exail

# AERONAUTICS TESTING SOLUTIONS

**Exail, your long-term partner for all your aircraft tests means**

**Leveraging 20+ years of unique industrial expertise in aircraft tests means - from the qualification and manufacturing phases, to maintenance operations - Exail has developed a modular and evolutive technology to support specific testing requirements. Easy to use, our modular solution, based on an agile and customized approach, ensures highly effective and accurate testing of all aircraft critical systems. This ultimately enables cost-savings, time optimization and increased availability and operability of all systems during airliners complete life cycle.**

# exail at a glance

**20+**
YEARS OF EXPERIENCE

**250+**
MILLION EUROS OF TURNOVER

**80%**
OF TURNOVER ACHIEVED ABROAD

**1500+**
EMPLOYEES

**80**
COUNTRY SERVED WORLDWIDE

**20%**
OF TURNOVER REINVESTED EACH YEAR IN R&D

**5000+**
TEST MEANS DELIVERED

**30+**
AVAILABLE FUNCTIONS

**30+**
AEROSPACE CUSTOMERS WORLDWIDE

# TECHNOLOGICAL BRICKS TO BUILD YOUR OWN TESTING MEANS SOLUTION

## Modular & evolutive T-CELL® technology

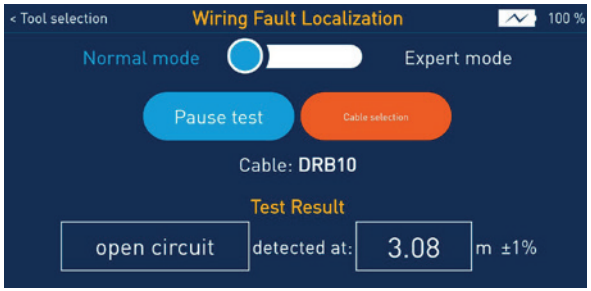
Exail offers a modular and evolutive technology based on technological bricks that cover all your specific testing needs. Choose from 30+ available standard functions or have us develop specific functions tailored to your requirements.

T-CELL® offers a wide range of functions

Miniaturized µT-CELL® for test rack rigs

## AVAILABLE FUNCTIONS

| | |
|---|---|
| Discrete functions | Input, Output |
| Analog functions | AC/DC Generator, AC/DC Acquisition, Waveform Generator, Phase order check (ODPH) |
| Load functions | Generator, Acquisition |
| Communication functions | Serial buses, ARINC429RS422 full duplex, RS485 half-duplex, RS485 full duplex, ARINC 664/AFDX, MIL-STD-1553, ARINC 825/CAN2b |
| Switching functions | Power, Signals, Relays |
| Wiring check functions | Wiring fault localization, Megohmmeter |
| Connectivity | Wireless – automatic reconfigurable |
| Maintenance | Auto-test, Fram for predictive maintenance |
| Custom functions on demand | |




Exail dedicated HMI offers highly intuitive wiring check functions

# EASY INTEGRATION WITHIN EXISTING TESTING ECOSYSTEMS

HOT SWAPPABLE TECHNOLOGY

## Various form factors to adapt to your testing environments

Available in both fixed and mobile versions, Exail T-CELL® technology adapts to all your various testing environments.

**Based on an open source software**
Benefiting from an open source software, Exail T-CELL® technology can easily be interfaced with existing testing ecosystems.

It offers a wide range of solutions to test LRU complete functionalities, whether in standalone, or integrated architectures.

### Test Rack

- Emulate calculator in avionic suite
- Portable and rugged
- Designed to be used on ground testing
- Existing formats: 2 to 6MCU
- From 10 to 24 µT-CELL®

### Test Case

- Portable
- Designed for use on assembly lines or during aircraft service life
- Up to 16 T-CELL®
- 220Vac or 28VDS powered

*All form factors share the same generic smart connector*

## A user-friendly, efficient and robust technology

Exail T-CELL® technology is highly intuitive and easy to use on routine testing, equipement emulation and maintenance operations. Thanks to a smart supervision software that automatically pilots all testing sequences, tests can be runned smoothly. All technological bricks can further be hot swapped without impacting ongoing testings, saving precious operational time.

Benefiting from a rugged design, Exail testing solution can furthermore easily withstand aeronautics most severe testing environments.

### Test Module

- Close proximity with tested equipment
- Portable and light
- Bar, grid or mesh hanging support for narrow environments
- Up to 5 T-CELL®
- 28Vdc or battery powered

### Test Bench

- Designed for assembly lines and outstanding work
- Possibility to chain other Test Benches
- Up to 52 T-CELL®
- Can be ethernet chained

# A LONG-TERM PARTNER DURING ALL AIRCRAFT SERVICE LIFE

REMOTE ACCESS VIA VIRTUAL NETWORK

## A versatile, reliable & durable philosophy

Our dedicated support & services team, as well as smart T-CELL® testing technology, ensures that you are supported throughout your aircraft whole service life phases, from design to maintenance.
Mastering obsolescence management Exail can offer full MCO services on both hardware and software.

Auto test cap ensuring required performance

## Design testing qualification

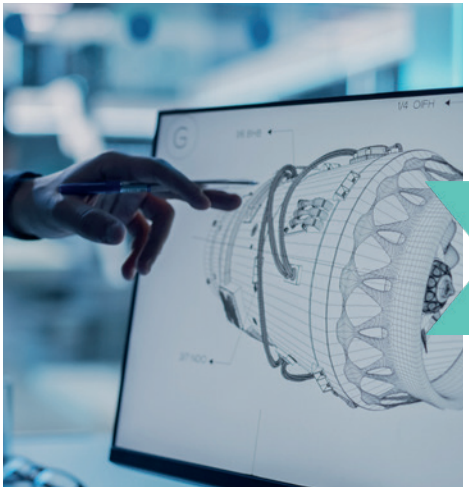
- Modular architecture for easy reconfiguration
- Possible stand-alone test database configuration
- Off-the-shelf component

## Manufacturing testing

- No production disruption thanks to hot swapping
- 24/7 availability
- Pool of means with auto configuration possibility

## Maintenance

- Rugged conception for on-the-field support
- Experienced support & services team
- Portable
- Secured availability through obsolescence management



# ATA CHAPTERS EXPERTISE

**ATA 21 – AIR CONDITIONING & PRESSURIZATION**

AIR CONDITIONNING

- Cooling fan operational test
- Temperature regulation system check
- Fan starting and monitoring
- Shut off valve control and monitoring

AIR HUMIDIFIERS

- Valve position simulation
- Valve position control

CABIN PRESSURE REGULATION

- Cabin outflow valve status check

**ATA 24 – ELECTRICAL POWER**

ALARMS

- Cockpit alert operational check

BATTERY

- Bus power check
- Battery charge functional check

CARGO COMPARTMENT

- 115VAC/28VDC Power plug check

POWER DISTRIBUTION

- Circuit breaker simulation
- 115VAC Three phase power check

POWER GENERATOR

- Engine alternator power simulation

POWER SERVICE LINE

- 115VAC and 28VDC Power plug check
- 115VAC Service line power check
- Connect power to the service line

POWER TRANSFORMER

- Output voltage and current check
- Frequency rectifier power stabilization check

**ATA 25 – EQUIPMENT / FURNISHINGS**

EMERGENCY FLOTATION

- Squib resistance check
- Bottle functional check

GALLEYS

- 115VAC Three phase power check

LAVATORIES

- 110VAC/230VAC Power plug check
- Valves, vaccum, and light command
- Valves, vaccum and light status simulation

**ATA 26 – FIRE PROTECTION**

CARGO COMPARTMENT

- FENWALL Fire loop check

ENGINE FIRE PROTECTION

- APU FENWALL Fire loop check
- FENWALL Fire loop check

FIRE EXTINGUISHER

- Squib resistance check
- Bottle functional check
- Local fire extension simulation

LAVATORIES

FENWALL Fire loop check

**ATA 27 – FLIGHT CONTROLS**

1553 BUS COUPLERS

- Bus coupler resistance check FLAP/SLAT
- 230VAC Three phase power check WING/TAIL ACTUATORS
- Friction and displacement measurement

**ATA 28 – FUEL**

FUEL PUMP

- 230VAC Three phase power check
- Specific three phase power check
- Pressure sensor simulation

FUEL TANK

- Valve position control
- Fuel filling sequence simulation
- Level sensor simulation

**ATA 29 – HYDRAULIC POWER**

MAINTENANCE HYDRAULIC PUMP

- 230VAC Three phase power check

**ATA 30 – ICE AND RAIN PROTECTION**

PROBE & WINDSHIEL DE-ICING DEVICES

- Heather functional test

PROBE & WINDSHIELD ICE DETECTION SENSOR

- Operational check

WING & TAIL DE-ICING DEVICES

- Heater functional test

**ATA 32 – LANDING GEAR**

AIR/GROUND SENSOR

- Flight and ground sensor status

ANTI SKID

- Brake control check

BRAKE

- Brake temperature simulation

LANDING GEAR

- Wheel speed simulation
- Landing gear extension and retraction check

**ATA35**

OXYGEN FEEDING

- Oxygen feeding system check (valves,sensors,oxygen,bottles)

OXYGEN MASK

- Mask drop setting

**ATA 44 – CABIN SYSTEM**

CABIN SEATS

- 110VAC/230VAC Power plug check
- Circuit breaker check

FLIGHT ATTENDANT PANEL

- Alarm light panel testing

PASSENGER CABIN SYTEMS

- Passenger light test

**ATA 52 – DOORS**

CABIN DOORS

- 115VAC/28VDC Power plug check
- Door locking system check

**ATA 55 – STABILIZERS**

TRIMMABLE HORIZONTAL STABLIZER

- 230VAC Three phase power check

**ATA 70 – ENGINE**

AIR BLEED SYSTEM

- Air sealing system check
- Air shut off valves position control
- Pressure and temperature monitoring

ENGINE CONTROLLER

- Engine control system power supply
- Motor overheat simulation
- ARINC 429 bus reading
- Shaft rotation speed monitoring
- Cooling fan simulation
- Fuel flow level simulation
- Monitor, save and replay communication sequences
- Engine data acquisition
- Maintenance data uploading and downloading
- Throttle lever position simulation
- Send/receive operational data to/from secondary engine computers

EXCITER

- Ignition excite power supply

IGNITER

- Spark plugs pulses monitoring

THRUST REVERSER

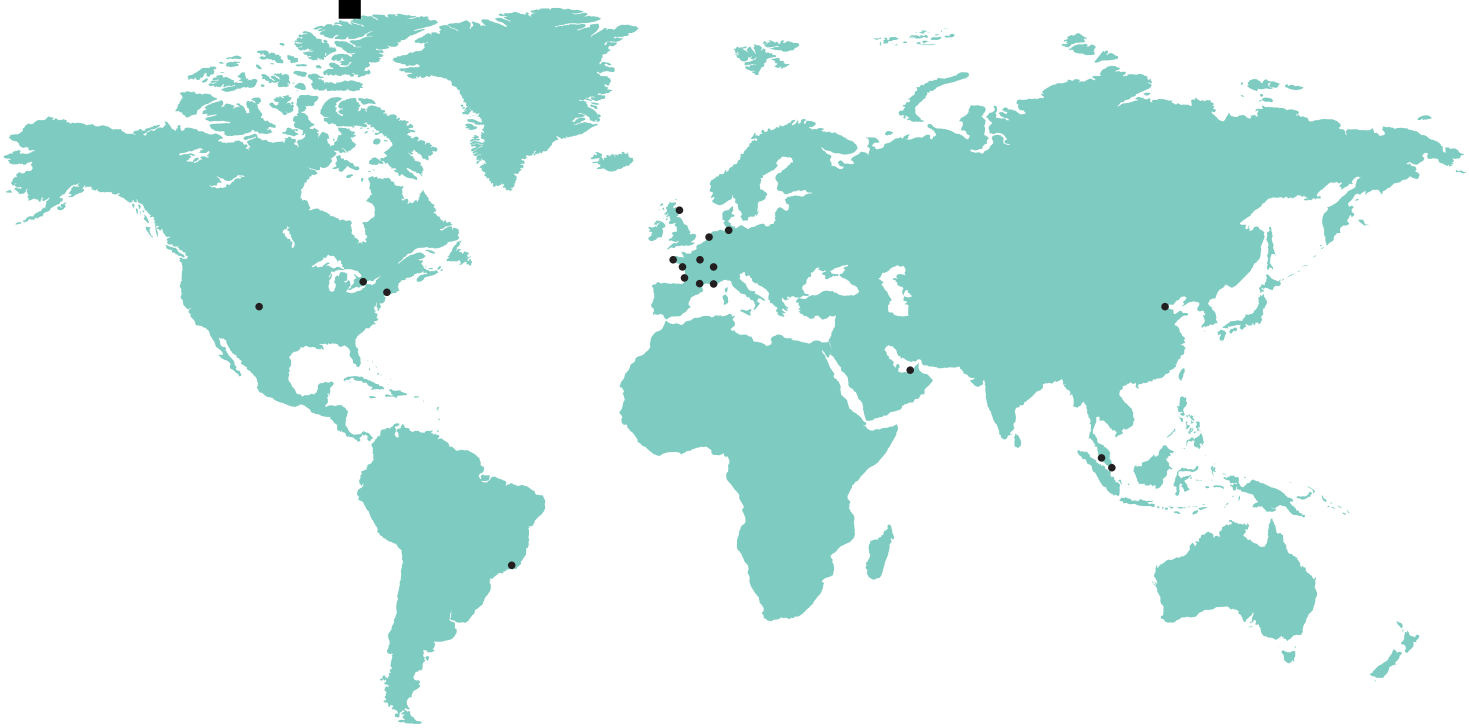
- 230VAC Three phase power check
- Control unit power supply
- Connect power to actuation system

**ATA 80 – STARTING**

ENGINE STARTER

- Engine starting power check
- Engine start simulation

# our global footprint



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