

Recombination Apparatus RCA



Picture Courtesy of the Petroleum Engineering Department
at the Colorado School of Mines, Golden, CO USA



PVT Instrumentation

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Description

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The heart of the apparatus is a high pressure and high temperature cell. Simultaneously captured samples of separator gas and oil/condensate are injected into the cell at pre-defined masses. These samples are mixed, heated and pressurized to achieve one homogeneous sample identical to the reservoir fluid downhole.

Two differed mixing devices or the combination of both are available to provide sample homogeneity while reducing fluid preparation time and cost:

- A motorized rocking system agitating the HP/HT cell and causing a mixing ring inside the sample chamber to float through the sample. This way of mixing features a minimum dead volume and assures proper agitation of heavy oil samples.
- A magnetic driven stirrer within the HP/HT cell to speed up homogeneous mixture of the fluids inside the recombination cell.

The HP/HT cell is enclosed by an aluminum framed heating jacketed to control temperature. While pressure control is achieved with an external pump and monitored by a digital gauge attached to the HP/HT cell.

A sapphire window may be integrated to visually observe the saturation pressure inside the RCA.

The cell is built on sturdy frame. 5" wheels make it easy to move the apparatus within a laboratory and to associate it with different PVT systems.

Technical Specifications

Capacity (nominal)	: 2,000 cm ³ standard, volume 2,100 cm ³
Operating pressure	: 15,000 psi (1,035 bar)
Operating temperature	: -4 °F to 392 °F (-20 °C to 200 °C)
Power supply	: 230 V AC, 50/60 Hz
Dimensions (L x W x H)	: 25.6" x 19.7" x 43.3" (650 mm x 500 mm x 1,100 mm)
Weight	: approx. 320 lbs (145 kg)
Port thread connection	: 7/16" female
Material	: stainless steel, resistant to H ₂ S and CO ₂ ANSI / NACE MR0175 / ISO 15156-1 (second edition 2009-10-15), Inconel on request
Certificates	: PED & Hydrostatic