

AI INTELLIGENT ROBOTS

Battery Test Bench Solutions

Precision Power Electronics · LabVIEW Automation · Complete Integration



From Signal to System – We Deliver the
Complete Test Bench

2026

AI RTIFICIAL

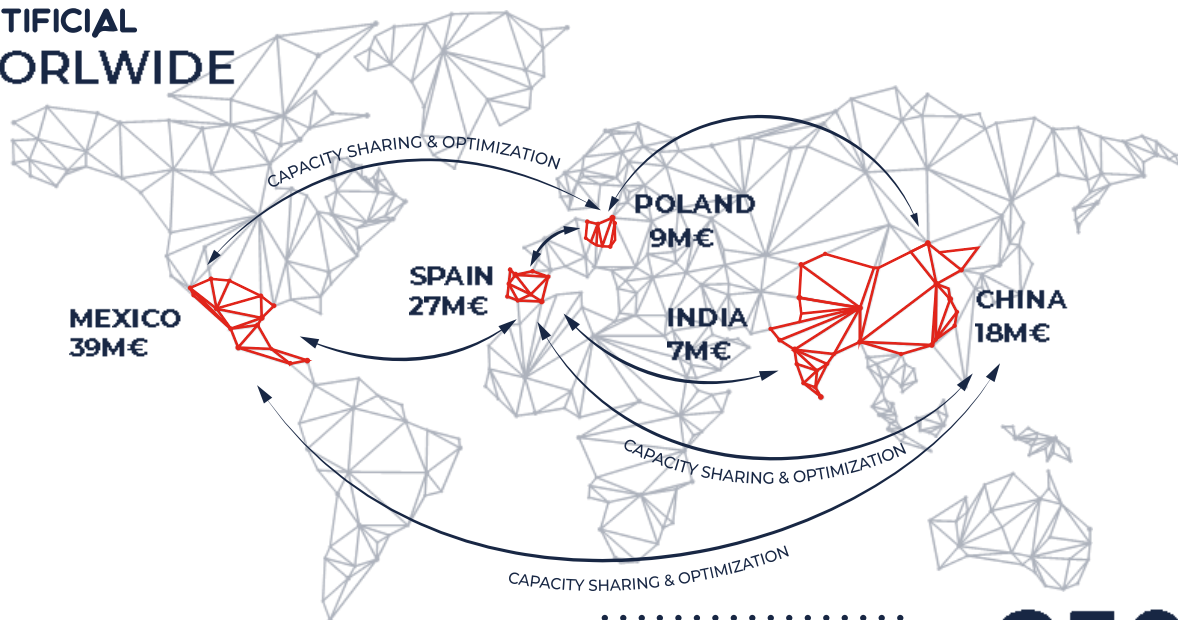
+28

years of
EXPERIENCE

+1000

SUCCESSFUL
PROJECTS
DElivered worldwide

AIRTIFICIAL
WORLDWIDE



GLOBAL
CAPACITY **100M€**



+250
HUMAN TEAM
80% Technical Team

**COMPETITIVE
ADVANTAGES**



Continuous
innovation



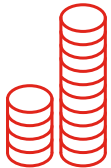
Engineering
Partnership



Project
Management

**BUSINESS
VOLUME**

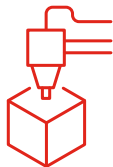
60M€



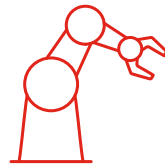
Our main
**CUSTOMERS
TOP 20**

Tier 1 Automotive & PROCESSING
PLATFORM FOR TESTING APPLICATIONS

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.



Continuous Innovation

TEAM TALENT

A **multidisciplinary global team** that applies creativity, analysis, critical thinking, knowledge transmission, and continuously innovation to its engineering work.

SIMULATION TECHNOLOGIES

We apply **all the knowledge to your plant without risks, costs, or mobility.**

VR / AR | Process simulator
Software | Online validations



The scalable traceability SW that will allow you to **control and improve the productivity and performance of equipment.**

ADVANCE ROBOTICS

including collaborative robotics

VISION SYSTEMS

to simplify the assembly and test solutions.

Pick and Place | Assembly |
Machine tending Dispensing |
Inspection | Palletizing Screwing
| Intra-logistics

PARTNERSHIP PROJECTS

Through PARTNERSHIP PROJECTS we develop the future products and processes

New process feasibility | Process simulation | Critical process validation | Mock-up's | Laboratory's test development | 3D simulation.

PROBLEM SOLVING SERVICE

We **improve equipment performance and solve critic production problems** by using methodologies such as lean, 6 sigma, agile in combination with AI algorithms.

The Battery Testing Challenge



Increasing Complexity

EV, stationary storage and aerospace batteries require multi-chemistry, multi-format testing — from cells to full packs.



Regulatory Pressure

IEC 62660, ISO 12405, UL 9540... traceability, safety interlocks and audit trails are non-negotiable.



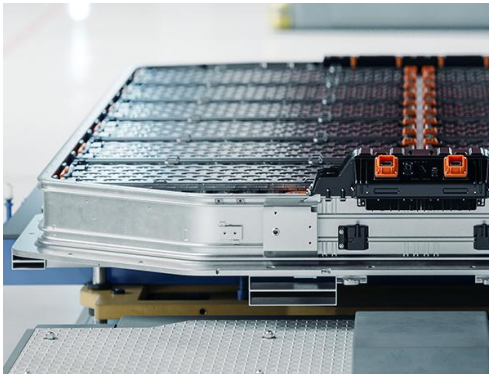
Integration Bottleneck

Hardware, software, mechanics and safety are typically bought from different vendors — integration is left to you.



Energy Costs

High-power cycling generates enormous heat. Regenerative solutions cut energy bills and CO₂ by up to 80%.



Our Value: Turn-key Battery test Systems

Integrating **high-power regenerative** test equipment, **environmental control** and **advanced automation**.

You receive a fully operational test bench — wired, programmed and validated.



Power Electronics

Best-in-class cyclers — cell to pack, kW to MW scale



Mechanical Design

Custom bench frames, DUT fixturing, thermal management



Electrical Cabinet

Full LV/MV wiring, safety interlocks, EMC compliance



LabVIEW Software

Automated test sequences, real-time DAQ, reporting & traceability



Commissioning

On-site installation, validation and operator training



Ongoing Support

SW updates, hardware upgrades, preventive maintenance

AiTRACE
by **AIRTFICIAL**

GAME-CHANGER
PLATFORM

Our **acquisition**,
traceability, and **analytics**
platform developed by
Airtificial.

AIRTFICIAL

Cell & Module Cycler

Ideal for **R&D, Formation & End-of-Line**

64

channels / rack

up to 300 A each

75%

footprint reduction

vs. legacy systems

3

performance tiers

Basic · Standard · Premium



Built-in EIS, DCIR and oscilloscope — no extra instruments needed



Channels can be combined (series/parallel) for higher voltage or current



±0.02% full-scale accuracy — research-grade measurement quality

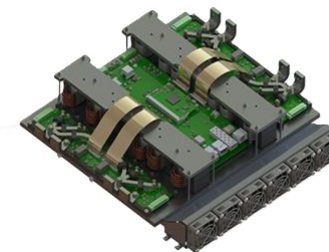


Open API — native integration with our LabVIEW automation layer



Upgrade path between tiers (Basic → Premium) without hardware swap

Performance Tiers	Basic	Standard	Premium
Full-scale accuracy		0.03 %	0.01 %
Minimum voltage	< 1 [Volt]	650 [mV]	250 [mV]



AIRTIFICIAL

Module & Pack Cyclers

For **EV** Packs, Stationary **Storage** & **Aerospace**

100 kW

per channel

scalable to 4+ MW

80%






energy recovered

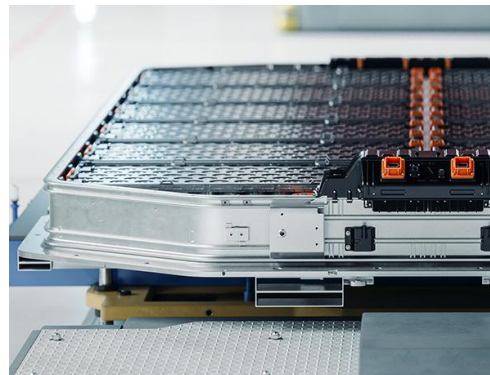
DC bus regeneration

<1 ms

transient response

SiC power stage

-  Common DC bus recirculates energy: charge one pack while discharging another
-  Galvanic isolation channel-to-channel — safe parallel multi-pack testing
-  Real-time simulation of charge, high-current pulses, regen and cell degradation
-  Modular architecture — start at 100 kW and expand to multi-MW without redesign
-  Open API + Ethernet — full control from our LabVIEW test sequencer



AIRTIFICIAL

AiTP · Artificial Testing Platform

Our Software Layer · LabVIEW Automation

We deliver **fully automated test sequences**, tailored to your process



Test Sequencer

Step-by-step CC/CV/CP profiles, DCIR pulses, rest periods — no coding required for operators



Real-Time DAQ

Synchronised multi-channel acquisition: voltage, current, temperature, BMS CAN data



Safety & Interlocks

Configurable alarm limits, hardware e-stop integration and automatic abort sequences



Reporting & Traceability

Auto-generated PDF/Excel reports with timestamps, operator ID and test conditions



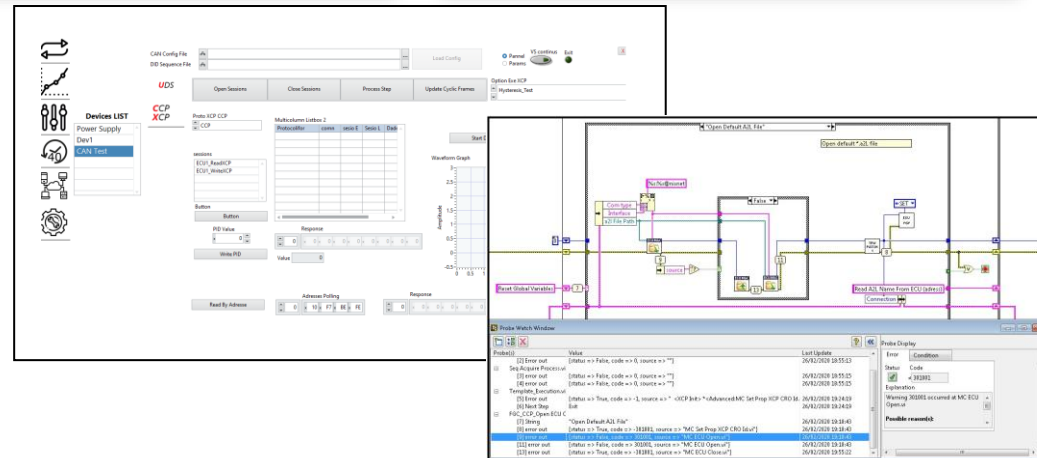
System Integration

CAN bus BMS, thermocouples, thermal cameras, climate chambers — all in one LabVIEW project



Scalable Architecture

Modular VI structure: add channels, instruments or protocols without rewriting the core



AIRTFICIAL

Applications

Diferent solutions for different Applications, tailored for you



Battery R&D

Cell chemistry validation, formation cycling, capacity grading and degradation studies in research labs



EV Pack Validation

Full functional testing of EV battery packs: charge/discharge, BMS communication, thermal performance and abuse testing



End-of-Line (EOL)

High-throughput production testing: capacity check, internal resistance, SOC matching — cycle time optimised



Second-Life Batteries

Characterisation and grading of refurbished cells and packs for stationary storage or industrial applications



Stationary Storage

Qualification of BESS modules for grid-scale and industrial UPS applications — IEC 62619 and UL 9540 ready



Aerospace & Defense

High-reliability test programs for aviation, drone and defence battery certification with full data traceability

AiTRACE

by AIRTIFICIAL

GAME-CHANGER PLATFORM

Data driven decisions in real time.

HOW WE DO IT

Share and act

Monitoring and analysis

Acquisition

Whatever you want Whenever you want Wherever you want

FUNCTIONALITIES



USERS

- Plant & Production Managers
- Advance Manufacturing Engineers
- Quality Control
- Maintenance & Inventory Manager
- Project Manager and Team
- Test Engineer



BENEFITS

- ✓ Agility & Flexibility
- ✓ Profitability
- ✓ Quality improvement
- ✓ Problem solving
- ✓ Fast & trustworthy
- ✓ Maximum reliability



EVOLUTION



All rights reserved. Confidential and proprietary document.

- This document and all information contained herein is the sole property of Airtificial. No intellectual property rights are granted by the delivery of this document or the disclosure of its content. This document shall not be reproduced or disclosed to third party without the express written consent of Airtificial. This document and its content shall not be used for any purpose other than that for which it is supplied.
- The statements made herein do not constitute an offer. They are based on the mentioned assumptions and are expressed in good faith. Where the supporting grounds for these statements are not shown, Airtificial will be pleased to explain the basis thereof.
- In case of questions for commercial usage please get in contact with us.

Excellence Commitment Innovation.

AIRTIFICIAL

SPAIN

+34 93 878 97 60

ir.sales@airtificial.com

Pol. Ind. Pla de Sta. Anna
La Coma 15-17 08272
Sant Fruitós de Bages
Barcelona – ES

POLAND

Tychy
+48 32 328 5349
ir.pl@airtificial.com

MEXICO

Queretaro
+52 (442) 223 0233
ir.mx@airtificial.com

USA

Saginaw, MI
+1 989 799 6669
ir.us@airtificial.com

CHINA

Shanghai - Suzhou
+86 512 6722 3237
ir.ch@airtificial.com

INDIA

Pune - Bangalore
+919168037975
ir.in@airtificial.com