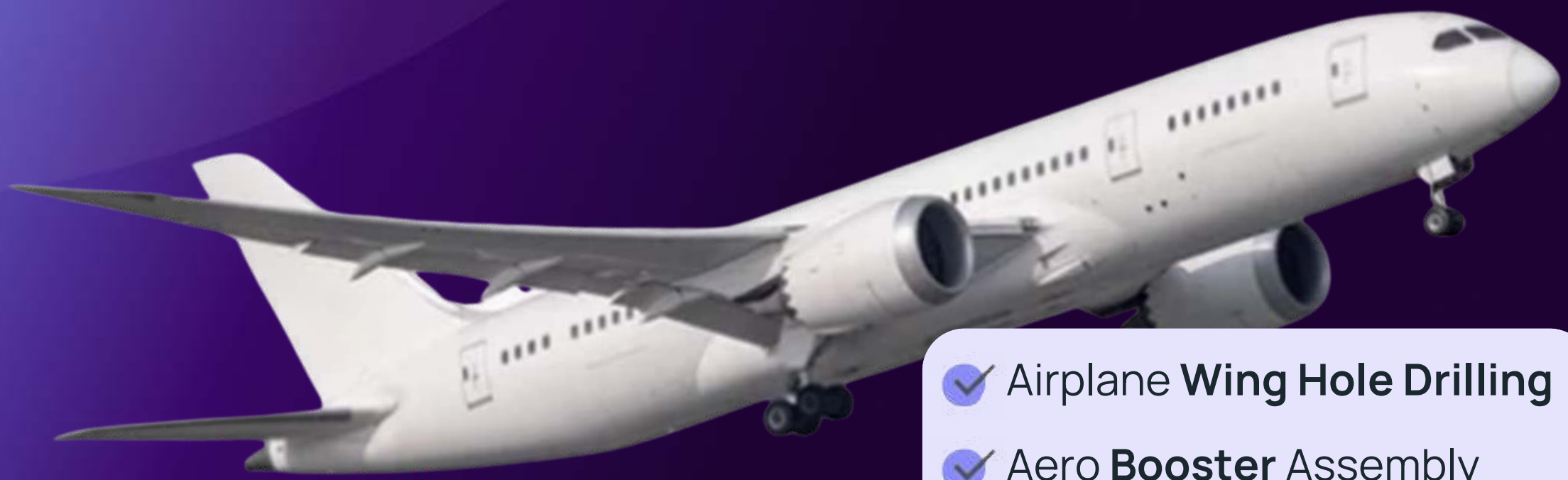
ansomat

6 CUSTOMER CASES - AEROSPACE & DEFENSE

Operator Guidance Software



- Airplane **Wing Hole Drilling**
- Aero **Booster** Assembly
- **Airplane Seat** Assembly
- **MRO** (Maintenance & Repair Operations)
- **FOD** (Foreign Object Detection)
- **Drone** Assembly

#1 - Airplane Wing Assembly

Problem

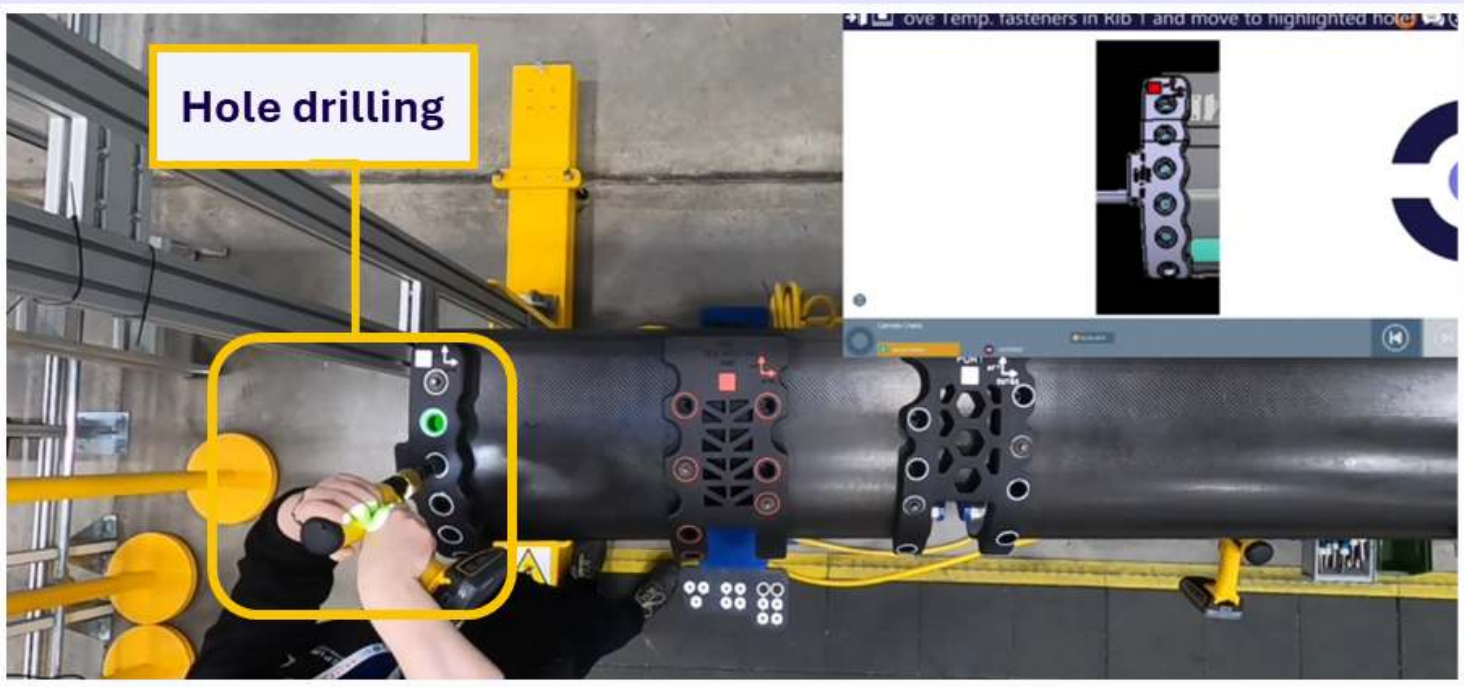
- Uncertainty about correct hole drilling
- Large parts make QC difficult and costly
- Paper instructions with no validation & no operator performance traceability

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



#2 - Aero Booster Assembly

Problem

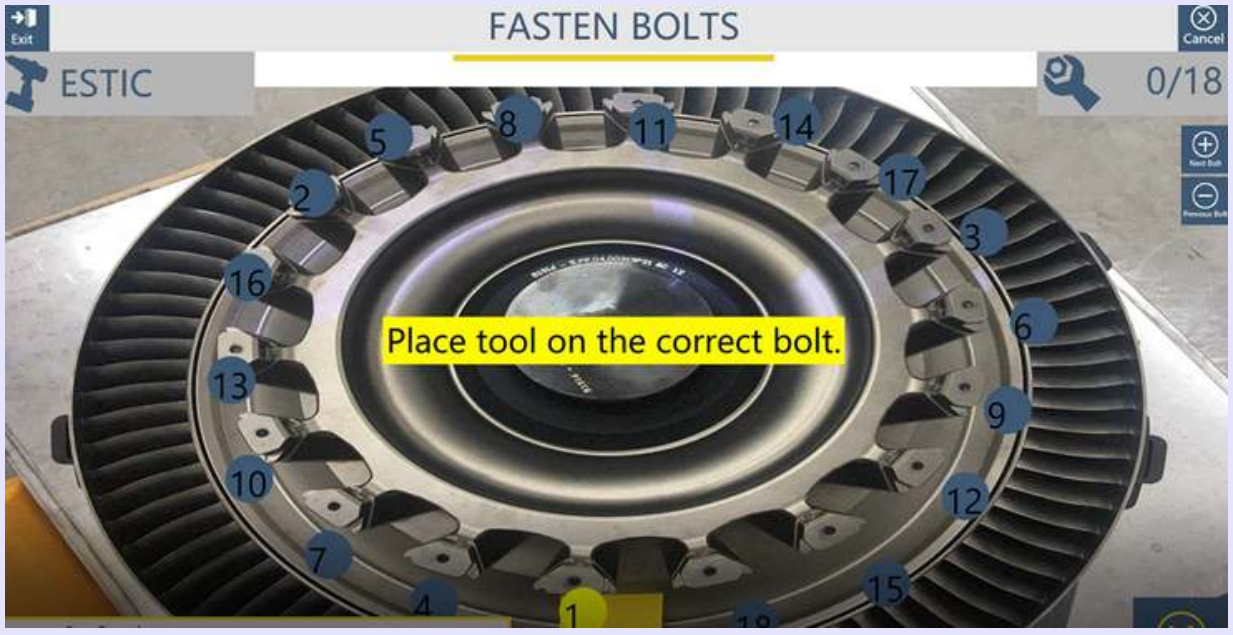
- Aero-booster bolts require a strict 18-bolt cross sequence
- Errors occur when bolt sequence isn't followed

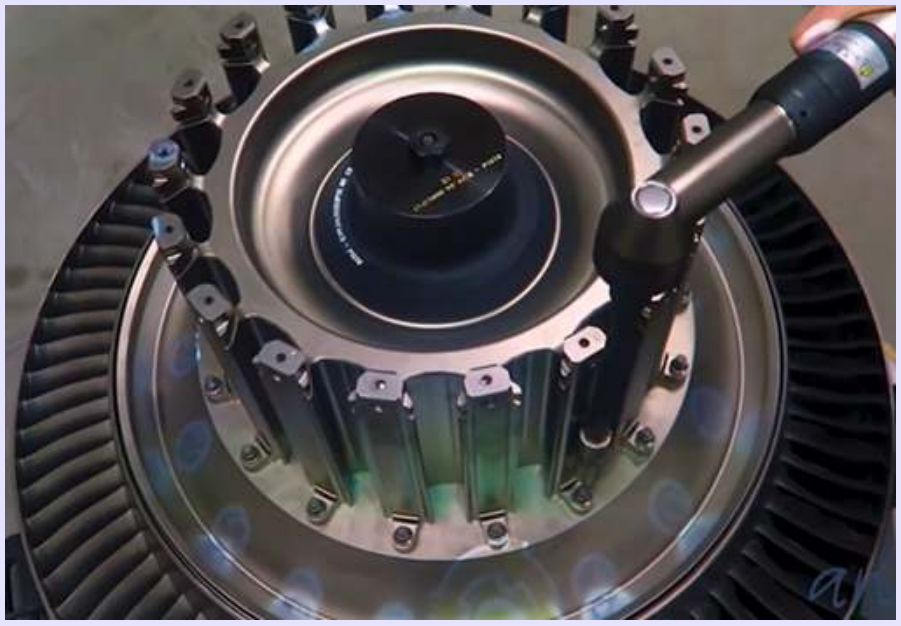
SOLUTION → TOOL POSITION CONTROL CROSS SEQUENCE

"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





#3 - Airplane Seat Assembly

Problem

- Business seat = highly critical, errors are costly
- Torque requirements not followed
- Limited traceability manual work
- Risk of FOD (=foreign object detection)

SOLUTION → GUARANTEED PRECISION & TRACEABILITY

"Ensure consistency, compliance and error-free assembly"

- **Step-by-step visual guidance displayed on a PC** or workstation
- **Stanley tool integration** provides real-time **torque** and **angle** feedback (STANLEY)
- **Full traceability of all operator actions** incl. torque

Increase product quality and first-time right

#4 - MRO Aero Booster

Problem

- 5x manual torque verifications are performed to confirm proper wrench functionality before starting MRO
- All torque checks are conducted manually and documented on paper records

SOLUTION → DIGITAL TORQUE VALIDATION

"Ensure torque accuracy before every repair"

- **Scan QR code** to automatically **load correct repair sequence**
- Integrate **torque testing unit to verify torque before starting workflow**
- **Trigger repair** procedures when **torque measurement falls outside specification**
- Achieve **full traceability without reliance on paper-work**
- **Picture taking** for improving repair robustness and traceability

- Better consistency & process reliability
- Improved shop floor transparency

#5 - FOD Tool Room picking

Problem

- FOD (= Foreign Object Detection) risk, tools left in parts can cause severe accidents
- No tool traceability

SOLUTION → TOOLS CHECK IN & CHECK OUT

"Controlled tool checkout with full traceability (who, what, when)"

- **Tool room is accessed** with key from safe and **user logs in**
- **Required tools** shown **via checklist**
- **All tools are tagged** (barcode scanner or RFID)
- **Required tools** are **scanned**
- **Foam board is taken to work area**
- **Scan-in on return** for **full traceability**

- Prevention of tools disappearing
- Full traceability tools usage

#5 - Drone Assembly

Problem

- Manual, paper-based instructions slow down production
- Minor assembly errors can trigger mission-critical failures
    - Missed torque spec leads to vibration or structure damage
    - Dozens of similar looking wires resulting in wrong signal routing
    - Connectors not fully locked
    - ...

SOLUTION → NO-FAULT FORWARD

"Verify every action before allowing the process to advance"

- **Step-by-step visual guidance (AR)** projected onto work area
- **Vision guided alignment & component presence validation**
- **Torque tool integration** to ensure a high-repeatability torque and fastening system
- **Semi-automation of cable routing** with projected wiring paths

- More consistent production
- Fewer assembly errors leading to less rework