OFITE®

CORE ANALYSIS EQUIPMENT

For over 30 years OFI Testing Equipment (OFITE) has provided instruments and reagents for testing drilling fluids, well cements, completion fluids, and wastewater. In addition to these product lines we also offer a range of instruments for core analysis. From our manufacturing facility in Houston, TX we provide customers all over the world with quality products and exceptional service.

Our extensive line of Core Analysis products includes equipment for preparing core samples, routine testing, and advanced analysis.

As an independent manufacturer and supplier, OFITE has one priority, our customers.

CRF-840 Rock-Fluid Centrifuge

A properly-equipped centrifuge has many applications in the study of the rock-fluid properties of hydrocarbon reservoirs. Processing the centrifuge core analysis results provides relative permeability and capillary pressure data applicable to reservoir production performance calculations. Because enormous forces on the pore fluids are easily generated in the centrifuge, it is possible to perform experiments that model gravity drainage production processes. Rates and end points are key concerns that can be derived from the measured centrifuge core analysis data.

Features

- Solid construction with welded frame provides enhanced stability and safety
- Testing chamber is mounted on compressed vibration absorbers for smooth operation
- Top rotor shaft bearing enables stable and safe operation throughout the entire RPM range
- Integrated vacuum pump evacuates testing chamber so that the rotor can maintain high speeds
- Radiant heating system makes it possible to heat the core holders in a vacuum environment

A Test Cell Attached to the Rotor

- Integrated chiller for fast cool-down cycle after tests
- Hassler-type core holders apply equivalent confining pressure along the length of the cores
- Core holders are reversible for operating in either imbibition or drainage mode
- Computer with control and data acquisition software is included
- High-resolution camera gives accurate measurements of the fluid interface changes

Technical Specifications and Requirements

#700-570 CRF-840 Rock-Fluid Centrifuge

Specifications

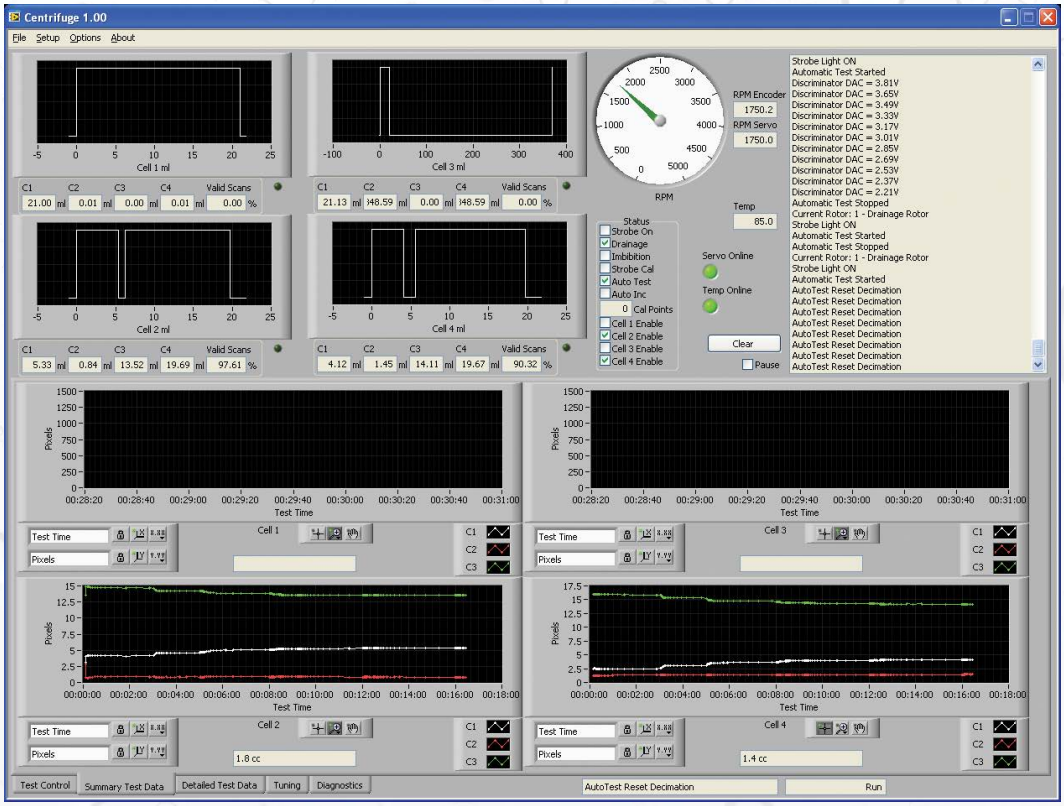
- Rotor speed
  - Maximum: 5,000 RPM
  - Minimum (with data acquisition simultaneously on all 4 core holders): 100 RPM
- Core holders
  - Sample Size: 1.0" and 1.5" diameter × 2.0" maximum length
  - Maximum Confining Pressure: 3,000 PSI
  - Maximum Temperature: 200°F
- Camera
  - Resolution: 2048 linear pixels
  - Data rate: 1 reading per revolution below 700 RPM, 10 readings per second above 700 RPM

Requirements

- Power: 220 Volt, 50/60 Hz, 1 Phase (20 Amp) and 3 Phase (30 Amp)

Software Features

- LabView graphical operator interface, data collection, and control
- Capillary pressure data reduction guide and programmed spreadsheet included
- Other data processing packages may be available upon request



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Intro

The OFITE Rock-Fluid Centrifuge simulates the effects of gravity on a core sample. Four test cells each hold a core sample. The cells are mounted to a rotor which spins them at up to 5,000 RPM. The centrifugal force pulls fluid out of (or forces fluid into) the core sample. The flow of fluid is measured and recorded over time.

Description

The Centrifuge consists of a rotor, four test cells, a vacuum chamber, a strobe light, and a camera. The rotor and cells are housed inside the vacuum chamber to reduce friction from air resistance.

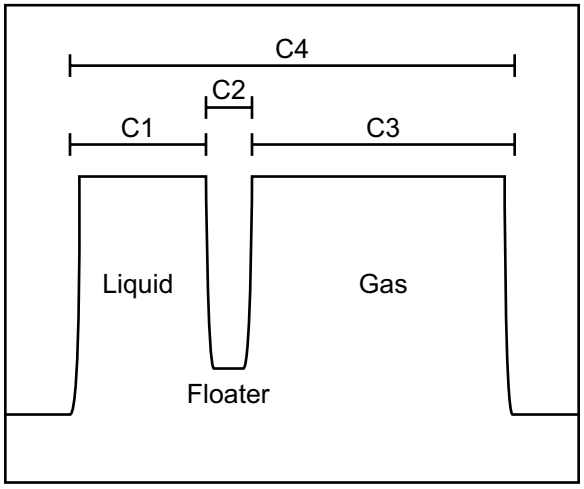
The test cells consist of two chambers. One chamber holds the core sample inside a rubber boot or sleeve. Outside the sleeve, the cell is capable of holding up to 3,000 PSI of confining pressure.

The second chamber holds a clear receiver tube to hold fluid. A pair of windows in the receiver side of the cell allow the strobe light to illuminate the fluid inside. A camera photographs the cells as they rotate and sends the data to a computer for analysis.

The test cell can be oriented on the rotor two ways. When the core sample is oriented toward the rotor, fluid will drain out into the receiver tube. This is called a Drainage test. When the core sample is oriented away from the rotor, fluid in the receiver tube will be forced into the core sample. This is called an Imbibition test.

As the rotor spins, the camera photographs a single line of pixels for each cell. Each pixel is classified as either light or dark. A plastic disk floating on top of the fluid in the receiver tube provides contrast to the interface between the liquid and gas.

The graph of the pixels looks similar to the image below.



- C1: the liquid in the tube
- C2: the floater
- C3: the gas (air) in the tube
- C4: the total of C1 + C2 + C3

As the test progresses and the fluid level changes, C1 and C3 will also change. The software will record these changes and draw a graph for each cell.

Specifications

Maximum Speed: 5,000 RPM
Maximum Temperature: 200°F (93.3°C)
Optional Maximum Temperature: 250°F (121°C)
Power Requirements:

- 230 VAC, 3 Phase, Up to 30 Amp
- 230 VAC, Single Phase, 20 Amp

Components

#127-20-004	Inlet O-ring
#700-570-015	Cell Body
#700-570-016	End Cap - Receiver Side
#700-570-017	Receiver Tube
#700-570-018	Plunger
#700-570-019	Plunger End Piece
#700-570-019-2	Spacer, Rubber, ⅛"
#700-570-019-4	Spacer, Rubber, ¼"
#700-570-019-6	Spacer, Rubber, ⅜"
#700-570-020	End Cap - Core Side
#700-570-021	Locking Ring
#700-570-024	Charge Valve Assembly
#700-570-022	Valve Seat
#700-570-023	Needle Valve
#142-56	O-ring
#700-570-027	Core Sleeve
#700-570-028	Retainer
#700-570-030	O-ring for Cell Body
#700-570-031	O-ring for Receiver Tube