



TOP INDUSTRIE

High Pressure Engineering



HIGH PRESSURE EQUIPMENT



YOUR RESEARCH PARTNER

80 rue Marinoni

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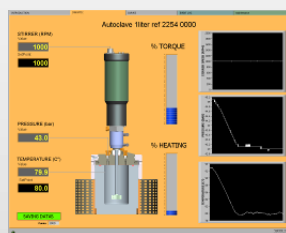
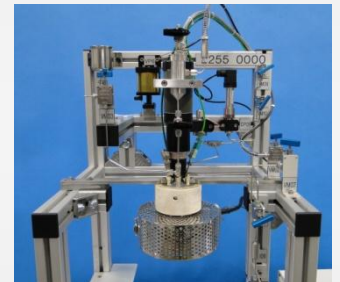
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TOP INDUSTRIE started 30 years ago by producing high pressure components, valves, fittings and pressure generators. We have designed our own range of products and have delivered them all over the world

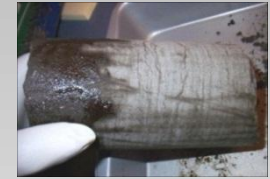
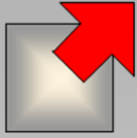


We then moved to the production of autoclaves and high pressure cells. We offer an extensive range of reactors from 15 ml to 10 liters, in a large variety of materials and with a lot of innovative accessories: magnetic stirrers, heating and cooling, pressure control devices, injection and metering pumps...



We now design and produce complete installations. Our turn-key pilot units always oriented toward the development of new products and new technologies, incorporating a wide range of new components and new processes :

- Gas monitoring, injection and sampling devices,
- Supervisory Control and Data acquisition.
- Rock mechanics Triaxial Cell



Gas Hydrates , Wax, Asphaltenes and Salting out Equipments

Blind stirred Cell

- Working pressure : 200, 400, 700 bar (3000 / 6000 / 10000 psi)
- Volume : 150ml to 1 liter
- Working temperature : - 50 à 250° C
- Bespoke sealing arrangement determined by fluids compatibility
- Wetted parts material: Stainless Steel, XN, Duplex, B6, Alloys, Titanium
- Designed in accordance to PED 97/23

Magnetic Stirrer

- Working pressure : 400 bar Alloys, Ti
700 bar Stainless Steel
- Torque : 30 , 95 and 200 Ncm
- Working temperature : -50 to 250° C
- Speed : 0 / 1500rpm
- Hollow shaft for gazing effect
- Taylor made impellers



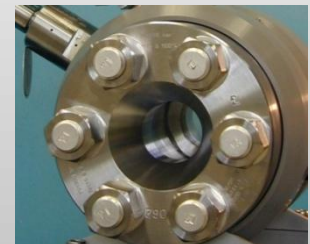
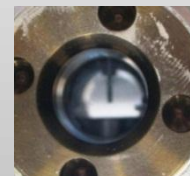
Microsampling devices

- Working pressure : 200, 400bars
- Sampling volume: 1 µl to 10 ml
- Working temperature : -50 à 250° C
- Material: Stainless Steel, alloys, Titanium
- Direct controlled analysis by GC



Sapphire windows Hydrates Reactor

- Working pressure : 200, 400, 700 bar (3000 / 6000 / 10000 psi)
- Volume : 150ml to 1 liter
- Working temperature : -50 à 250° C
- Typical sealing according to fluids compatibility
- Wetted parts material: Stainless Steel, XN, Duplex, Uranus B6, Alloys, Ti
- Sapphire windows,
- In accordance to PED 97/23



Hydrates Raman Spectroscopy

- Raman hydrates cell
- Working pressure 200 / 300 bar
- Working temperature : -50 to 150° C
- Magnetic stirrer



Tubular sapphire cell :

- Working pressure 200 bar,
- Internal Ø 12,7 / 25,4 / 40mm
- Stirring, microsampling, injection...
- Heating or cooling in climatic room -20 to 250°C.
- Phase equilibria studies.



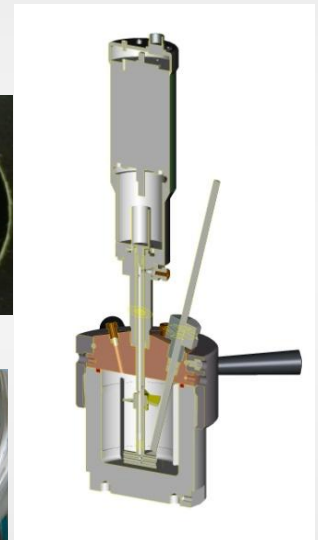
Phase Equilibria and thermodynamic units

Thermodynamic and phase equilibria studies for petroleum fluid characterization in order to predict physical properties, PVT, and gas injection in crude oils.



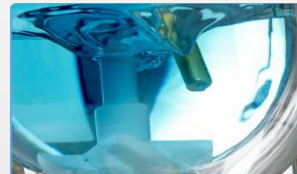
IR & Raman Spectroscopy Stirred Sapphire Cell

- Designed for infrared and Raman spectroscopy studies on natural gases field
- Internal Volume from 1 to 10 ml.
- Magnetic insert or Magnetic stirrer 30 Ncm.



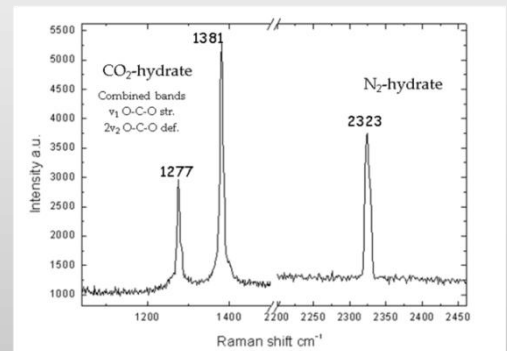
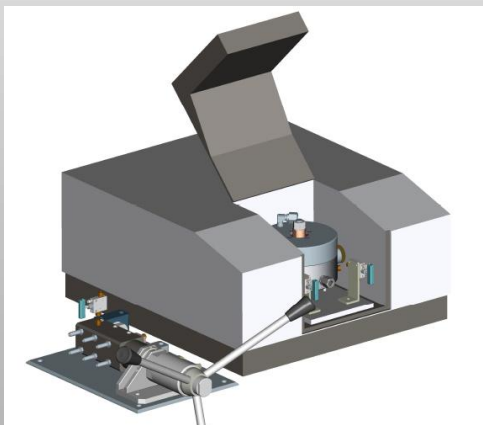
Infrared with FTIR Bruker probe

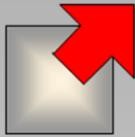
- FTIR probe inside media.
- Pressure 100 bar / temperature 200°C
- Magnetic stirrer.
- Continuous analysis.



HP sapphire cell for RAMAN / FTIR

- Thermostated HP Cell 200 / 500 / 1000 / 3000 bar
- One to four sapphire windows.
- Integrated on Bruker, Shimadzu, Thermo-Fischer devices.

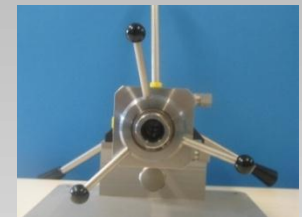




Variable Volume Cell Pump

Manual Cell Pump

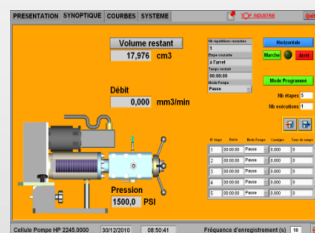
- Working pressure : 100, 200, 500, 1000 bar
- Volume : 5 to 30ml.
- Working temperature : -20 à 250° C
- Bridgman seal, all fluids compatibility , including supercritical CO2 and corrosive media.
- Sapphire windows : sight Ø 6 to 30mm (following pressure and internal volume)
- Pressure accuracy sensor 0,2 to 0,01% FS
- 2 to 5 1/8 HP connections for vacuum pump, liquid or gas injection , drain, pressure gauge ...



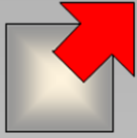
- Screen , Camera and software.
- Cold light.
- Wetted parts : SS, Alloys ...
- Magnetic insert stirrer.
- Piston displacement control

Motorized Cell Pump

- Variable volume cell equipped with brushless motor ,
- Working Pressure : 100, 200, 500, 1000, 2000, 3000 bar
- Volume : 3 to 30ml.
- Working Temperature : - 20 to 250° C
- Labview software enables the operator to work at constant pressure or constant volume , selecting for each sequence the rate, the plateau time, and set-point or make accurate injections under pressure.
- Data acquisition .



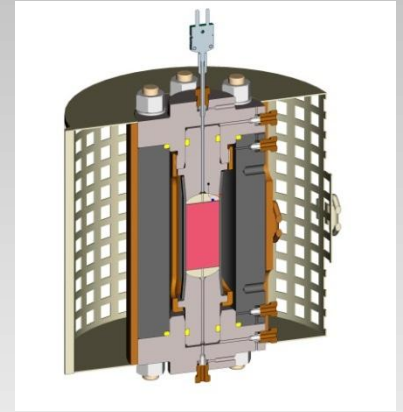
PMHP model	200 - 200	100 - 500	50 - 500	35 - 1000	50 - 1000
Pressure / bar	200	500	500	1000	1000
Volume / ml	200	100	50	35	50
Flow mini ml /mn	0.0015	0.00082	0.00041	0.00028	0.00041
Flow maxi ml /mn	61.4	33.5	16.7	11.6	16.7
Flow accuracy %FS	0.05	0.05	0.05	0.05	0.05
Temperature	-20 / + 150	-20 / + 150	-20 / + 150	-20 / + 150	-20 / + 150



Geophysics, Petrology, Geochemistry, Rock & Soil mechanics

Core analysis and permeability Cells

- Hassler, Hoek cells ...
- Pressure 0 / 600 bar.
- Temperature 0 / 200° C
- Sample Ø : 25.4 to 40mm.

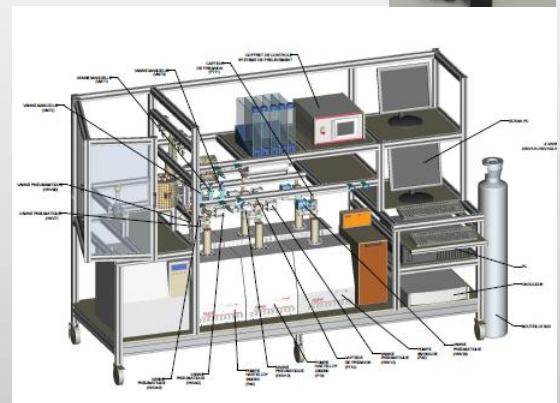


Supercritical CO2 Injectivity Pilot

*Geochemical studies of the behavior of soil & rock in liquids and gases environment, under severe conditions of pressure and temperature.
Continuous injection in micro flow through the sample in confined spaces. Alternating injection, gas / liquid.
Studies of mechanisms and thermophysical properties .*



*Flow : $5 \cdot 10^{-5}$ ml / mn.
Pressure : 250 bar.
Temperature : 250° C
Sample Ø 25.4mm x 60mm.
Fluids : H2O+NaCl / CO2 scf...*



Rock mechanics Triaxial Cell



*60 to 100Mpa deviatoric and confinement
Independent and self-clearing pressure generation*

- Geomechanic testing under pressure
- CO2 sequestration and storage.
- Triaxial testing system
- Pore pressure, axial stress, drainage, radial strain
- Sample Ø 25.4mm to 50mm.



Cementing autoclave

We are one of the leading manufacturers and suppliers of Cement or Curing Autoclave units. These autoclaves are designed to perform accelerated soundness tests on cements as well as the autoclave expansion test, needing a constant steam pressure with the corresponding constant temperature.

Piezo-rheometer

*Rocking confining cell System intended for viscosity studies under mechanical and thermal stresses.
Volume : 200ml. Working Pressure : 500bar. Temperature : 200° C
Viscosity following variable stress : continuous ramp, controlled steps, creep, temperature fluctuations...
Liquid or gas injection .*

Permeameter Cell

*Confining stirred cell for gas or liquid permeability studies
Samples Ø 1" (25,4mm) or Ø 40mm
Volume 200ml. Pressure : 2000 bar. Temperature : 250° C
Variable stress and temperature controlled. Liquid or gas injection .*

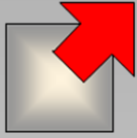
Rheology and Surface Tension studies Cell

*This cell allows the characterization of dispersed systems such as foams, emulsions and powders.
Designed in cooperation with **TECLIS**, leader in developing image analysis software. It helps to understand properties of interfaces liquid / liquid, solid / liquid and gas / liquid under severe pressure and temperature conditions.*



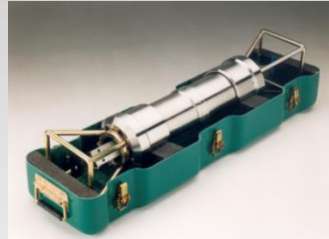
Ultrasonic Cement Analyzers

*These products are used for compressive strength determination, Including pressure and temperature control, for maximum performance and flexibility.
Integrated piezo sensors ,*



PVT and Fluid Technology Instrument systems.

A wide range of products including Pumps, High Pressure Floating Piston Sample Bottles, Equilibrium Separators, Phase Detection Systems, Gasometers and Fluid Phase Behavior Systems...



- 10 To 15 Kpsi
- Volume 0,5 to 1 liter.
- Floating piston with mixing ball

High Pressure / High Temperature Testing Units Well testing & Drilling calibration.

Following a growing demand for size, Pressure & Temperature limits, we develop complete units according to our customer's requirements.

- Pressure range : 5 / 10 / 20 / 30 / 45 kpsi (350, 700, 1500, 2100, 3000 bar)
- Temperature : - 20°C / 200°C . Optional : 210, 230 and 250°C.
- Fluid : oil, water , seawater, drilling muds...
- Vessel Internal Ø : 80mm up to 250 mm.
- Vessel length : 0.5m to several meters.
- Material : Stainless Steel , 1.4980 / 1.4418 / Inco Alloys ...
- Complete equipment with heating shells , water cooling system.
- Handling and lifting devices.
- Multipin or coaxial bulkhead connectors (5 / 27 / 40 pins)
- Hydraulic pressure generator unit with air driven liquid pumps.
- Supervisory Control and Data acquisition.



***Manufactured according to European
Standard PED97 / 23***

