



DESIGN DEPT. / MANUFACTURING / SPECIAL PURPOSE MACHINES
METROLOGY / MAINTENANCE / INDUSTRIAL FACILITIES

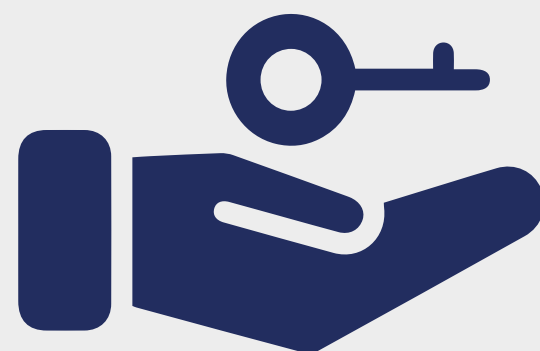
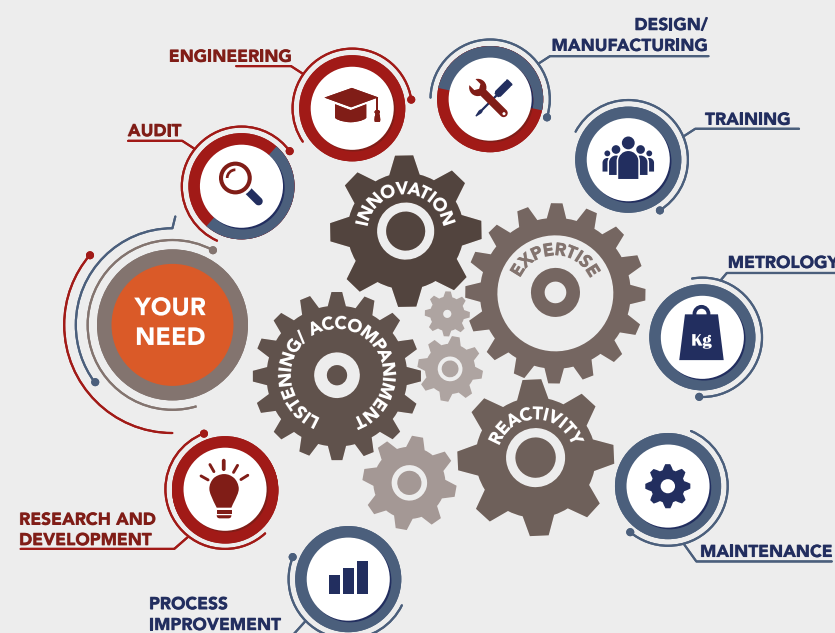
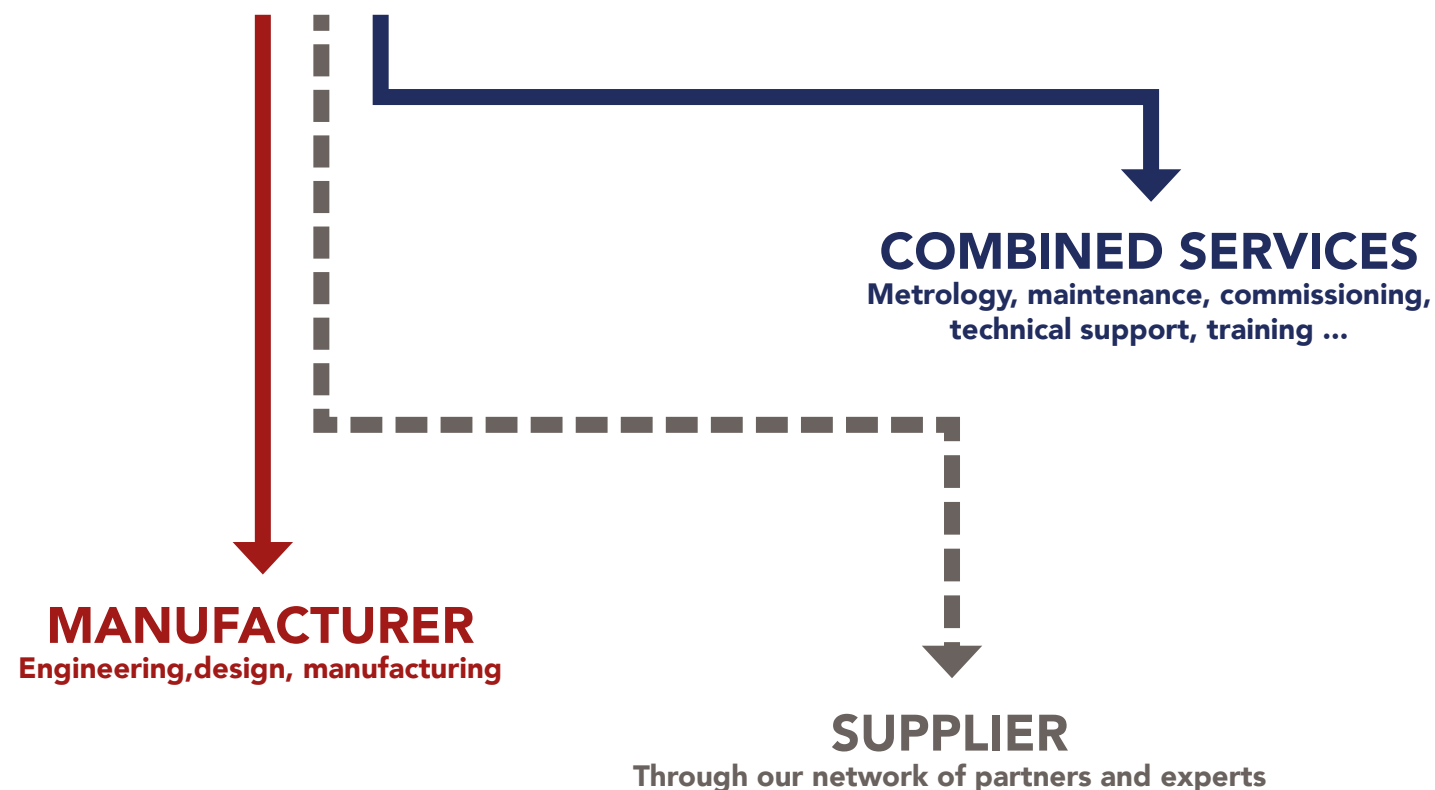
SPECIALISTS IN HIGH PRESSURE / HIGH TEMPERATURE / PROCESS INSTRUMENTATION

Combined skills to provide a complete range of solutions





OUR KEY STRENGTHS ► A FULL-RANGE OFFER



Individual complete
TURNKEY
solutions



FROM LABORATORY ROUTINE ANALYSIS TO CUSTOM SOLUTIONS ► TO MEET YOUR EXPERIMENTAL NEEDS



AREAS OF INTERVENTION

INVOLVED IN SEVERAL TECHNICAL FIELDS

- AERONAUTICS
- CHEMICALS
- ENERGIES
- AGRI-FOOD SECTOR
- OIL & GAS
- GOVERNMENTAL & MILITARY
- INDUSTRIAL LAUNDRY

SPÉCIALIZATION IN PETROLEUM (OIL & GAS)
FROM FIELD TO PRODUCTION
& EXPLORATION LABORATORIES

► GEOSCIENCES LABORATORIES

- Corehouse
- Rock Mechanics (*mechanical analysis*)
- Fluids & Organic Chemistry
(PVT - Fluids thermodynamics - phase change)

► DRILLING & WELL LABORATORIES

- Reservoir wellbore interface (rwi)
(sand control, well stimulation, well damage...)
- Fluids & cement

**TO RESPOND TO YOUR REQUESTS
AND TO ACCOMPANY YOU THROUGHOUT YOUR PROJECT**



SERVICES

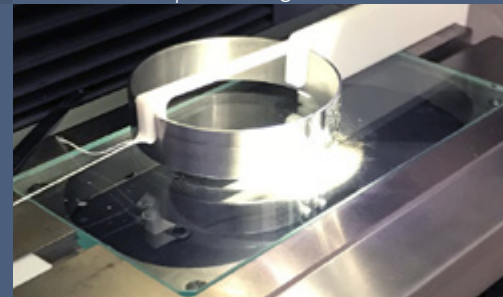


Member of the
AFNOR commission
and national
commission office
(BN Pétrole) expert,
we are especially
involved in metrology

afnor **BN**
Pétrole



Extensometers calibration
& expansion ring calibration



Strength (with dynamometer)
& pressure (with deadweight tester)



METROLOGY

OUR USUAL WORKING RANGE

PRESSURE

- ▶ relative pressure up to 2000 bar
- ▶ differential pressure under static pressure up to 300 bar
- ▶ vacuum measurement up to 1×10^{-3} mbar

TEMPERATURE

- ▶ Chains of measures from - 80 to +1000°C
- ▶ Mapping all volumes (including thermostatic chambers according to FD X15-140, EN 60068-3 or ACEI's method)

ROTATION SPEED

- ▶ up to 18000 tr/min

DISPLACEMENT

- ▶ linear speed from 10 to 5000 $\mu\text{m}/\text{min}$
- ▶ LVDT, extensometer from 0 to 25mm
- ▶ extensometry measurement with strain gauge

STRENGTH

- ▶ Compression and traction up to 200 kN

FLOW RATE / VOLUME

- ▶ Volumetric pumps calibrations
- ▶ Gas flowmeters from 1 to 3000 ml/min
- ▶ Liquid flowmeters from 1 ml/min to 80 m³/h

WEIGHTING

- ▶ Lab scales calibration, accuracy tests, reproducibility, excentration, creep, fluage – from 50 to 5000g

OUR SUPPORT OFFERS



Extrapolated uncertainties measurements



Equipment management



Periodicity optimization



Development of procedures in accordance with current applicable standards (NF, API, ISO)



Instrumental drift management



TRAININGS

- ▶ Measurement uncertainties (2 levels)
- ▶ Pressure calibration (2 levels)
- ▶ Temperatures calibration (2 niveaux)
- ▶ Characterization of thermostatic chambers

TO GO FURTHER...

- ▶ Declaration of conformity / risks
- ▶ C2I (inter-instrument comparison)

METROLOGY

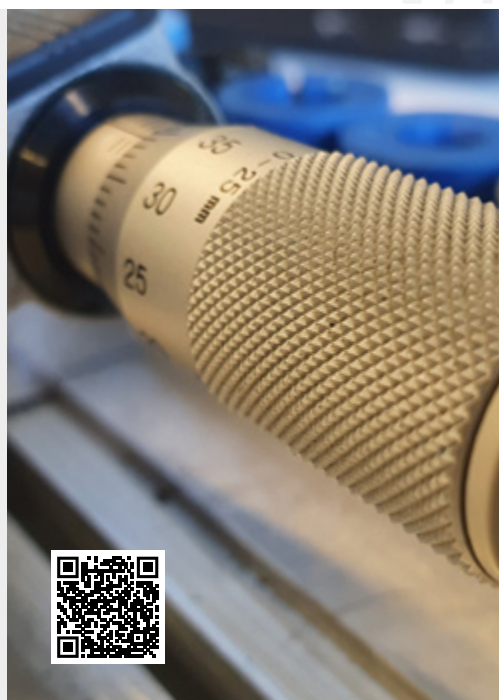
OUR SPECIFICS SERVICES

FLUIDS PROPERTIES

- ▶ pH-metry
- ▶ Conductivity
- ▶ Turbidity
- ▶ Consistency
- ▶ Viscosity
- ▶ Density

SPECIFICS EQUIPMENTS

- ▶ Consistometer
- ▶ Mechanical Potentiometer
- ▶ Expansion ring
- ▶ UCA / SGSA...



ASSISTANCE SUPPORT

TECHNICAL

- COMMISSIONING
- TECHNICAL ASSISTANCE ONSITE
- LABORATORY MANAGEMENT OR ONSITE :
follow-up of operations / inventory management
control charts / preventive & metrology planning

**Follow-up
of operation/
defects**
(planned according
to needs)

**Inventory
management**
(map, parts criticality,
availability...)

**Control
Charts**



QUALITY ASSISTANCE

**ISO 9001
ISO 17025
ISO 15189**

**Support to certification
and accreditation,
internal audit, training**



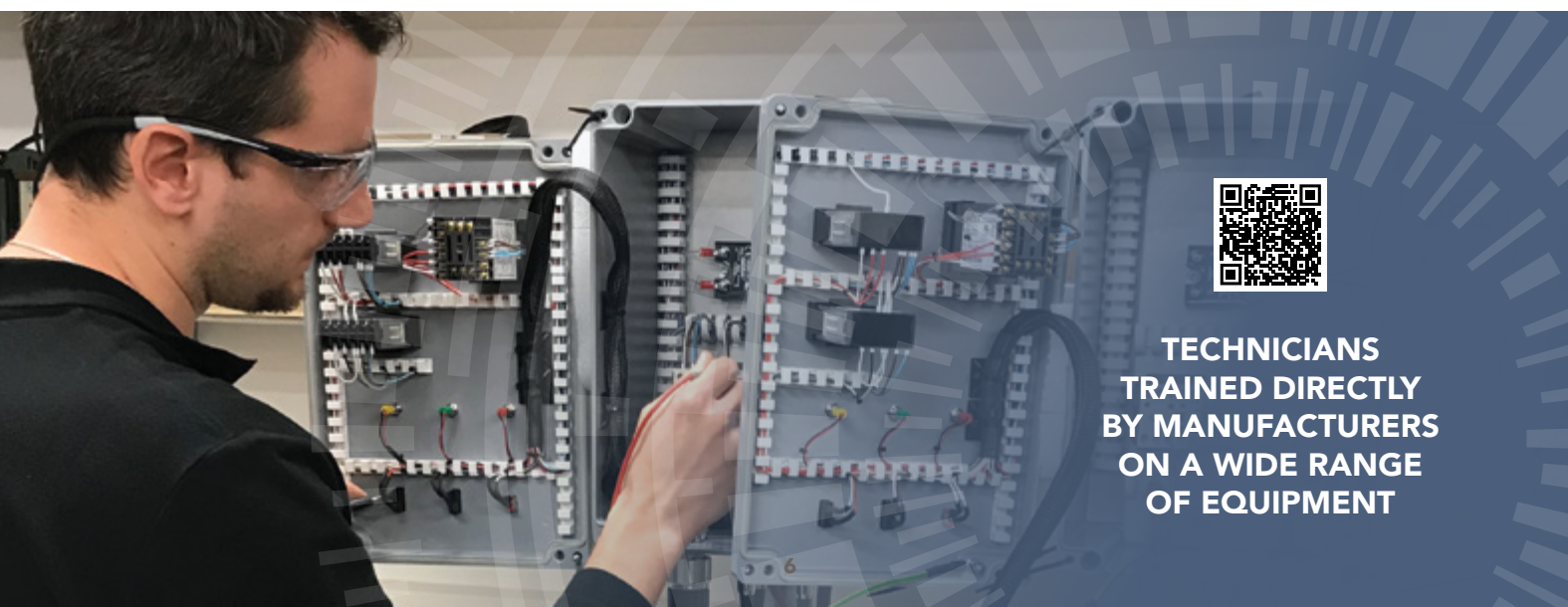
MAINTENANCE



- CURATIVE
- PREVENTIVE
- AMELIORATIVE
Operation on equipment, on
process, controller parameters,
measurement systems.....



**TECHNICIANS
TRAINED DIRECTLY
BY MANUFACTURERS
ON A WIDE RANGE
OF EQUIPMENT**



INSTALLATION OF FIXED OR MOBILE COMPLETE LABORATORIES

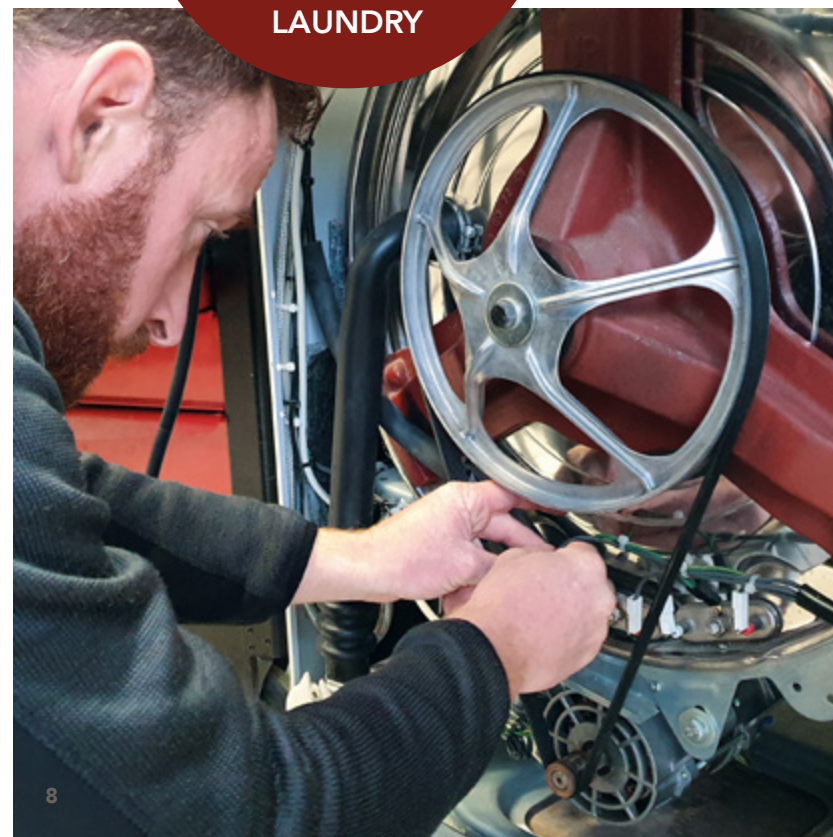
- ▶ Network mapping (*compressed air, nitrogen, water, electricity*)
- ▶ Study and implementation of environmental
- ▶ Layout and ergonomics
- ▶ Manufacturing of specific equipment or supply through our network partnerships*
- ▶ Commissioning & training
- ▶ Preventive Maintenance
- ▶ Metrology



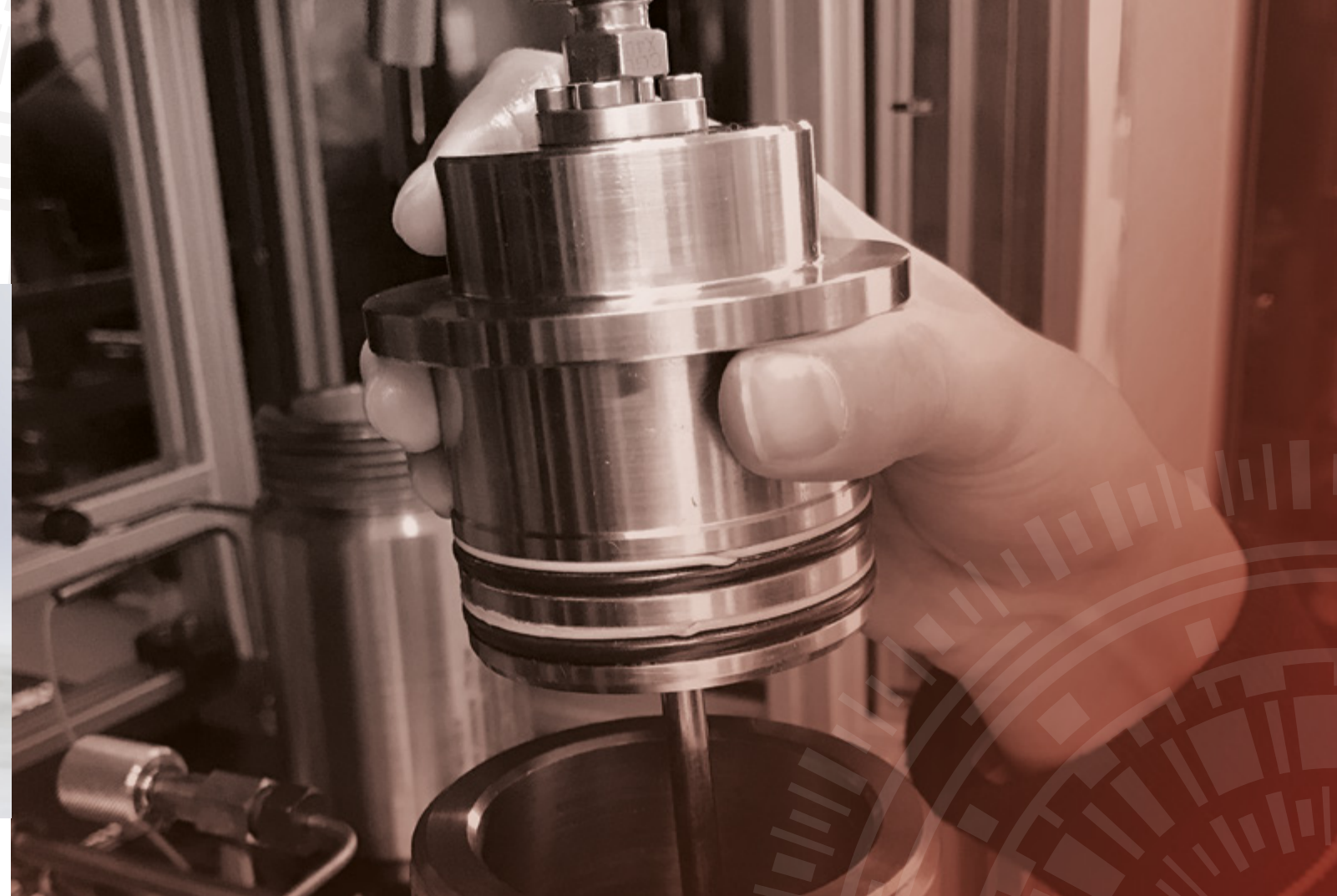
INDUSTRIAL LAUNDRY MAINTENANCE

AUTOMATICS LAUNDRIES, COMMUNITIES,
FRENCH ORGANIZATION FOR HELP
DISABLED PEOPLE, CARE HOMES,
HOTEL INDUSTRIES...

- ▶ Implementation of personalized maintenance
- ▶ Protocol
- ▶ Optimization of your facilities
- ▶ Troubleshooting and assistance
- ▶ Preventive and/or Curative maintenance

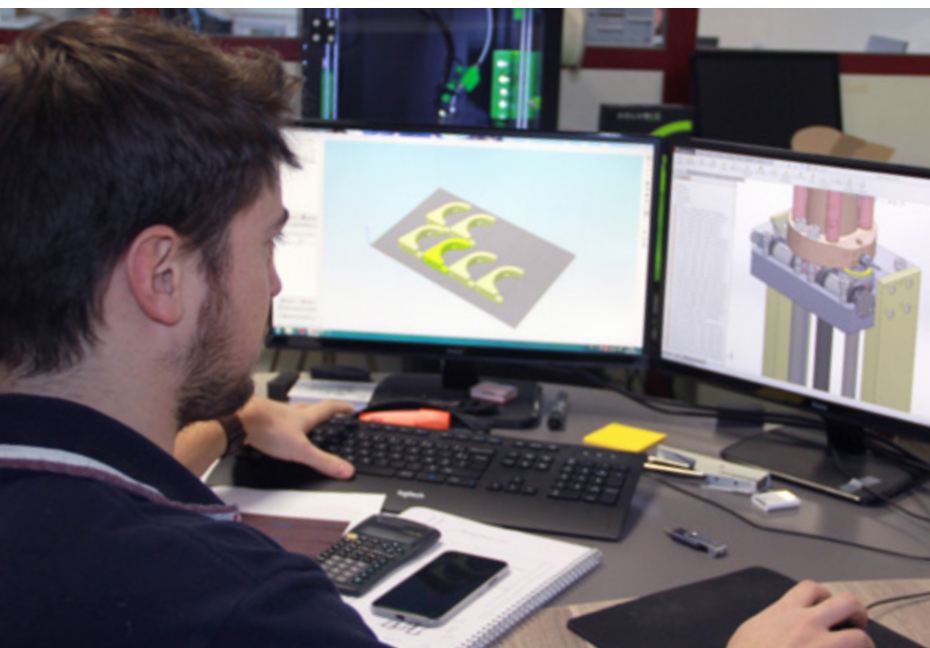


EQUIPMENT





ENGINEERING & DESIGN RECOGNIZED EXPERTISE



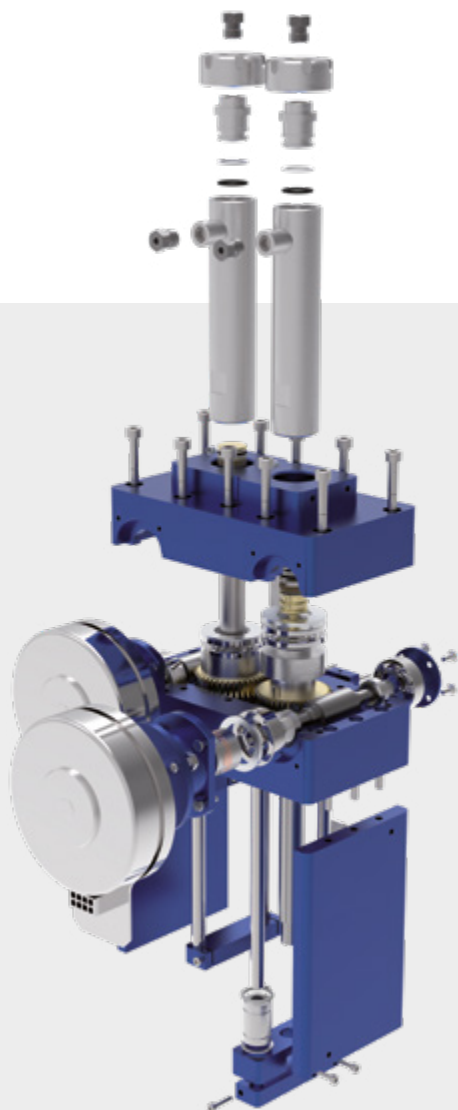
- DESIGN/MANUFACTURING OF SPECIFIC EQUIPMENT
- ACCESSORIES
- RETROFITTING
- STANDARDS OR SPECIAL EQUIPMENT
- PROTOTYPES



RESEARCH & DEVELOPMENT

CHALLENGE OF STANDARDS IN ORDER TO

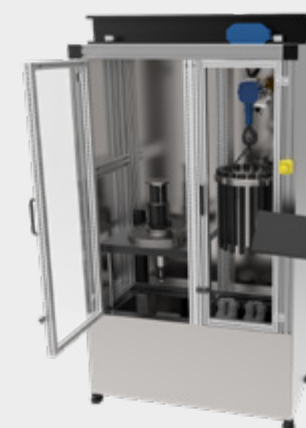
- DESIGN FUTURE ON-SITE LABORATORIES
- LIMIT INTERACTIONS FOR SAFER USE
- PROVIDE INNOVATIVE MEASURING DEVICES



Field mobile Rock-testing facility
"Micro-indentation" device
to determine the mechanical properties
on the surface of a full diameter core.

SOME EXAMPLES OF ACHIEVEMENTS

ROCK MECHANICS



Design by ACEI Services #2019

CUT (Combined UniAxial Testing) ▶

MODEL : CUT-200

3 KIND OF TESTING

- Mini UCS (Diameter 10 mm)
- Traction test
- Flexion 3 points bending test

◀ HOLLOW CYLINDER TESTING

MODEL : HC-100

2 KIND OF TESTING

- Risk of sand production (perforation)
- Borehole stability (thick wall cylinder)



Design by ACEI Services #2020

ROCK TRIAXIAL TESTING SYSTEM ▼

- Axial strength
800 – 1200 – 2000kN
- Max confining pressure
600 – 1000 – 1500 bar
- Temperature
from Tamb to 150°C



Design by ACEI Services #2019



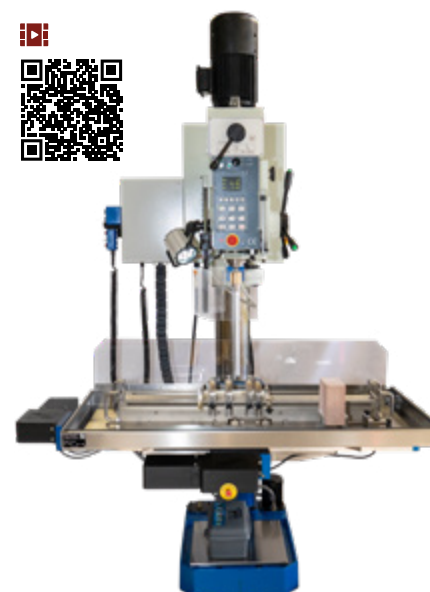
Design by ACEI Services #2020



CORE & SAMPLES PREPARATION

◀ HIGH PRECISION DRILLING MACHINE

- Fluids or Nitrogen
- Motorized xyz positioning table

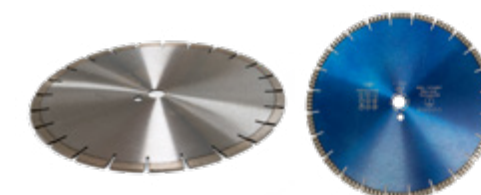


Design by ACEI Services #2017 #2019 #2021



INJECTION HEAD

CORE DRILL BITS



SLABING SAW DISCS

SOME EXAMPLES OF ACHIEVEMENTS

CORE & SAMPLES CONSERVATION & TRANSPORTATION

PARTNERSHIP



Design by ACEI Services #2018

◀ **AUTONOMOUS & MOBILE REFRIGERATION UNITS WITH TEMPERATURE CONTROL**
MODEL :PACK-901

FLUID PIPE ▶
Rock sample transportation in fluid (Brine, water, drilling mud, mineral oil,...).

GEOBAG PRESERVATION ▶
Protect geological samples from external chemical elements. It can be vacuumed, heat-sealed, taped.

Fluid Pipe 4" core section



Easy Handling



Geobag Protector for plug



GEOSEAL PRESERVATION

designed for melting waxes used during core preservation operations



Geobath large



Geoseal Wax

CORE STUDIO 360° ▶
Photo of drill core under White Light and UV Light



GAS PERMEAMETER / POROSIMETER

- Adaptable to all types of cells : Hassler, Hoek, Hydrostatique and Triaxial for measurement under stresses
- Express analysis by quasi steady flow method
- Can be used and/or combined with fixed flow
- Design on request of the user

Range of permeability :
10D to 1nD

FLUIDS : Helium, Nitrogen, Air

WORKING CELL ▶



PARTNERSHIP



Frédéric SKOCZYLAS
Very low permeability Expert

FLUIDS AND GEOCHEMISTRY



Design by ACEI Services #2019

RECOMBINAISON CELL ▶



Design by ACEI Services #2020

◀ **HEATING TROLLEY**
Up to 250°C // Pressure 1000 bars
Volume : 500ml / 1000 ml
(other on request)



HIGH VOLUME & HPHT TRANSFERT CELL ▲
650 bars // 150°C // 20 Liters

Design by ACEI Services #2020



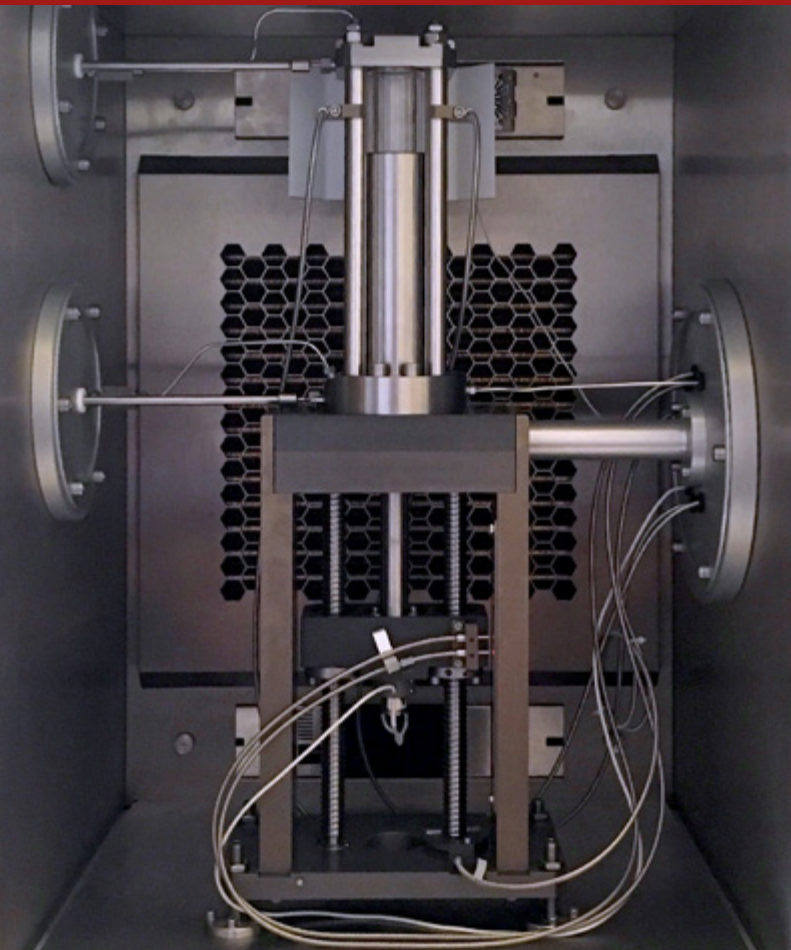
◀ **SAMPLER**



GPC (GEL PERMEATION CHROMATOGRAPHY) ONLINE TCD (well-head) ▶



SOME EXAMPLES OF ACHIEVEMENTS



PVT

◀ ACEI PVT Unit

HEATING & COOLING SYSTEM
by heat transfer fluid : high speed

WAITING TIME DIVIDED BY 4

EFFICIENT SYSTEM INTERNAL STIRRING

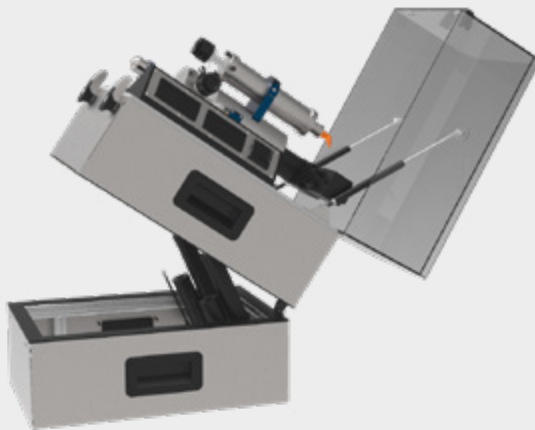
PVT CELL SPECIFICATION

- Motorized Piston with heating and cooling system + Optical detection system
- Max working pressure: 1000 bars
- Sample Volume: 100 cc
- Maximum temperature: +10°C to +200°C

TRANSPORTABLE INNOVATIVE LIGHT



J2 Compact Analyser ▶
J2CA



**HD camera for bubble point
or dew point visualization**

SPECIFICATIONS

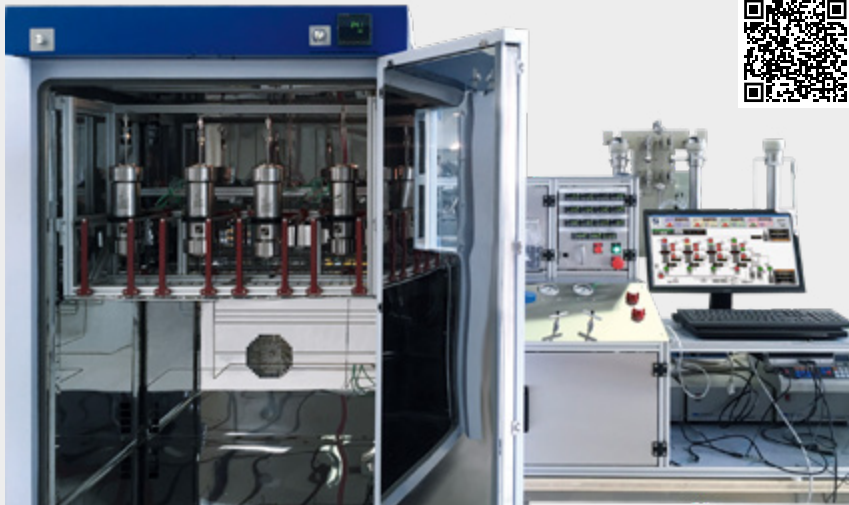
- Max working pressure: 1000 bar (Accuracy 0,1 bar)
- Maximum Temperature : 200°C (Accuracy +/- 0.3°C)
- Cell Volume : 1,24 cm³ (Accuracy 10-5 cm³)
- Fully automated control (motorized valves)
- Software : Control & Acquisition (collect/record/analysis)
- Adjustable stirring system (Electromagnetic Vibrations)
- Cooling system (over-ventilation)
- Integrated gasometer with microvalve control
- Cell tilt: 0-45°

Design by ACEI Services #2020

CEMENTING



Design by ACEI Services #2019



Design by ACEI Services #2018

STRAIN RECOVERY SYSTEM ▲

700 bar / 150°C / Hastelloy

◀ **CURING CHAMBER**

1200 bar / 300°C



Design by ACEI Services #2018

**MOBILE UNIT
OF PRESSURE
CELLS ▶**

TEST BENCH CONCEPTION

- OPTIMIZATION OF ERGONOMY
- INTEGRATION OF INSTRUMENTATION
- INTEGRATION OF ACQUISITION
- SOFTWARE DEVELOPMENT
- TUBINGS
- ASSEMBLY
- SCHEMATIC DIAGRAM
- PROVIDED ON-SITE & COMMISSIONING



VARIOUS EQUIPMENTS & ACCESSORIES

SYRINGE PUMPS ▶ (single or dual)

- 700 / 1000 / 1500 bar
- 150 / 250 / 500 / 1000 ml
- 150°C



HIGH PRESSURE SYRINGE PUMPS

MINI PUMP ▶

- 300 bar / 50 cc
- 500 bar / 80 cc
- 150°C



EXTENSOMETER circumferential deformation measurement system



- Circular ring equipped with 8 instrumented cantilever flexion blades
- Diameter : 300 mm
- 8 blades at 45°C for heterogeneities analysis
- Watertight and resistant to seawater
(Use of maritime sealants)



FLOW RATE CALIBRATION PUMP

- MAX WORKING PRESSURE: 25bar
- TEMPERATURE: 20°C up to 50°C
- FLOW RATE
Low flow rate: 0,013L/h up to 100L/h
High flow rate: 100L/h up to 6000L/h
- VOLUME
Low flow rate: 3L
High flow rate: 30L
- FLUID: water
- DIMENSIONS (L X L X H):
1,43m x 0,91m x 2,15m
- WEIGHT: 570kg



PACS FLIGHT CASE PUMPING AND CEMENTING SUPERVISION

- Modular all-terrain acquisition system and multi-sensors for process monitoring
- Remote software access
- Wifi and ethernet ports
- Easily accessible both for operators or managers in real time

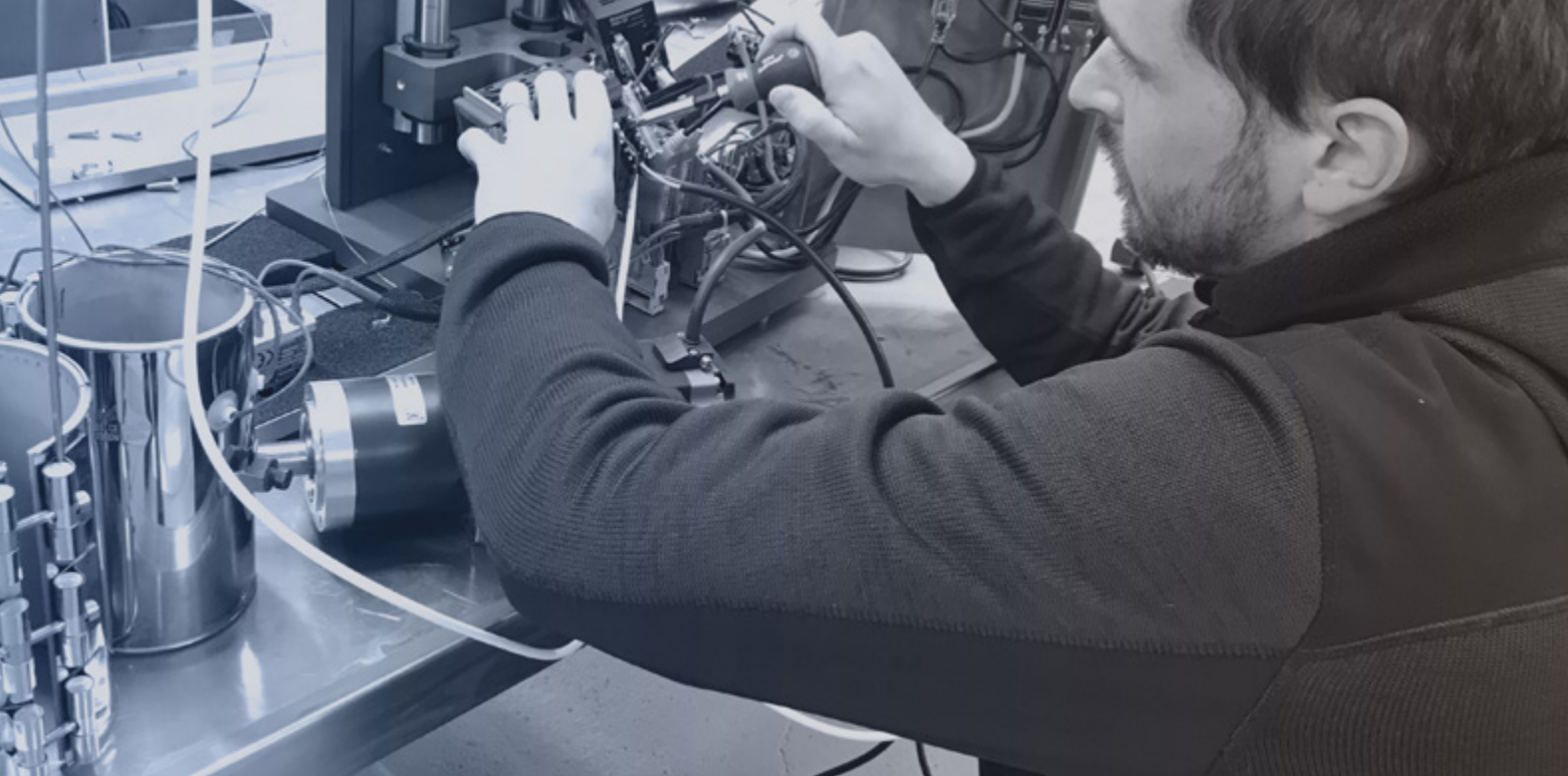
**Main use on cementing unit but
adaptable to any other system**

**ADVANTAGES :
Supervision on smartphone
or remote control**

Design by ACEI Services #2021 in partnership with ECS

PARTNERSHIP





CONSULTANTS & ACADEMIC PARTNERS



GEOCHEMISTRY – PVT
Jacques BICKERT
PVT Consultant
Retired since 2018



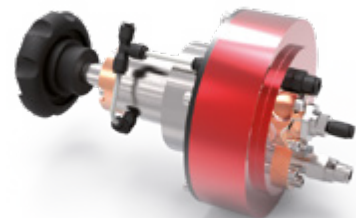
ROCK MECHANICS
Edmond POYOL
Geomechanics Consultant
retired since 2019



**ROCK MECHANICS & CIVIL
ENGINEERING**
Pr Jianfu SHAO
PhD Shouyi XIE

ACCESSORIES

**BACK PRESSURE
VALVE ▶**



**AUTOMATIC
VALVE ▶**



**SERVO
CONTROLLER ▶**



**ACID SAMPLING
UNIT ▶**



**SAMPLING
CASE ▶**



**STANDARDS
IN SUITCASE ▶**



VERY LOW PERMEABILITY
Pr Frédéric SKOCZYLAS
Consultant
Retired since 2021



**MEASUREMENT & ANALYSIS
OF DEFORMATIONS**
Jean-Yves TERRASSON
Consultant Expert ACEI
Retired since 2020



**GEOLOGY - EARTH
MAGNETISM**
Pr Jean-Pierre POZZI
Ecole Normale Supérieure
de Paris



OUR VALUES

RESPONSIVENESS



INNOVATION

OUR COMMITMENT
TO BE HEEDFUL TO YOU
FOR THE BEST QUALITY
OF SERVICES

A CONSTANT WILL
TO GO BEYOND
THE STANDARDS

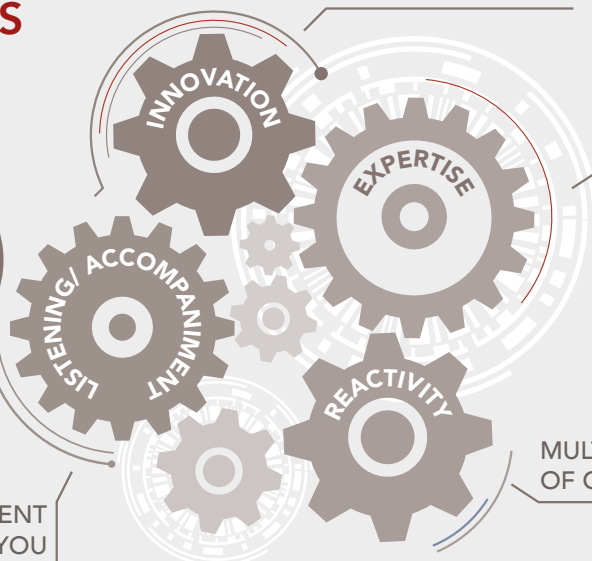
EXPERTISE

A CONSTANT WATCH
ON THE CHANGES IN STANDARDS
AND TECHNOLOGIES

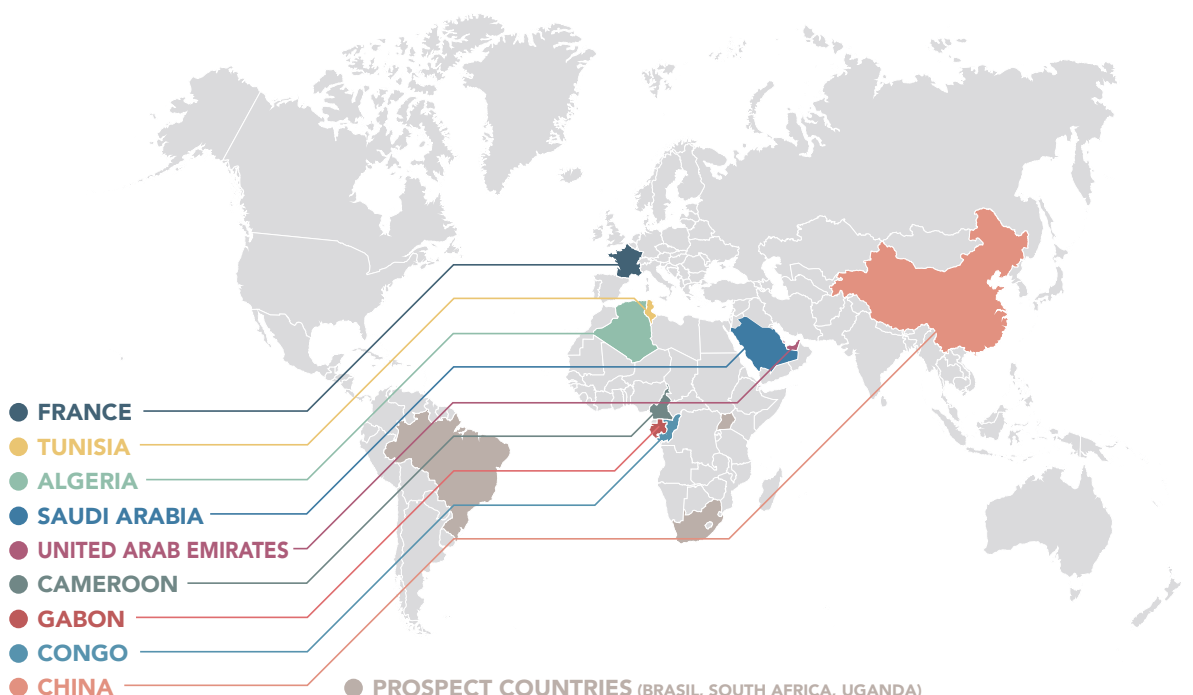
MULTI-SKILLS

MULTI-SKILLING
OF OUR TEAMS

CUSTOMER SUPPORT



OUR INTERNATIONAL AREA



ACEI Services - 17 rue du Pont Long - ZI Berlanne - F 64160 MORLAËS - France



+ 33 5 24 36 55 48



contact@acei-services.com

www.acei-services.com



Cité El Ouancharisse - Bât D2-N°17 - REGHAIA - ALGER - Algeria

Maghreb