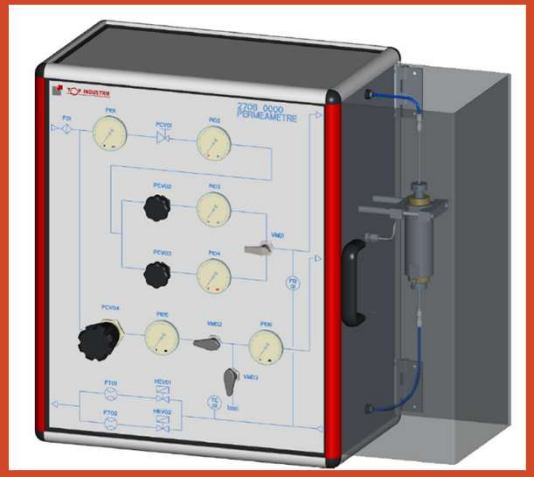
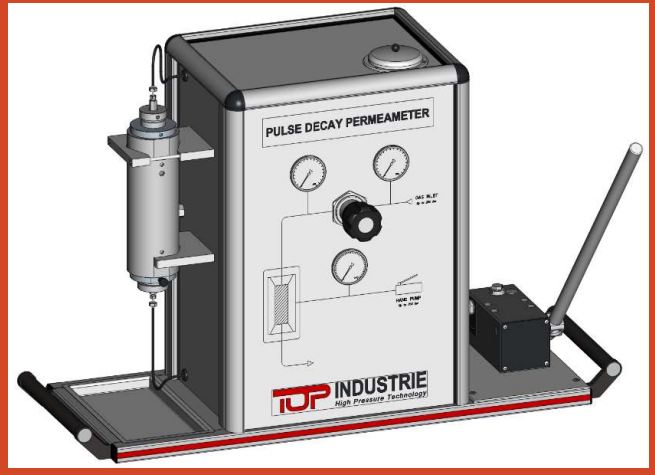
Gas / Liquid permeameter



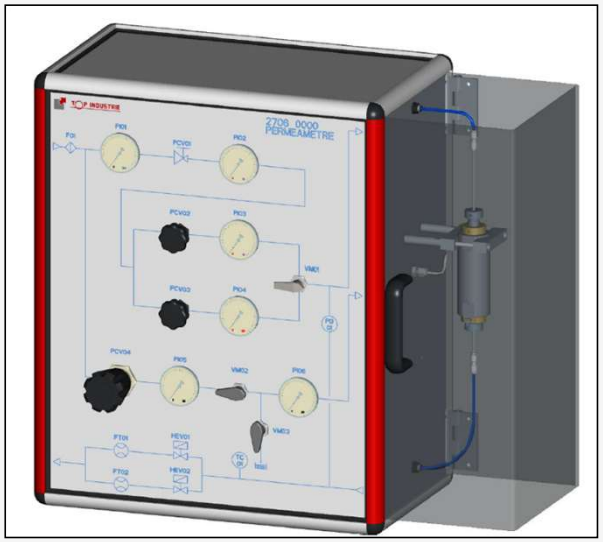


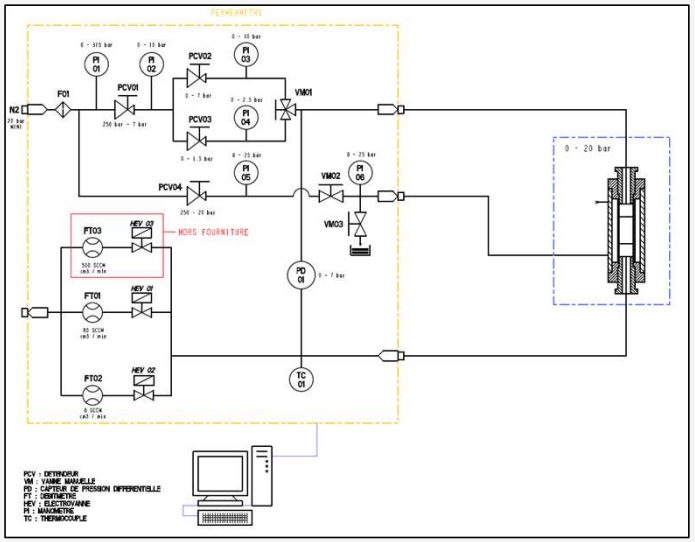
Steady State Permeameter

50 bar (725 psi)
+20 °C to +100°C.
Sample Ø9 mm up to 1”

- The steady State Gas Permeameter determines the permeability to gas of plug-sized core samples at ambient temperature and moderate confining pressure by virtue of the steady state method. The latter implies a constant flow rate across the sample. Gas can be injected over a wide range of pressures and flow rates. The core inlet pressure is continuously monitored by an inline pressure transducer while the gas flow rate is reported by a high-grade mass flow meter.

  The apparatus can be used with both consolidated and unconsolidated core samples previously prepared in metal or plastic sleeves with screens at the ends. An Excel spreadsheet calculation template allows for calculation of parameters and also calibration data.

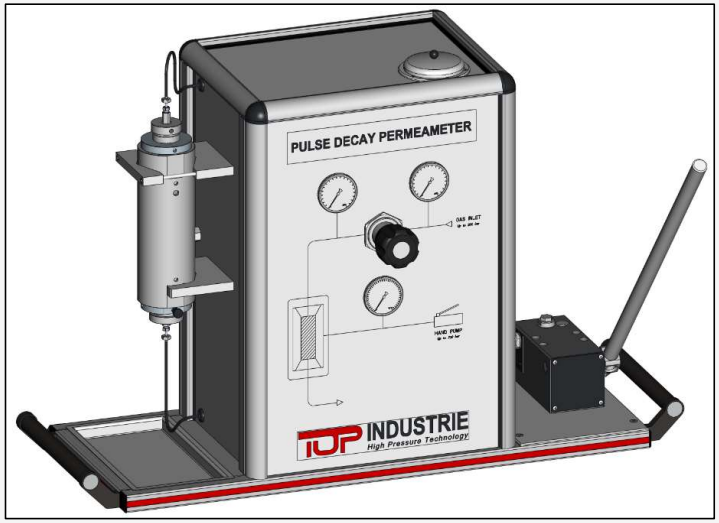


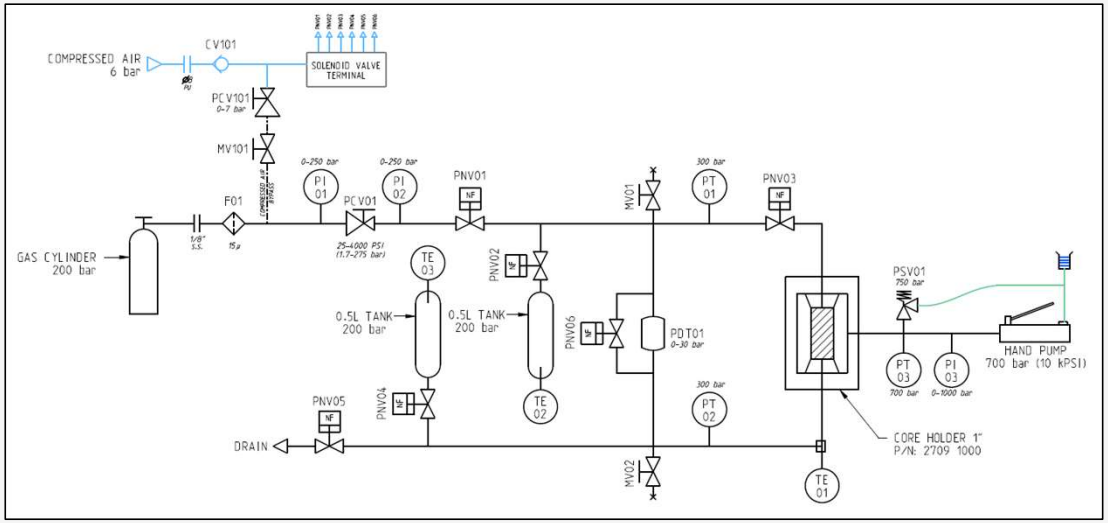


Pulse Decay Permeameter

700 bar (10 000psi)
+20 °C to +100°C.
Sample 1” up to Ø50 mm

- The Pulse Decay Permeameter is used for Ultra-Low Permeability Determination of Cap Rock, Tight Gas Sand Stone, and other very low permeability rock. The Pulse Decay Permeameter is similar in appearance to the steady-state Permeameter systems but uses a pulse decay measurement technique. The system can be easily attached to the users existing core holders.
- The Pulse Decay Permeameter system saturates the sample to a set pore pressure, then transmits a differential pressure pulse through the sample. As the pressure transient propagates though the sample, the computerized data acquisition system records the delta pressure across the sample, the downstream pressure, and time. A log differential pressure times mean pressure versus time plot is displayed real time on screen allowing visual quality control of the permeability measurement.
- Permeability is calculated from a linear regression performed on the pressure time data and the results stored to a data file. The use of a small Δ P minimizes non-Darcian flow effects and by utilizing multiple pore pressures Klinkenberg permeabilities can be determined in the conventional manner.





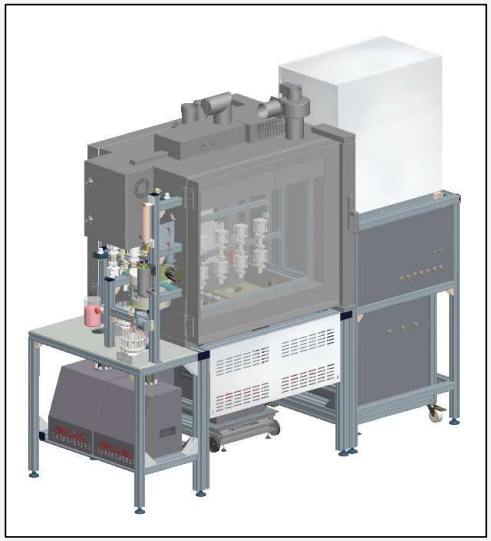
Automated relative Permeameter

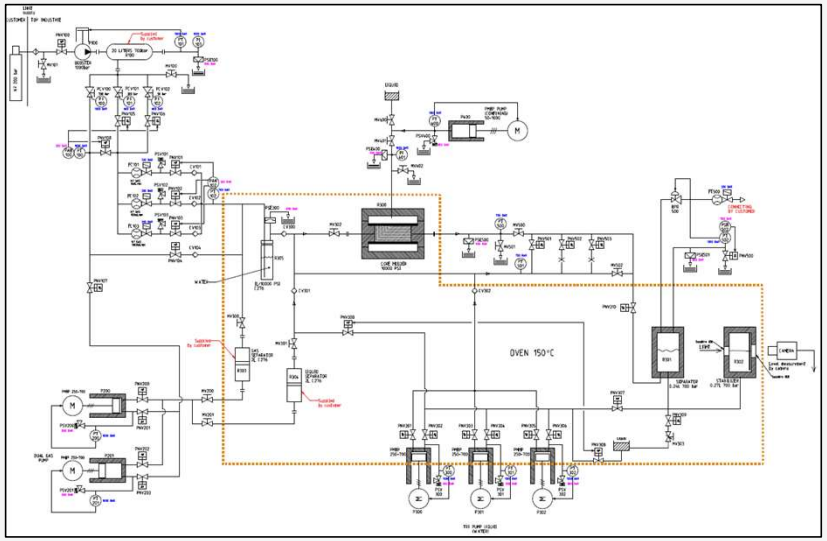
700 bar (10 000psi)
+20 °C to +200°C.
Sample 1” up to Ø50 mm

- The relative permeameter measures the absolute permeabilities to liquid and gas as well as the end-point effective permeabilities of a two phase fluid system. Liquid-liquid and liquid-gas relative permeabilities can be deduced at the saturation end-points. An Excel spreadsheet calculation template allows the operator to input the sample and fluid characteristics and experimental data (pressure gradient and flow rates) after which the above mentioned permeabilities are computed via the Darcy’s law.

- The Automated Reservoir Conditions Relative Permeability System allows for the recirculation of live fluids to maintain rock-oil-brine chemical equilibria, and thus wettability, leading to the production of more representative relative permeability curves and thus realistic reservoir production predictions. Live fluids are retained and can be reused after the experiment. Proprietary software allows for the ramping of individual pumps to achieve true pulse-less transitions by adjusting system pressure and flow rate. The circulation is driven by two dual cylinder Stigma pumps that recirculate the fluids while an additional single cylinder pump is used to maintain constant pressure in the recirculation system.

- The visualization separator is employed to record real-time volumetric data with an accuracy of 0.05ml or better. The unit is fully customizable and can be configured for confining pressures up to 15,000 psig, pore pressure up to 10,000 psig and temperatures up to 300 °F (150 °C) with Viton seals. For temperatures up to 430 °F (200 °C) specific seals and sleeves are used in place of the Viton. Automated data acquisition and logging of pressures, temperature, flow rate and volumetric data with automated file back-up is controlled by the operating software.





Samples from 25,4 up to 100 mm

Main possible studies

- Compression
- Hydrostatique (drained or not)
- Triaxiale
- Permeability
  - Steady stade
  - Pulse decay
  - Relative
- Others :
  - Compressibility measurment
  - Hollow cylinder
  - All poro-elastic parameters