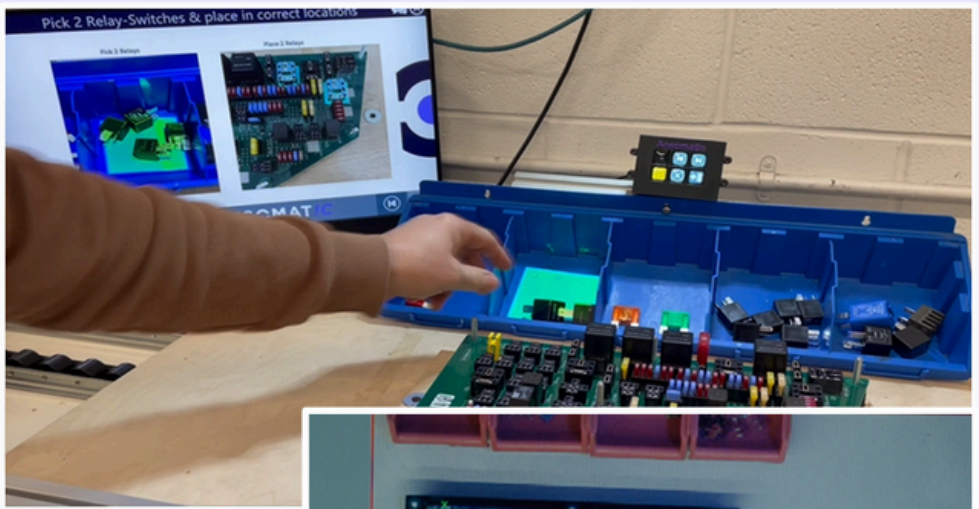
- 100+ possible configurations increase risk of human error
- Variant-based vision job adjustment that is scalable

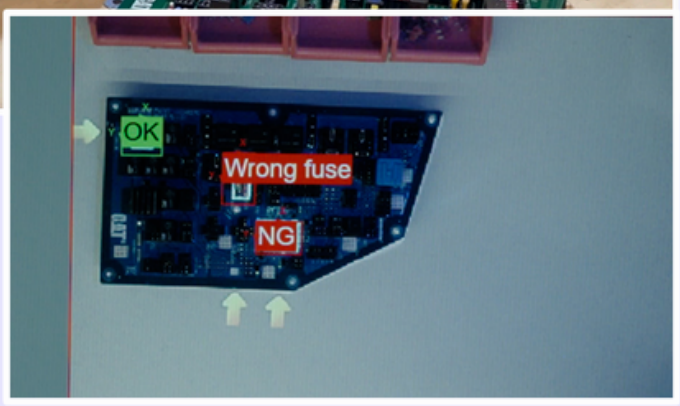
SOLUTION → DYNAMIC WORK INSTRUCTIONS

« Ease of configuration high-mix/low-volume production"

- **Projections (AR) highlight** the correct **working location**
- **Vision system** with real-time feedback to **detect potential mistakes (COGNEX)**
- **Flexible variant management,** allowing to easily add or adjust new variants
- **MES integration** to push the correct work order

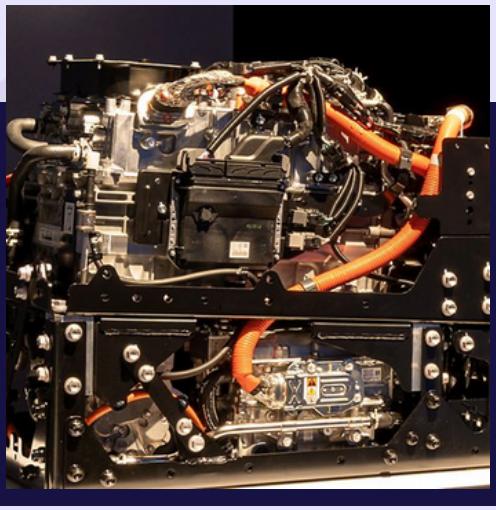
- Eliminate operator mistakes
- Speed up training





Hydrogen Fuel Cell Assembly

TOYOTA



Problem

- Hydrogen is nascent, requiring flexible processes for continuous improvement
- Strict compliance requirements demand full traceability

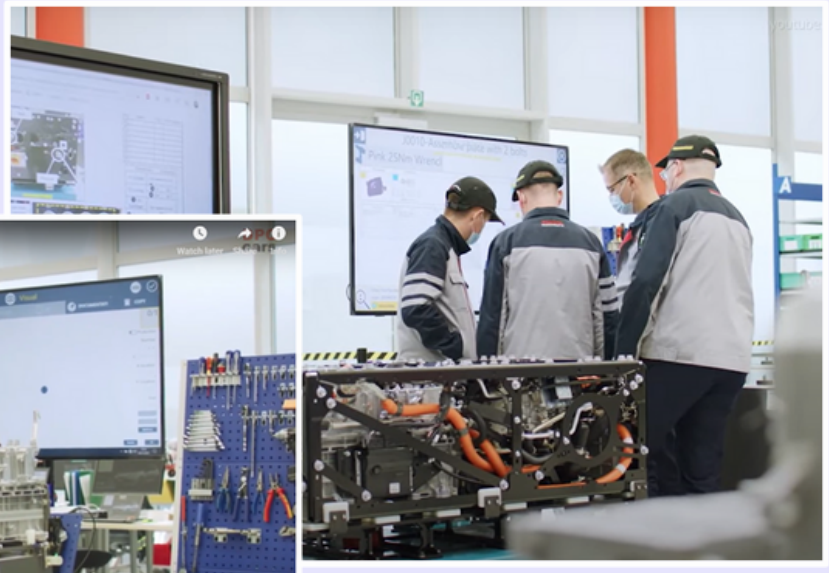
SOLUTION → PROCESS CONTROL NEW PRODUCT

« Configure, adapt, improve the process instantly"

- **Barcode scanner** for automatic **program selection**
- **Digital work instructions** with **visual bolt sequence**
- **Intelligent torque wrenches** for controller tightening
- **Tool position control** to ensure correct bolt order
- **Pick-to-light system** for correct part selection
- **Full traceability: torque, angle, operator ID,...**

100% built-in quality at source

Full traceability human actions & reporting



Complex Batching Seat Leather

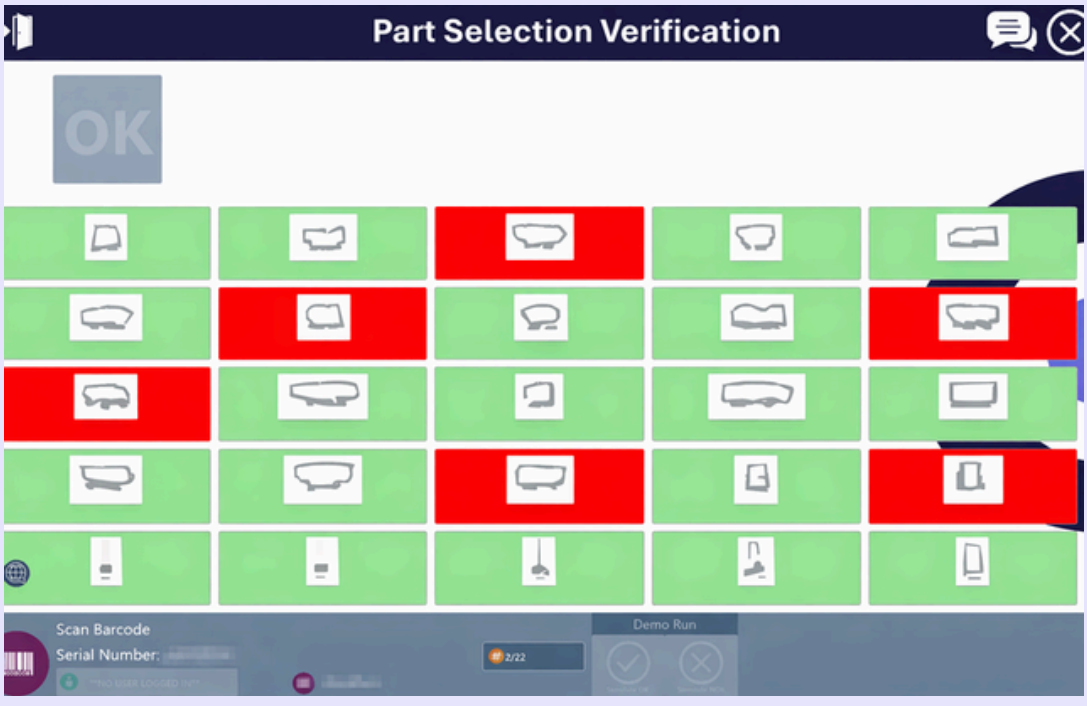
Problem

- Highly bespoke interiors (color, stitching, perforation,..)
- 100+ of leather parts per vehicle
- Paper-based kitting, long setup times
- Frequent missing parts
- High cost of errors and lack of traceability

SOLUTION → TRACEABILITY PARTS SORTING FOR ANY CAR CONFIGURATIONS

- **MES integration batch configuration**
- **Visual checklist** of required parts
- Digital **verification** of **present/missing parts**
- **Auto-generated rework orders for missing items**
- Full traceability **missing-parts alerts**

- 70% rework reduction
- 22% Setup time reduction



Motor Bike Assembly

Problem

- End-to-end production consistency across assembly line
- Fasteners not meeting specifications
- Missing components, mistakes made with lack traceability

SOLUTION → END-TO-END ASSEMBLY PROCESS CONTROL

« Connected assembly solution for full production consistency”

- **On-screen bolt sequence** playback
- **Crane torque wrench + socket selector verification**
- **Stream deck** step confirmation & control
- Trigger **companion app photo capture** and store images
- **Per-bolt validation (wrench, socket, torque)**
- **Centralized SQL data logging** & analysis

- End-to-end traceability
- Drastically reduce scrap & rework

Manifold Assembly

Problem

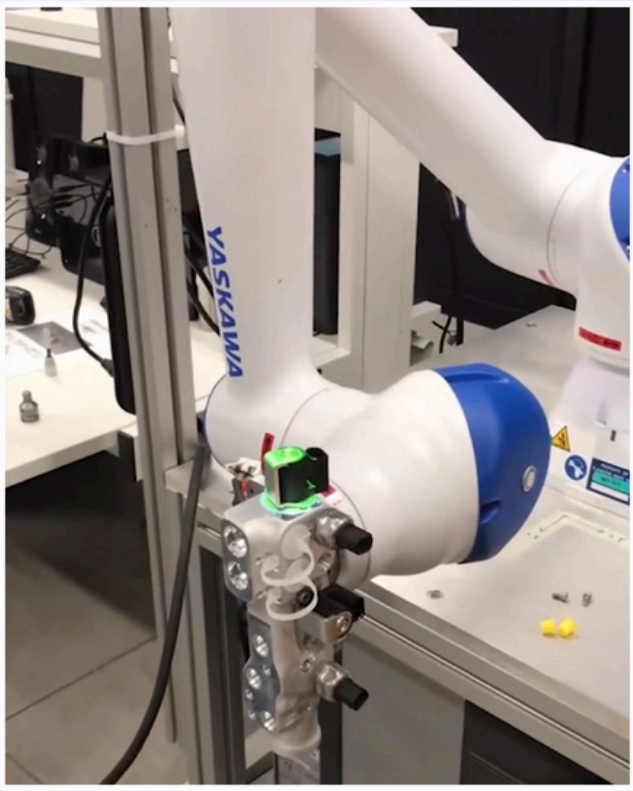
- Manifold weights heavy, leading to bad ergonomics for operator
- Operator mistakes during tightening

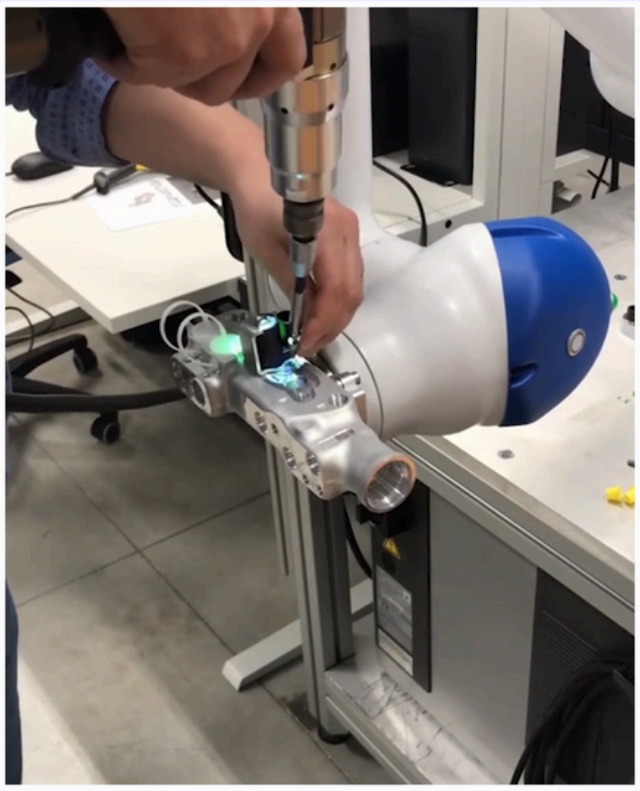
SOLUTION → COBOT, THE HUMAN ASSISTANT

« Standard integration with cobots”

- **Cobot** handles manifold **lifting and rotation**
- **Ansomat has standard robot/ cobot integration** for easy setup
- **Projected work instructions** onto manifold
- **Vision-based** action **validation**
- **ESTIC tools** for controlled tightening (ESTIC)

- Improved ergonomics setup
- Assemble parts right sequence right condition





Front Grill Assembly

Problem

- Initially, DAF developed their own in-house smart benches, these lacked scalability
- Logo misalignment was irreversible
- Usage of wrong bolts and clips

SOLUTION → STREE-FREE TIGHTENING

"Increase operator confidence with structured workflow"

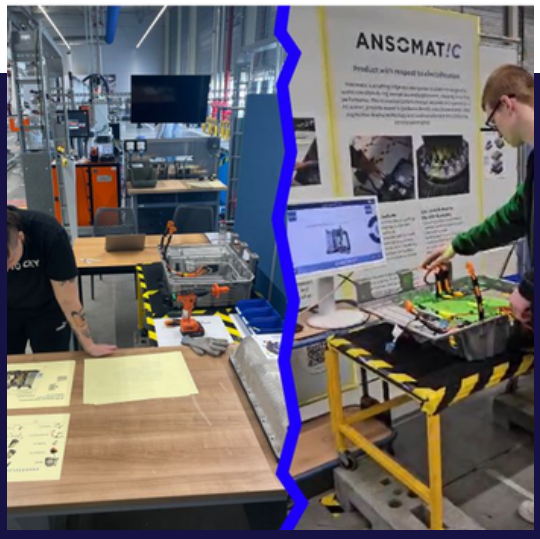
- **MES integration to trigger correct production order**
- **Projection of instructions onto the front grill**
- **Pick-to-light sensors to highlight bin location (pick to light)**
- **Machine vision to validate correctness logo placement (COGNEX)**

- Lower risk of scrap parts
- Speed up training new hires

EV Battery Assembly for Tier1s

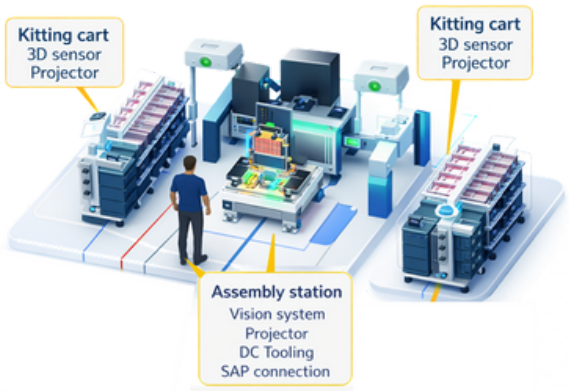
Problem

- Paper-based work instructions are difficult to follow and prone to more error
- Operators lack clear visual guidance on where to pick parts from across 2 kitting carts and main assembly station
- High product variability from multiple OEMs increases complexity and risk of mistakes



SOLUTION → TRACEABILITY PARTS SORTING FOR ANY CAR CONFIGURATIONS

- Each kitting cart is equipped with a **projector and 3D sensor** that visually indicates exactly where the operator must pick correct component
- Assembly station provides **dynamic work instructions that automatically adapt** to specific battery or product variant being built
- **Vision system** validates each operator action
- System **projects assembly steps** directly onto the work surface



Hydraulic Valve Assembly

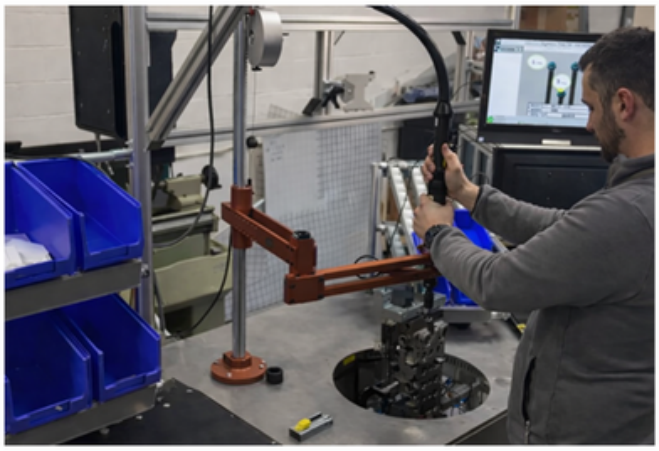
Problem

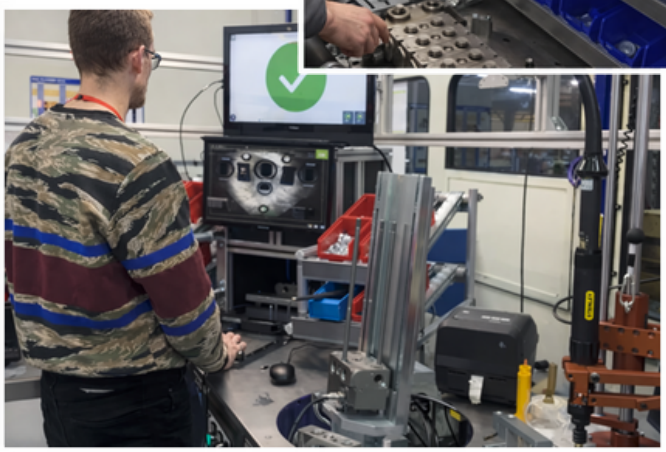
- Poor operator ergonomics when handling heavy hydraulic valve assemblies
- Missing O-ring leading to internal leakage and costly rework
- Excessive number of nuts, bolts and manual process steps, increases risk of assembly errors

SOLUTION → ERROR-PROOF, ERGONOMIC, FULLY TRACEABILE

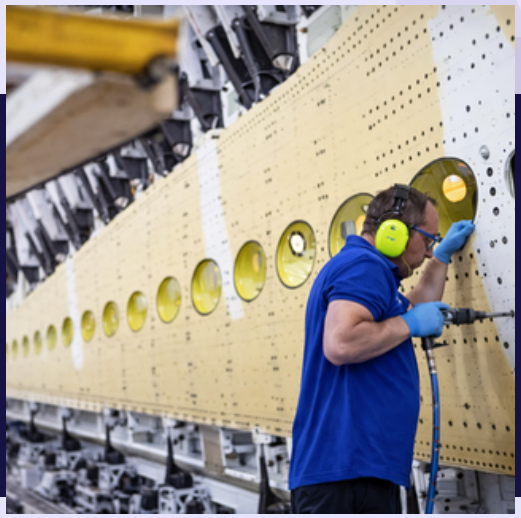
« Improved ergonomics and lower defect rates»

- Machine **vision** for **O-ring verificatoni (KEYENCE)**
- **PLC-controlled height-adjustable fixture positioning** for optimal working height to reduce operator strain
- **Controlled fastening tools of plugs:** fastening tools monitor torque and angle and provide automatic feedback (**STANLEY**)
- Tool **Position Control** with **Reaction Arm (DOGA)**
- **Automatic Socket & program selection:** automatically load the correct tightening program





Airplane Wing Assembly



Problem

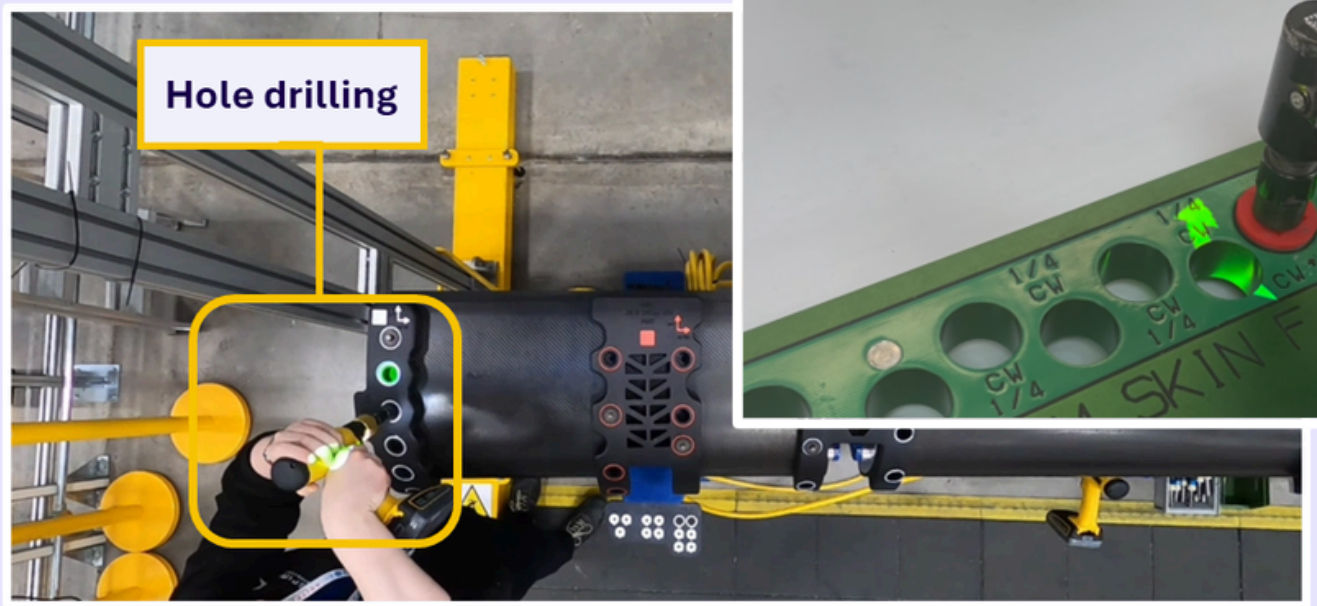
- Uncertainty about correct hole drilling
- Large parts make QC difficult and costly
- Paper instructions with no validation & no operator performance traceability

SOLUTION → ENSURE ACCURATE HOLE DRILLING

"Support accurate work for long aerospace parts"

- **AR guides correct drilling location**
- **Sliding vision + projector cover 14m workspace**
- **Instruction videos preview next task**
- **RFID-based tool registration**
- **Digital twin validates quality via logged actions**

Increase product quality and first-time right



Aero Booster Assembly

SAFRAN

Problem

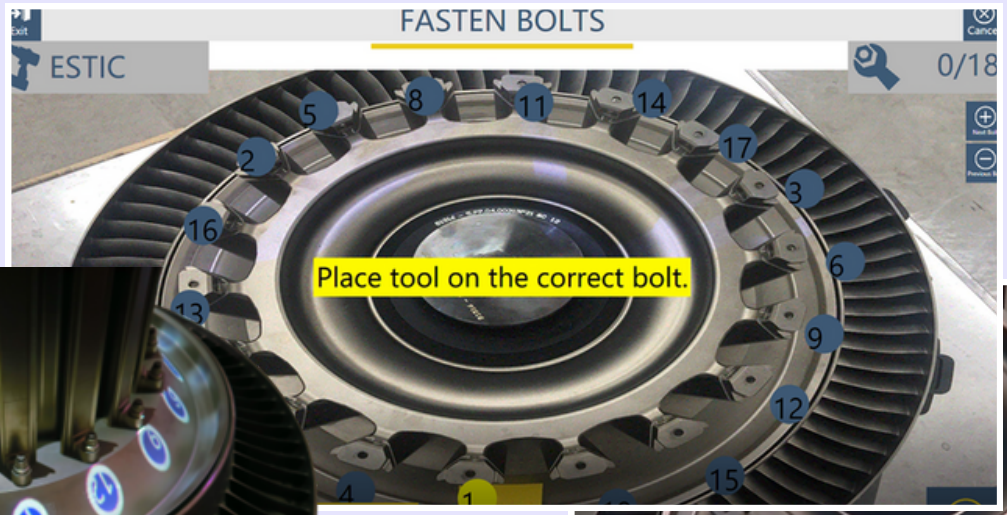
- Aero-booster bolts require a strict 18-bolt cross sequence
- Errors occur when bolt sequence isn't followed

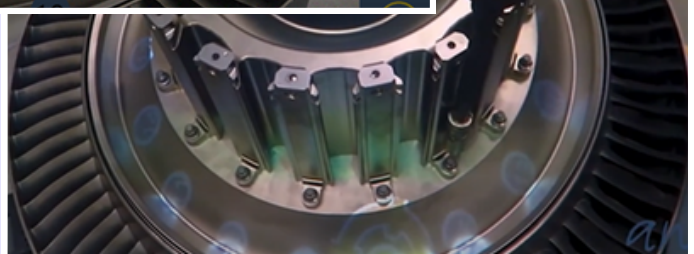
SOLUTION → TOOL POSITION CONTROL CROSS SEQUENCE

"Ensure correct position cross tightening "

- **Projection** bolt sequence onto the booster **(Augmented Reality)**
- **Verify position** of the **booster** through **machine vision**
- **Track tool position with vision** to flag incorrect bolt position (ESTIC)
- **Take image** of completed booster through **vision**
- **Record full torque/angle traceability** for every tightening

- Enable operator rotation
- Reduce production errors wrong tightening sequence





ansomat

Specification Sheets

Feature Set - Operator Guidance Software

Item	Decription	DWI	FASTEN	INSPECT	ULTIM
Instruction Creation					
Full access to the configurator	Design your work instructions in model and instruction set creation platform	✓	✓	✓	✓
Type of instructions	Add different type of steps: image, video, question step, barcode scanner, manual input, user login,.. to show to operator on the screen	✓	✓	✓	✓
Media Library	Store your images in a media library. Create folders to give structure to your images. Ability to crop/ rotate pictures and add annotations	✓	✓	✓	✓
Variant Management & Conditions	Handle numerous variants with conditions, submodels and variables to create dynamic work instructions.	✓	✓	✓	✓
Rework & Repair flows	Track change history instruction creation	✓	✓	✓	✓
Link to documentation	Add manuals, pdfs, powerpoints, pictures as additional documentation during operator guidance	✓	✓	✓	✓
Central monitoring & control of instructions					
Ansomat Management System	Create, update instructions from behind your desk, monitor multiple stations, central data management	OPTION			
Approval flows & advanced authoring	Ability to approve digital work instrucion sets and have advanced authoring (write, read, delete,...)	OPTION			
Data & Traceability					
Data recording	Record every operator action, all Ids (user ID, tool ID, step ID,...) and the results (valu inputs, torque/angle data for fastening, pictures taken,...)	✓	✓	✓	✓
Dashboards & KPIs	Ability to store data from all seperate stations over SQL and link to a dashboard tool such as PowerBI	✓	✓	✓	✓
Device connections					
Simple device connection	Connect simple devices: streamdeck, push button, label printer, barcode reader, user card reader, webcam	✓	✓	✓	✓
Fastening tools	Connect fastening tools from any brand		✓		✓
Tool position control	Position control through reaction arm, RTLS or machine vision		✓		✓
Socket selector	connect socket tray with light indication which socket to pick with automatic tool program selection		✓		✓

Feature Set - Operator Guidance Software

Item	Decription	DWI	FASTEN	INSPECT	ULTIM
Device connections					
Machine vision	Connect vision system(s) such as from Keyence, Cognex to inspect products and control actions			✓	✓
Machine vision -live view	Give real-time feedback to operator on potential mistakes by displaying the vision software from the vision brand			✓	✓
Augmented Reality (AR)	Connect up to 3 projector(s) per workstation to enable AR features			✓	✓
RFID	Ability to link RFID tags to Ansomat operator guidance system	OPTION			
Label printer	Ability to design and print custom labels with for instance serial number, results, logo,..	OPTION			
Companion app	Confirm step completion through mobile phone, take pictures, scan barcode,..	OPTION			
Picking	Worker picking actions through 3D sensors, Pick-to-light sensors or RTLS bracelets	OPTION			
System connections					
Open Protocol	Connect tools over Open Protocol	OPTION			
MQTT	Communicate over MQTT	OPTION			
OPC UA	Communicate over OPC UA	OPTION			
Siemens S7	Communicate over Siemens S7	OPTION			
Other	Custom cummunication (Node-red)	OPTION			
Software Care					
Service Level Agreement	Response time within 8hours	✓	✓	✓	✓
Priority	Access to ticking portal with priority treatment	✓	✓	✓	✓
Remote support	included over teamviewer	✓	✓	✓	✓
Updates & new features	Access to Ansomat latest software updates & new features	✓	✓	✓	✓

Feature Set - Electric Screwdrivers

	Smart Cabled Screwdrivers			Smart Battery Screwdrivers			
Brand	DOGA	DOGA	DOGA	ESTIC	Makita	STANLEY Engineered Fastening	ESTIC
Model							
Tool Name	GX/GY series	MDC series	MDT series	Micro Tools	MTC series	QBE series	EHC series
Covering Range	0.09...10Nm	0.01...49Nm	0.01...49Nm	0.1...5Nm	0.5... 40Nm	1...90Nm	1...100Nm
Versions	Pisto, Straight	Pistol, Straight, Angle	Pistol, Straight, Angle	Straight	Pistor, Angle	Pistol, Straight, Angle	Pistol, Angle
# Presets	1	16	16	99	1	256	99
Drive	Clutch	Current Control Direct Drive	Transducerized Direct Drive	Transducerized Direct Drive	Clutch	Transducerized Direct Drive	Transducerized Pulse
Monitoring	OK/NOK	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	OK/NOK	Torque & Angle Data	Torque & Angle Data
Communication	I/O	Open Protocol	Open Protocol	Open Protocol	WIFI	Open Protocol	Open Protocol
Controller Name	XT series	MDC 26/32	MDT26/32	Handy 2000 micro	MTC	QB/SC series	EHC2-MIF series
Controller Model							
Controller Capacity	1 screwdriver/controller	1 screwdriver/controller	1 screwdriver/controller	1 screwdriver/controller	N/A	Up to 6 / controller	Up to 10 / controller

Feature Set - Electric Nutrunners

	Electric hand-held nutrunners				Battery Pulse Tools	
Brand	STANLEY Engineered Fastening	ESTIC	YOKOTA	Norbar Torque Tools	STANLEY Engineered Fastening	ESTIC
Model						
Tool Name	QB series	EH2 series	E-wrench	EvoTorque	QB series	EH2 series
Covering Range	0.5...400Nm	1...180Nm	3...90Nm	100..700Nm	1...2200Nm	1...600Nm
Versions	Pistol, Straight, Angle	Pistol, Angle	Pistol	Pistol	Straight,	Anble
# Presets	256	99	16	1	256	99
Drive	Transducerized Direct Drive	Transducerized Pulsing	Transducerized Pulsing	Transducerized Direct Drive	Transducerized Direct Drive	Transducerized Direct Drive
Reaction device?	Yes	No	No	Yes	Yes	Yes
Monitoring	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data
Communication	Open Protocol	Open Protocol	Open Protocol	None	Open Protocol	Open Protocol
Controller Name	SC series	HT45/50 series	YETC series	Direct 220VAC	SC series	HT45/50 series
Controller Model						
Controller Capacity	1 tool/controller	1 tool/controller	1 tool/controller	/	1 tool/controller	1 tool/controller

Feature Set - Pulse Tools

	Cable Pulse Tools			Battery Pulse Tools		
Brand	STANLEY Engineered Fastening	ESTIC	YOKOTA	STANLEY Engineered Fastening	ESTIC	YOKOTA
Model						
Tool Name	EPB series	EH2 series	E-wrench	QB series	EH2 series	Cordless Wrench
Covering Range	0,6...150Nm	1...180Nm	3...90Nm	1...14Nm	1... 100Nm	5...80Nm
Versions	Pistol, Angle	Pistol, Angle	Pistol	Pistol, Angle	Pistol, Angle	Pistol
# Presets	256	99	16	256	99	16
Drive	Transducerized Pulsing	Transducerized Pulsing	Transducerized Pulsing	Transducerized Pulsing	Transducerized Pulsing	Transducerized Pulsing
Reaction device?	No	No	No	No	No	nO
Monitoring	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data
Communication	Open Protocol, Fieldbus, Toolsnet	Open Protocol	Open Protocol	Open Protocol, Fieldbus, Toolsnet	Open Protocol, Fieldbus, Toolsnet	Open Protocol
Controller Name	SC series	HT45/50 series	YETC series	SC series	EHC2-MIF series	YS-Z series
Controller Model						
Controller Capacity	1 tool/controller	1 tool/controller	1 tool/controller	6 tools/controller	10 wireless tools/ controller	4 tools/ controller

Feature Set - Digital Torque Wrench

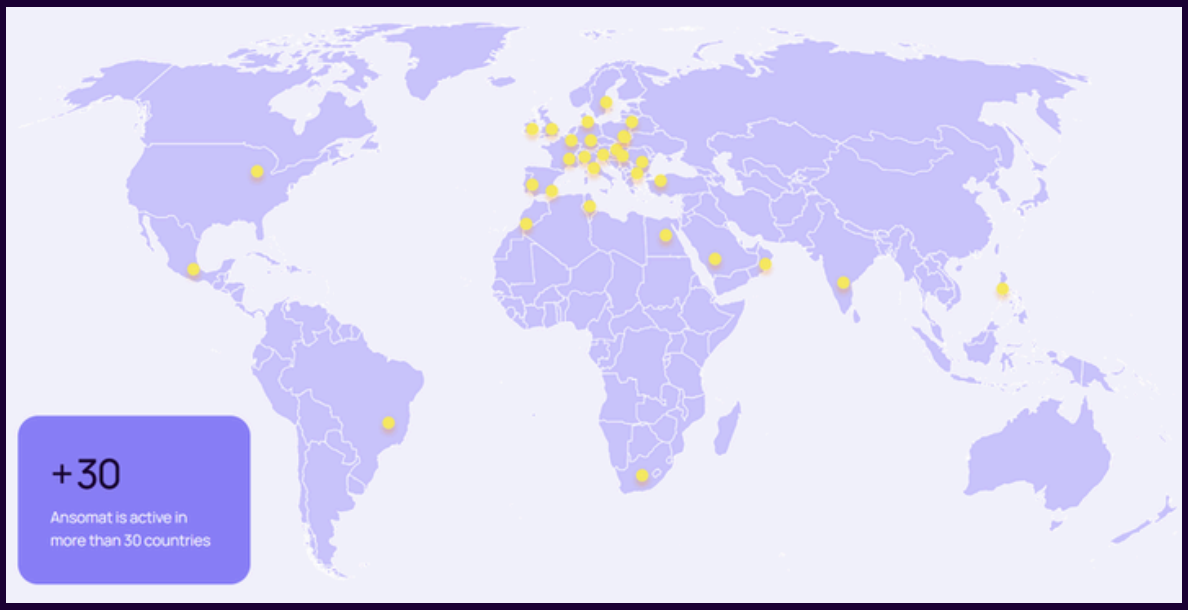
Digital Click Torque Wrenches

Digital Vibrating Torque Wrenches

Brand	Sturtevant Richmont	Sturtevant Richmont	BMS Torque Solutions	NovaTork®	Stahlwille	NovaTork®	Ecrane
Model							
Tool Name	SLTC 2.4 Ghz	TAC 2	Smart Click	Preset Torque	Manoskop 766 ADAPTIQ	QC	WrenchStar Multi
Covering Range	0,6...813Nm	0,6...204Nm	20... 160Nm	4... 300Nm	1... 1000Nm	0,6... 1000Nm	1...1500Nm
# Models	9	5	2	6	10	8	11
# Presets	1	1	1	1	1	unlimited	unlimited
Repeteability	+/-4%	+/-4%	+/-4%	+/-4%	+/-4%	+/-1%	+/-1%
Charger	Rechargeable batteries	Charger Craddle	Rechargeable batteries or USB	Rechargeable batteries or USB	Rechargeable batteries or USB	Rechargeable batteries or USB	Charger Craddle
Monitoring	Click OK/NOK	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data	Torque & Angle Data
Comms	Open Protocol, Fieldbus	Open Protocol, Fieldbus	Bluetooth	WiFi	Open Protocol	WiFi	Open Protocol
Controller Name	Global 400	Global 400	None	None	None	None	TCI-2 Lineside
Controller Model							
Controller Capacity	Up to 16 wireless wrenches	Up to 16 wireless wrenches	N/A	N/A	N/A	N/A	Up to 5 wireless wrenches
Application	Production	Production	Production	Production	Production	Quality	Production

Triggered by our expertise?

Global Presence



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