PROVEN EXPERIENCE

SAFRAN TEST CELLS
FOR A COMPLETE TESTING SOLUTION

TURNKEY TEST CELLS OR UPGRADES, TEST EQUIPMENT, DATA ACQUISITION AND CONTROL SYSTEMS, SERVICES

Safran Test Cells (formerly known as Cenco), a subsidiary of Safran Aero Boosters, has specialized for over 60 years in Aero-Engine Test Facilities for the Commercial & Military Market (turbofan, turbojet, turboshaft & turboprop engines).
**COMPLETE OFFER AND INTEGRATED SOLUTION**

Safran Test Cells offers turnkey test facility projects as well as upgrade solutions (refurbishment or new engine capability). Its added value lies in A to Z project management – from design to manufacturing, installation and service support – compliant with EN9100 standards.

Their clients include the most demanding aero-engine manufacturers, MRO operators, Airlines and Air Forces. It has completed 200 projects across the entire range of test cells on the market: solutions for development, production and MRO testing of turbofans, turbojets, turboprops, turboshfts, APU, components, for military and commercial applications.

The 4 flagship products are:

- **TEST CELLS**
  - ENGINE AND COMPONENTS TESTING FACILITIES AND SUBSYSTEMS
- **TEST EQUIPMENT**
  - ADAPTERS AND TEST NACELLE EQUIPMENT (BELLMOUTH, COWLS, BOATTAIL, EXHAUST NOZZLE)
- **DACS**
  - DATA ACQUISITION AND CONTROL SYSTEM
- **SMS**
  - SUPPORT, MAINTENANCE & SERVICES

The 4 offices for a global 24/7 service:

- THE ONE Part of Safran Aero Boosters, Technological Partner to the Engine OEM’s.
- THE ONE Operating 4 In House Test Cells, 1 Test Cell Simulator & 3 Demo Test Cells.

1 out of 3 large test cells worldwide

More than 200 TNE and 650 adapters delivered

More than 100 DACS in operation

24/7 support on 3 time zones

**THE VOICE OF THE CUSTOMERS**

“AGAIN – VERY PLEASED WITH THE ONGOING GE-SAFRAN COLLABORATION HERE IN PRAGUE”

GE Aviation Czech

“SAFRAN TEST CELLS ENCOUNTERED THESE CHALLENGES IN STRIDE AND HANDLED THEM IN A PROFESSIONAL MANNER BY THE PROJECT TEAM AND THE ACTIVE INVOLVEMENT OF MANAGEMENT.”

N3 Engine Overhaul Services

“NDTL’S EXPERIENCE WITH SAFRAN’S CYRES SYSTEM HAS BEEN OUTSTANDING. SAFRAN HAS PROVEN TO BE CAPABLE OF MEETING FOUR OF THE TOP NDTL REQUIREMENTS FOR A DATA ACQUISITION SYSTEM.”

Notre Dame Turbomachinery Laboratory
TEST CELLS

SAFRAN TEST CELLS OFFERS TURNKEY TEST FACILITY PROJECTS AS WELL AS UPGRADE SOLUTIONS WHICH ENHANCE ENGINE CAPACITY.

Its added value lies in A to Z project management, from design to manufacturing, installation and product service support.

Their clients include the most demanding aero-engine manufacturers (Safran Aircraft Engines, Pratt & Whitney, General Electric or Rolls-Royce), the largest MRO operators, together with airlines and many airforces and it has completed 200 projects across the entire range of test cells on the market.

Whatever your testing needs are, Safran Test Cells can help you.
Safran Test Cells designs, manufactures and installs a wide range of specific test equipment used for indoor and outdoor testing, using both composite and metallic material.

Test Nacelle Equipment (TNE, sold under the name Eolines®)
Safran Test Cells can provide a complete adapter / TNE / storage carts solution.
Safran Test Cell’s DACS, Cyres and Ceres, includes the hardware and software installations needed to collect all the engine parameters, to operate the engine and the facility and to monitor the running of the test.

**IMPROVED RELIABILITY**
Cyres and Ceres include integrated troubleshooting tools and are supported 24/7 on 3 continents with remote access capabilities for online direct interventions.
60+ ENGINE TYPES TESTED

100+ DACS IN OPERATION

1000+ SIGNALS CAPACITY (INCLUDING HIGH FREQUENCY)

Ceres is our legacy and we will support it. Cyres is our future, with its new features and products being developed. Conversion plan an option available.

| CONFIGURE | Define sensors list, steady states and transient recording, etc. |
| MONITOR | Create your visualization screens. |
| COMPUTE | Create the calculations for all the realtime computed parameters |
| POST-PROCESS | Analyze test data, create reports |
| AUTOMATE | Automate your test up to a full automatic system including throttle movement |
| CALIBRATE | Control your measurement accuracy |
| CONTROL | Control your engine and facility |

| 1 CONTROL ROOM | 5 INSTRUMENTATION ROOM |
| - Single access point to all subsystems | - Includes facilities and engine control PLC and engine FADEC interface |

| 2 VISUAL MONITORING | 6 7 FUEL SKID AND PRESERVATION SYSTEM |
| - With permanent CCTV recordings | - Redundant sensors for accurate measurements |
| - Integrated automatic FOD detection | - Automated control for time and cost efficiency |

| 3 DECENTRALISED ACQUISITION | 8 ELECTRICAL ROOM |
| - Higher accuracy | - Conditioning and distribution of power |
| - Reduces electromagnetic perturbations | - Uninterruptible Power System |

| 4 EXTERNAL SIMULATION BENCH* | |
| 8S7 TEST CELL AT SAFRAN AIRCRAFT ENGINES, PARIS |
Safran Test Cells offers a large range of Engine Test Cells Services, including audits, equipment upgrades and long-term maintenance programs under its SMS branch.

These services are provided by a multi-skilled dedicated workforce who combine their expertise with the know-how of Safran, a high-tech international group.
With 150 people based in three different time zones (USA, EU and Asia), the SMS division provides round-the-clock availability (24/7 hotline support), high flexibility and proximity to our various customers.

Our mission is to enhance your test facility operation by providing optimal test cell performance, availability and risk management services.
TEST SIMULATOR
THE INTERACTIVE TOOL FOR TIME EFFICIENT TRAINING AND CONFIGURATION TESTING

The simulator reproduces a complete control room interface and simulates test cell and engine behaviours (normal sequences, incidents, accidents).
Maximize
YOUR TRAINING EFFICIENCY
AND YOUR CREW CAPABILITY
FOR HANDLING INCIDENTS

Minimize
YOUR FUEL BURN, THE
ENGINE RISK, YOUR TURN
AROUND TIME (TRAINING
AND CONFIGURATION
CHANGE)

Realistic engine simulation based on Safran Test Cells international library and experience

IMPROVE OPERATION SAFETY
In addition to normal operations, the instructor can trigger anomalies anytime during the simulation to train the operator to handle unusual events such as
- Fire
- High temperature
- High vibration
- Abnormal starting condition
- Loss of primary engine control

Each event is recorded and can be replayed for debriefing purpose.

TEST CELL CONFIGURATION
The test simulator can also be used as a configuration platform to
- prepare, configure and validate engine specific software, service bulletins, automated sequences, visualization screens
- upload validated configuration to the real test cell
- replay, export or trend data without interrupting operations

TRAINING WITHOUT ENGINE
The test cell simulator is an interactive tool to train your crew on the job at all times, without fuel burn or engine risk.

It is designed to provide a realistic interface and engine response to train operators on normal engine operation such as
- engine dry & wet motoring
- engine start
- break-in
- trim-balance
- performance testing
- preservation
And more.