

AIRTIFICIAL
intelligent robots

airtificial.com

AIINTELLIGENTROBOTS

Maximizing Output

Full Automation

Flawless Process

AI Technologies

Zero Defects

Tailor Made

Fast Change Overs



AIINTELLIGENTROBOTS

Maximizing Output / Full Automation

Feeding
Dispensing
Curing
Glueing
Precision Welding
(All Welding Technologies)
Pressing
Clamping
Screwing
Clinching
Heating & Cooling

Robotics System
Pick & Place Systems
Artificial Vision Systems
Micrometrics Systems
Plasma Systems
Adaptative Systems
Additive Systems
Handling Systems
Packing Systems
Palletizing Systems
Automated Logistics



AI INTELLIGENT ROBOTS

Flawless / AI Tech / Zero Defects

Artificial Vision Systems

- Full Analysis Software
- Full Images Processability
- Whole Images Database

Full Process Traceability

- Full Data Management
- Forecasting & Predictability
- Machine Learning Tools
- Deep Learning Tools

Testing Platform Software

Testing Capabilities

- Static Testing
- Dynamic Testing
- Electrical Testing
- Motor Calibration
- Engine Testing
- Functional Testing
- Performance Testing
- Torque Ripple Test
- NVH Testing
- Fatigue & Friction Testing
- Endurance & Impact Test



AIINTELLIGENTROBOTS

Tailor Made / Fast Change Overs

Automated Supply Chain

Material Reception

Feeding

Production

Work In Progress

Quality Control

Storage

Dispatch

AGV's Systems

AMR's Systems

Full Traceability

Bar Code/QR Management

Parameters Recalibration

Potential Failures Detection

Ordering of Spare Parts

Digital Coordination

Virtual Twins

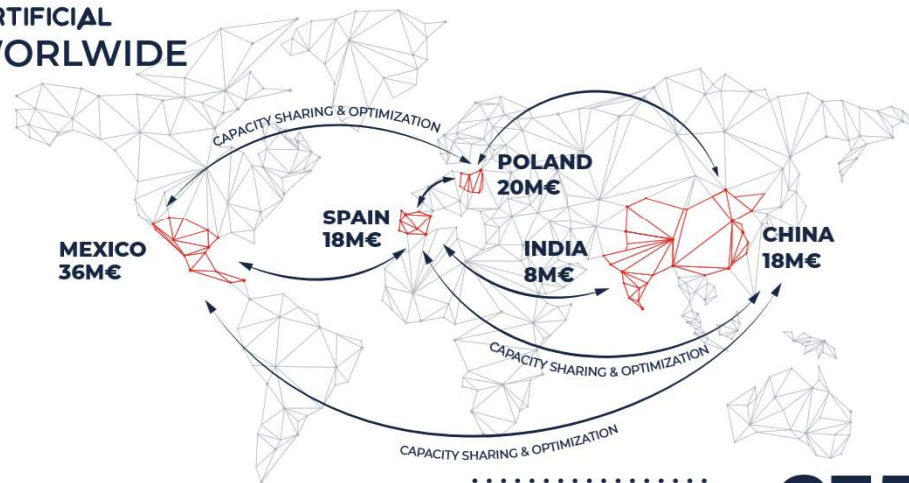
Industrial Flow Simulator

Own Dedicated Software

+27
years of
EXPERIENCE

+1000
SUCCESSFUL
PROJECTS
Delivered worldwide

AIRTIFICIAL WORLDWIDE



GLOBAL
CAPACITY **100M€**



+235
HUMAN TEAM
80% Technical Team

COMPETITIVE ADVANTAGES



Continuous
innovation



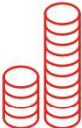
Engineering
Partnership



Project
Management

BUSINESS VOLUME

68M€



Our main
CUSTOMERS
TOP 20
Tier 1 Automotive

PRODUCTS / APPLICATIONS



Advanced Test
Technologies



Robotics,
Vision &
Assembly
Technologies



AiTRACE
Data Traceability
Acquisition Analysis
& Reporting



Smart Factory
(Automation
and digital
transformation)

OPERATIONAL EXCELLENCE

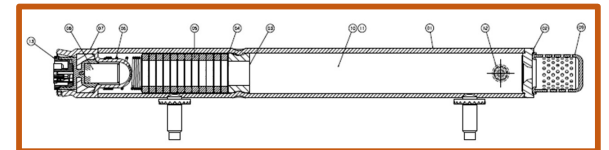
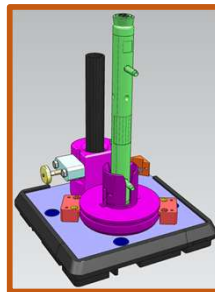
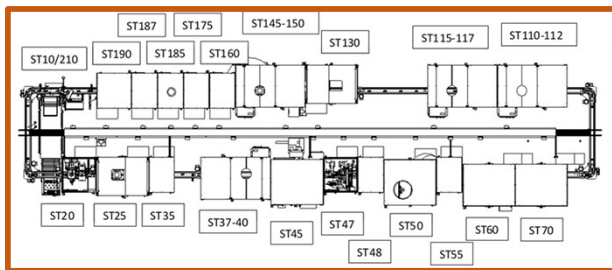
AS a driver to optimize efficiency
& customer experience applying
Lean 6sigma methodologies.



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Airbags Inflator / Igniter Tube Assembly + Automatic Gunpowder Loading

- Cycle Time 4 seconds
- Dosing system special design
- Controlled conditions for Temperature and Humidity
- Compacting System for Powder into Cup Igniter
- Automatic temperature and de-humification control system
- Permanent Scanner for all material and batches References



AIRTIFICIAL GENERAL PRESENTATION

AIRTIFICIAL

FATIGUE TEST JET TURBINE SHAFT

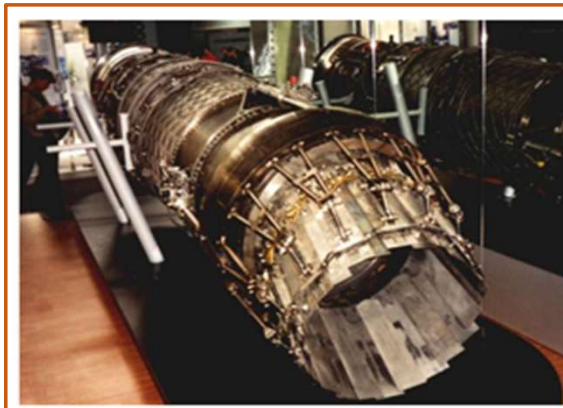
- Hydraulic Servo-Actuator
- 3.000 kN force Servo-Actuator
- Real Time Control
- Synchronized Multi-Channel Control



AIRTFICIAL GENERAL PRESENTATION

THRUST VECTORIAL NOZZLE CONTROL SYSTEM EJ-200 ENGINE EUROFIGHTER TYPHOON

- Control system for static and demonstrations test
- Vectorization and ovalization nozzle movements
- Jointly developed digital control system
- Synchronized real control time @ 4 nozzles actuators
- Joystick, throttle and customized panel interface
- Direct joystick and throttle data acquisition
- Set point generated @ joystick modelled @ real **F16**



AIRTFICIAL

Function Test - Fighter Aircraft Actuator (EF2000 Foreplane)

- Customer Control System Integration
- System Variables adjust & Programming
- Automatic & Manual operation sequences control
- Interactive Synoptic Control
- Parallel Check (To avoid operator errors)



By courtesy of CESA

AIRTIFICIAL

Skydrol - Oil Hydraulic Test Bench

- Two Benches, Skydrol and t STD Oil
- Work pressure à 350 bars, Max flow à 150 l/min
- Data logger system, to acquire all the analogs signals
- Laboratory acceptance aeronautical hydraulic tests
- Pressure and flow control



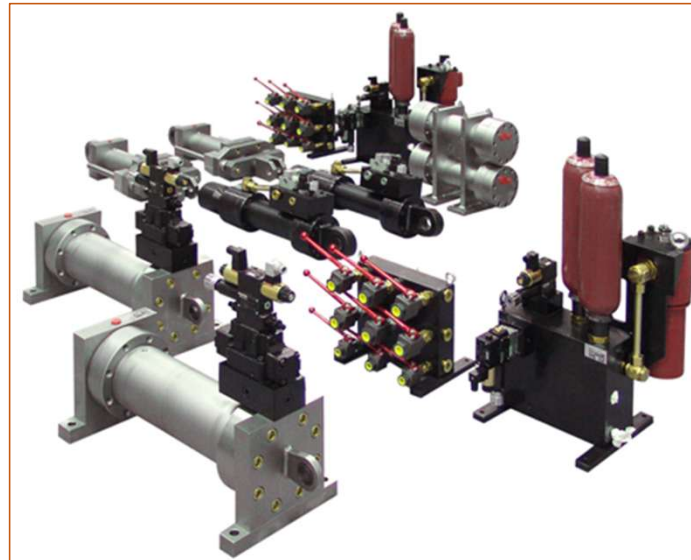
3MN Servo cylinder AIRBUS A350

- 5mn traction and compression Bench
- Test fixing ring between the wing and the engine
- 3 MN static load / 2,2 MN Dynamic Load
- Servo valve 180 l/min High precision
- 2 m/s maximum velocity, frequency 10 hZ
- Transducer position "LVDT" & Load Cell



Hydraulic Aircraft Actuator Airbus A400M

- Real Time Control
- 12 simultaneous control channels
- Combined cycle with climatic chamber
- Temperature converters
- Multiplayer actuators
- Oil / Skydrol converters / Hydraulic Actuators



Group Success Cases on Aerospace / Avionics / Systems Engineering

Aerostructures Assembly Composite Manufacturing

Technologies

1. Aerostructures
2. Tooling & Equipment
3. Mechanical systems
4. Integrated Labs
5. Test Benches

Success Cases

1. A350
2. Falcon 10X
3. Euro-Drone
4. A320 Fan Cowl

Flight Controls



Success Cases

1. Mission Consoles
2. Flight Control Sticks
3. Weight on Wheels
4. Actuators / Controls

Systems Engineering

Success Cases

1. Airborne/Naval Platforms
2. SW & Signal processing
3. Avionics/Naval buses
4. Combat Syst. Integration

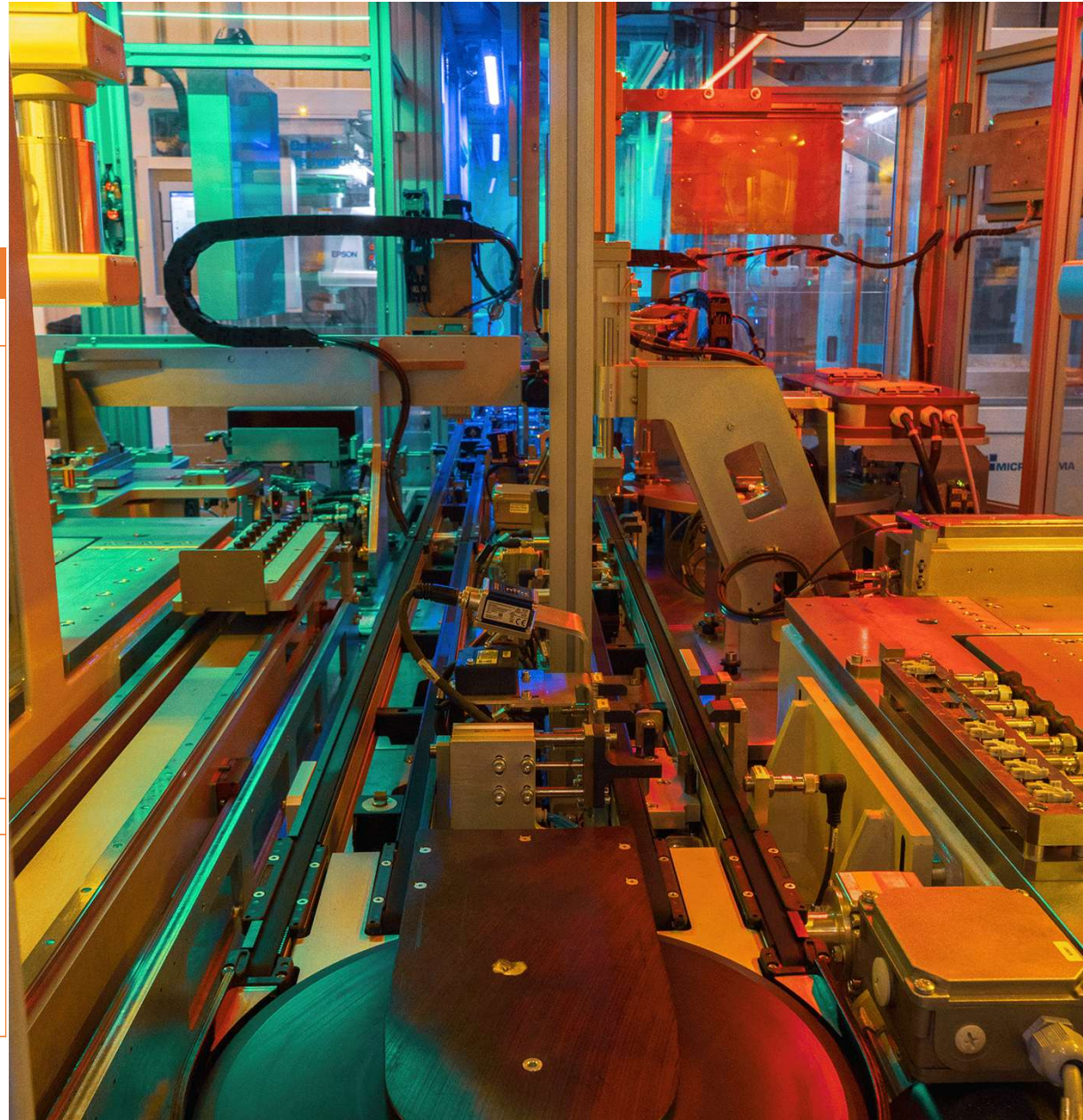
Technologies

1. Unmanned Ground Systems & Vehicles
2. Sensors/Radar integration and modules
3. Electronics housings, thermal / EM shielding.

M518 - BX8 TRANSFORMER ASSEMBLY CELL

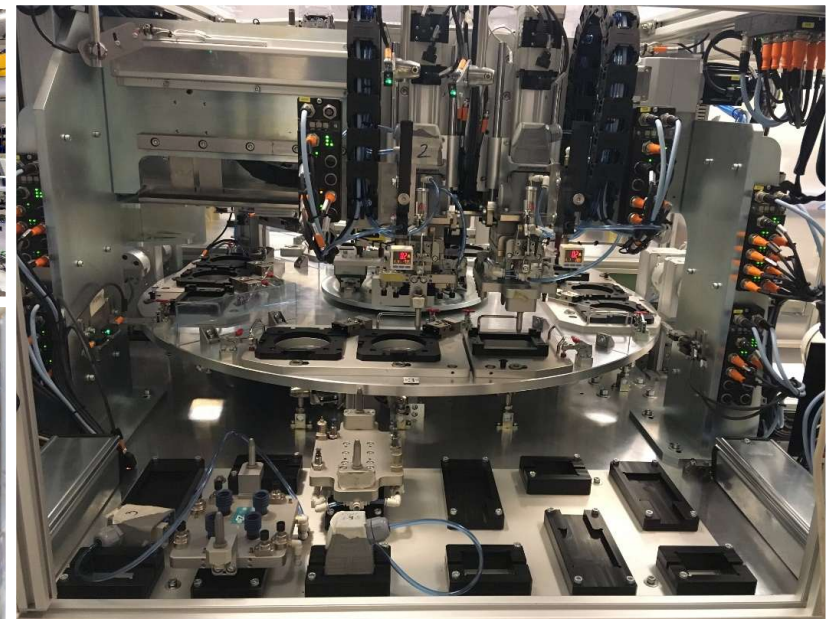
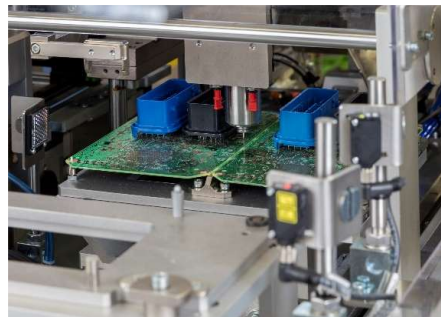
PRODUCT	Transformer
DESCRIPTION & TECHNOLOGIES	• Electrical Transformer Assembly Line. • Automated Assembly Line with 4 palletizer: component feeder system, including Scara robot. • Laser strip process. • Magnetization process, magnetic field measurement, manipulation and pick and place. • Vision check. • Tight tolerances and high repeatability for tooling. • Accurate Length measurement (LVDT sensor)
CYCLE TIME	3,5 sec. cycle time
CASE OF SUCCESS	• Line of high productivity. • Short cycle time (detailed study and simulations before proceeding to mechanical design phase)

AIRTFICIAL GENERAL PRESENTATION



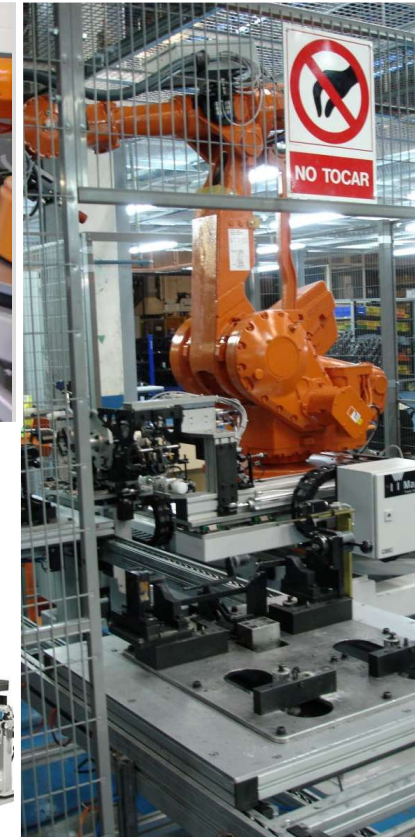
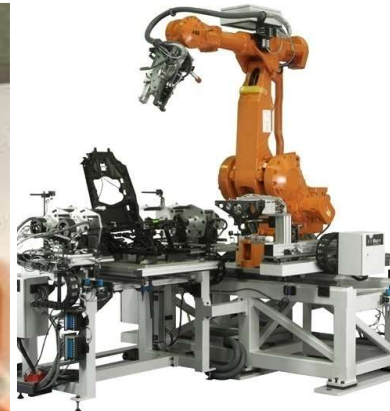
M499 - BODY 3 ASSEMBLY LINE ENG 12

PRODUCT	Compact ECU Assembly Cell
DESCRIPTION & TECHNOLOGIES	• Automatic dial table (only one operator) • Automatic screwdriver tightening • Cover & Base automatic bulk feeding with Robot guided by camera system • Automatic labeling • Laser marking • Direct connection of PLC to the customer server • Eye-feeder
CYCLE TIME	22 sec./unit
CASE OF SUCCESS	• Robot guided by artificial vision • Utilization of IO-link sensorics for easy replacement and auto-diagnostic system for maintenance • Laser 3D to check the perimeter and correct assembly verification (clips)



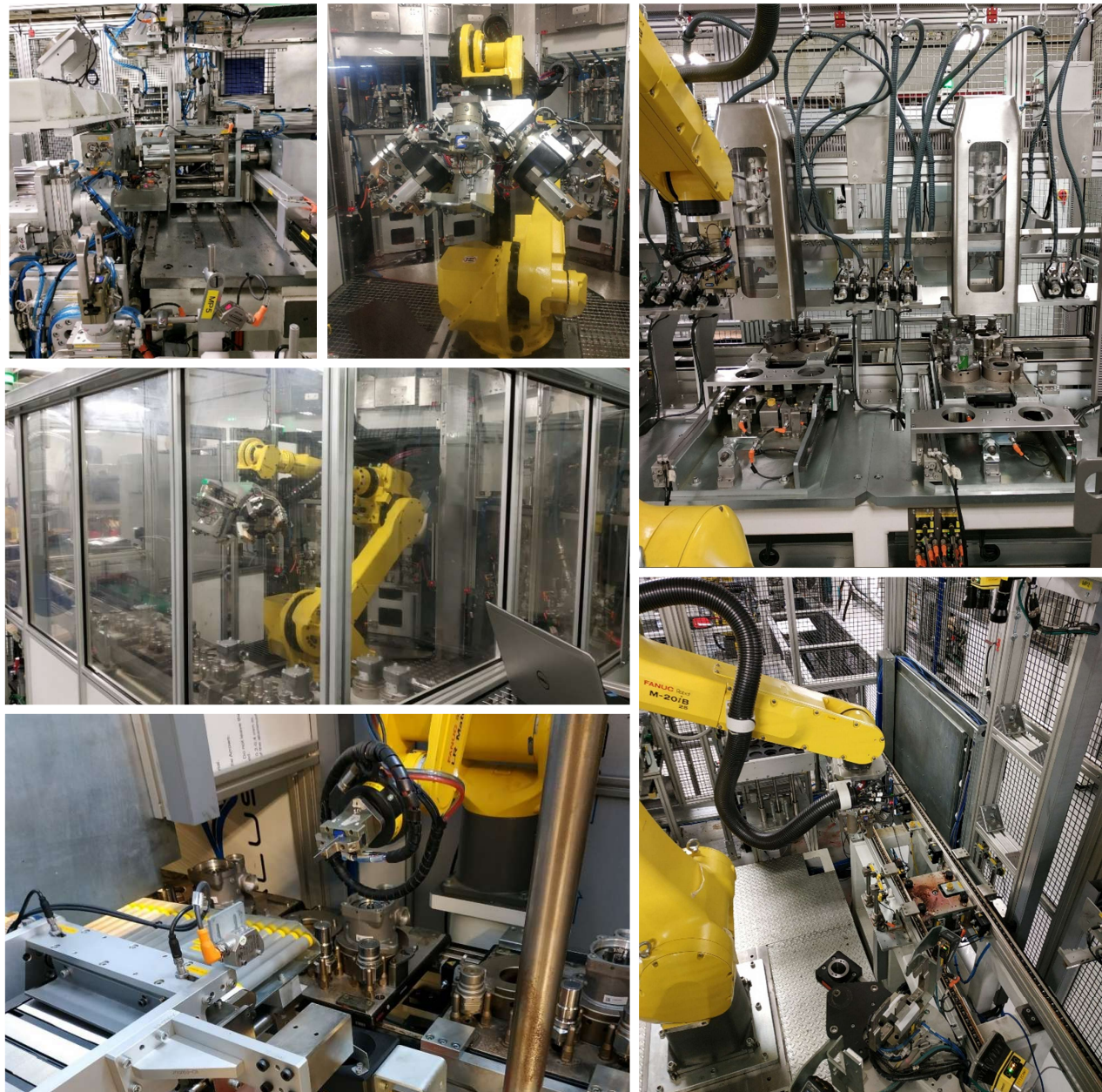
M259 - END OF LINE SEAT TEST STATION

PRODUCT	Seats
DESCRIPTION & TECHNOLOGIES	• Full automatic line • Laser marker • Visión • Magnetization • Trays and bowl feeding • 4 robots for manipulation • Conveyor system • Small components insertion • Press
CYCLE TIME	30 sec.
CASE OF SUCCESS	Integration of the test acquisition devices into the robot head allowing accessibility and variability of tests



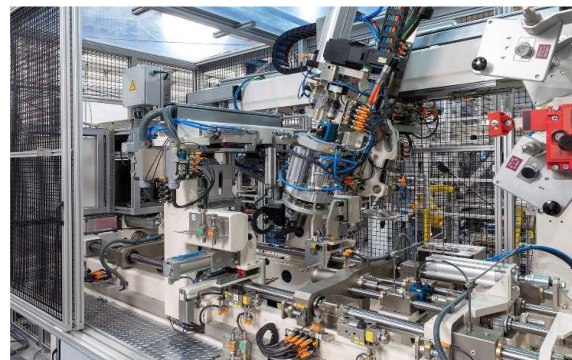
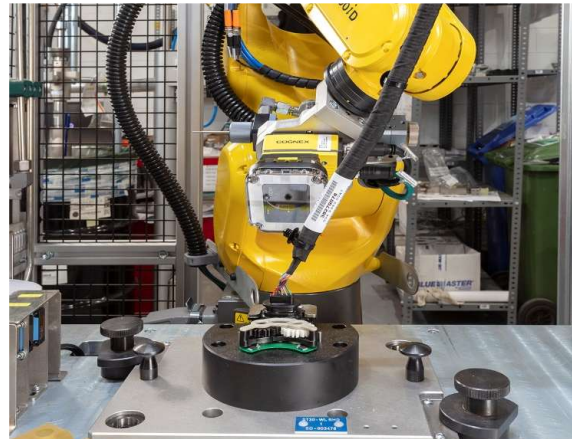
M481 - PUMPS ASSY LINE

PRODUCT	Trucks hydraulic steering pumps
DESCRIPTION & TECHNOLOGIES	• Full auto line in conveyor with 15 stations, 4 operators and 9 robots (4 EOLTesters included) • Design of all stations was protected & prepared with automatic changeover for future families of variants • Full line Traceability with MES with production work orders reception from plant ERP planning • Extended use of robots with external sensors to control the sequence by vision and/or force • These technologies allow full automatic components insertion process, flexible to adapt to product variation like in a manual line • EOLTesters automatic load/unload with one robot capable to do the hydraulic connections to the tested parts
CYCLE TIME	30 sec.
CASE OF SUCCESS	• Definition of a new concept production line with very high flexibility, prepared for more than 100 models, and reduced batch size to 4 parts • Full automatic changeover in 30" • The objective was to avoid produce in batches of parts



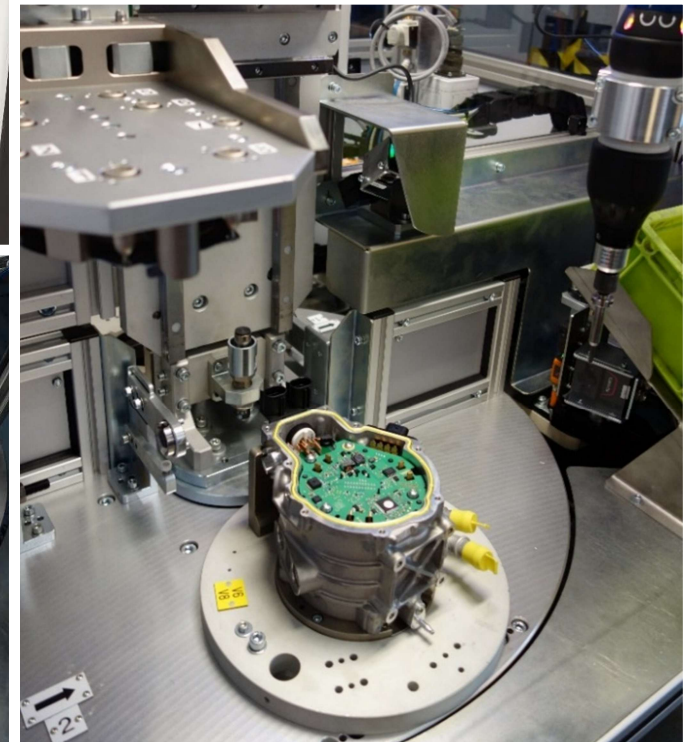
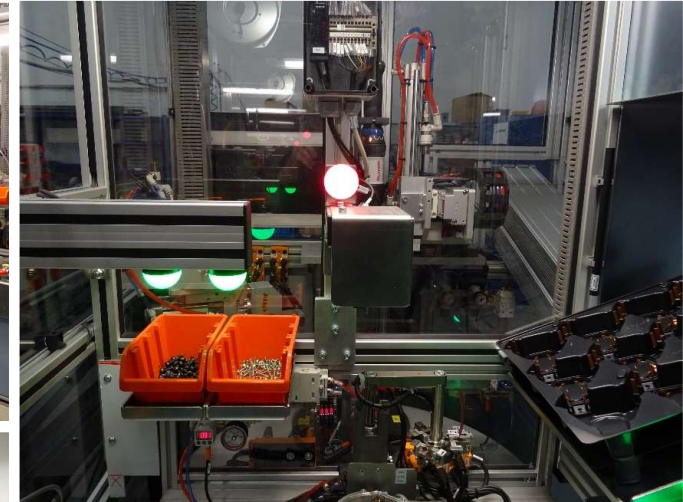
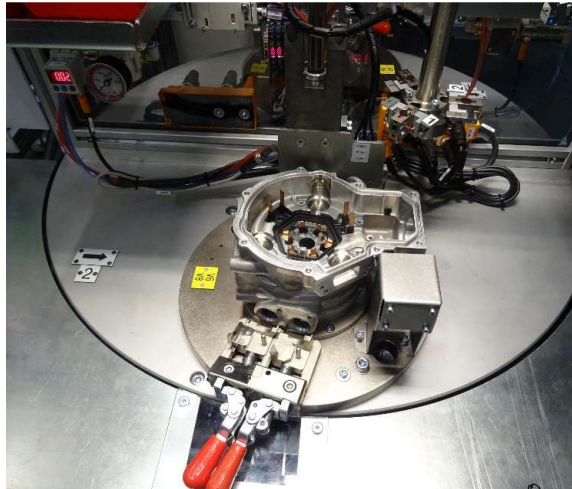
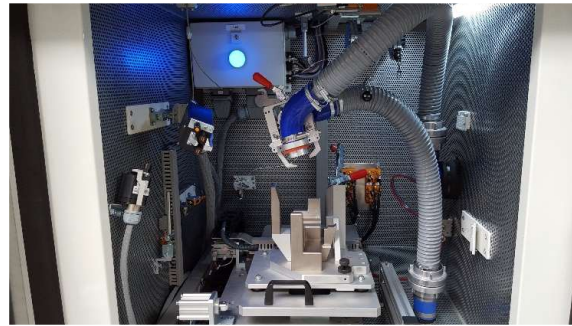
M-287-16 - SENSOR AND FINAL ASSEMBLY & TEST LINE (M-374 & M-458)

PRODUCT	Electric Power Steering (EPS)
DESCRIPTION & TECHNOLOGIES	• Automatic palletized flexible line with 20 stations (including 5 test stations) to assemble and test the Sensor and the Final Assembly of the EPS. • The operation of the line is done with 7 operators. The line is prepared to run 4 models and is capable of easily adding new models. • The line incorporates high technology robotics and vision system applications. • Auto greasing application with the robot gripper having the nozzle and the camera to grease an area of the sensor • Auto inspection of the correct installation of the wire harness brackets and connectors • Auto greasing and inspection of the cover of the EPS. Greasing dispenser and camera fixed
CYCLE TIME	60 sec.
CASE OF SUCCESS	Unify in the same line the two processes of Sensor and Final Assembly. Pallet is used only for transport, not for clamping or positioning of the EPS. This simplifies a lot the pallet and saves cost for maintenance and for adding future models.



M442 - ELECTRIC TURBOCHARGER FINAL ASSEMBLY AND TEST LINE

PRODUCT	Electric Supercharger
DESCRIPTION & TECHNOLOGIES	• Semiautomatic assy line with 12 stand alone station with processes with servopress • Screwdriving with autofeeder screws • Leak test • Laser marking and functional • NVH and acoustic noise test (anechoic chamber) • Critical automatic processes for silicone and thermal paste dispensing • Phase leads resistance welding and magnetization
CYCLE TIME	100 sec. cycle time
CASE OF SUCCESS	New development of functional/performance EOL Tester with anechoic chamber, NVH analysis and air flow/pressure and temperature high dynamic measurements. High power supply with 48VDC bus and 500A peak current. Artificial traceability, rework and Andon applications. Engineering partnership process needed to develop a line for a complete new product from customer requiring high flexibility for future models or process adaptations as well as for low or high volumes needs. Application of tools such as mock-up, cycle time studies, simulations,...



M494-1 DUAL PINION EPS FINAL ASSY & TEST LINE

PRODUCT	Dual Pinion Electric Power Steering
DESCRIPTION & TECHNOLOGIES	• Press processes and analysis • Functional Performance test • Leak test • Anti rattle noise adjustment and test processes • Dual yoke adjustments • Vehicle simulations • Friction tests • Noise tests • Assistance dynamic tests
CYCLE TIME	40 sec assembly cycle time 80 sec test cycle time
CASE OF SUCCESS	• Complete production and test line turn key project. • High flexibility for several models through standardization of individual processes in semiautomatic stations concepts. • Universal test equipment that can be used for R-EPS, P-EPS and DP-EPS giving the possibility to enlarge lifetime of the testers over the product live cycle.



Why are we the best partner?

Expertise & Leadership

Continuous Innovation



Product & operative innovation to supply high level technologies of solutions & services to our customers

Engineering Partnership



We collaborate with our Customers since the early stages of the Product Development

Project Management



Our **"SILK"** Methodology follows the Lean Six Sigma Philosophies

Global Strategy



We balance resources efficiently and Focus on Worldwide Customers

Technical Background & Leadership



We are leaders in advanced technologies (IA, robotics, vision...) and have highly collaborative and skilled Leadership Teams

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AIINTELLIGENTROBOTS

Ability to Tailor Production to Demand Increases

Shortening Lead Times

Strengthening the Supply Chain

Reducing Human Intervention to Zero

Avoiding Delays from Compromising Availability

Strengthening Export Market Access

Strengthening Geographical Footprint