



*YOUR PARTNER  
FROM LAB TO THE FIELD*

## Petroleum Engineering Laboratory Equipment

Routine Core Analysis

Special Core Analysis

EOR Tests

[www.fet-co.com](http://www.fet-co.com)

Design and construction team of this company offers the full range of educational and research facilities of petroleum engineering with the highest quality, relying on up to date technology to providing laboratory services, research centers and universities.

- Design and construction of petroleum engineering laboratory equipment
- Advanced rock and fluid properties laboratory equipment
- Special equipment and EOR laboratory apparatuses
- Full field studies and development plans



# Core Cutting Machine

## CC-R20



### Description:


After drilling cylindrical core samples, it is necessary to cut the core to a preset length using high-speed blades. The machine is a standard high-performance rock saw with a diamond blade and a cooling system (water or oil). The saw is equipped with a safety splash guard, coolant recovery pan, and a 3 hp electric motor for gentle cutting of core plug faces.


### Technical Specification:

- Maximum blade diameter: 14"
- Maximum cutting depth: 4"
- Maximum core length: 5"
- Moveable tray for easy core handling
- Lubricant and coolant fluids: Typically water (oil is also an option)
- Circulation pump
- Waste coolant accumulator
- Motor power: 3 hp




Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

 Tel No: +98 7137744659

 Phone No: +98 9177106084

 Email: [eortech.official@gmail.com](mailto:eortech.official@gmail.com)

 Website: [fet-co.com](http://fet-co.com)

# Core Cutting Machine

## CC-R30



### Description:


After obtaining cylindrical core samples, it is essential to use a standard high-performance rock saw fitted with a diamond blade and a cooling system (water or oil) to accurately cut the core to a predetermined length using two parallel high-speed blades. This machine is equipped with safety features, including a splash guard and a coolant recovery pan. It is powered by a 5 hp electric motor to ensure a precise cutting process for the core plug faces.


### Technical Specification:

- Maximum blade diameter: 14"
- Maximum cutting depth: 4"
- Maximum core length: 5"
- Moveable tray for easy handling of cores
- Four different spacers are available for adjusting the required space between two blades
- Lubricant and coolant fluids: Typically water (oil is also an option)
- Circulation pump
- Waste coolant accumulator
- Motor power: 5 hp



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

 Tel No: +98 7137744659

 Phone No: +98 9177106084

 Email: [eortech.official@gmail.com](mailto:eortech.official@gmail.com)

 Website: [fet-co.com](http://fet-co.com)



# Soxhlet Extractor

SO-R30



## Description:

The Soxhlet extractor was originally developed for the purpose of extracting lipids from solid materials. This method is typically employed when the desired compound has limited solubility in a solvent, and the impurity is insoluble in that solvent. The Soxhlet extractor comprises three primary components: a percolator (boiler and reflux) that circulates the solvent, a thimble (typically made of thick filter paper) that holds the solid to be extracted, and a siphon mechanism that periodically empties the thimble. The solvent is heated to its boiling point, condensed, and then returned to the original container. The solvent vapor ascends a distillation arm and floods into the chamber containing the solid thimble. The condenser ensures that any solvent vapor cools and drips back down into the chamber containing the solid material, gradually filling it with warm solvent. When the Soxhlet chamber is nearly full, it is emptied using a siphon, and the solvent is returned to the distillation flask. The thimble prevents any solid material from being carried to the still pot by the rapid motion of the solvent. The Soxhlet distillation extraction method is utilized for dissolving and extracting oil and brine from rock core samples using solvents.


## Technical Specification:

- Maximum core sample diameter: 4"
- Maximum core sample length: 8"
- Maximum working temperature: 450 °C
- Extraction capacity: 3 liters
- Solvent balloon: 5 liters
- Water cooling system
- Specific structure for safely assembling the system



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

 Tel No: +98 7137744659

 Phone No: +98 9177106084

 Email: eortech.official@gmail.com

 Website: fet-co.com

# Dean Stark Extractor

DS-R30



## Description:

The Dean-Stark apparatus is a laboratory glassware utilized in synthetic chemistry for the purpose of collecting water, or occasionally other liquids, from a reactor. It is employed in conjunction with a reflux condenser and a batch reactor to continuously remove the water produced during a chemical reaction conducted at reflux temperature. Additionally, the Dean-Stark extractor can be utilized to assess the fluid saturation of core samples. The apparatus comprises a distillation/extraction glassware unit and a heating mantle with a thermostatic controller. The glassware includes a boiling flask with an extractor, a sample support screen, a volumetrically graduated water receiving tube, and a condenser. Additionally, a flexible plastic tubing is employed to connect the condenser to the water cooling unit.

## Technical Specification:

- Maximum core sample diameter: 4"
- Maximum core sample length: 6"
- Maximum working temperature: 450 °C
- Extraction capacity: 3 liters
- Solvent balloon: 5 liters
- Burette: 50 cc capacity, 0.2 cc graduation, with drain valve
- Water cooling system
- Specific structure for safely assembling the system



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com

# Gas Permeameter

## GP-R30



### Description:

The gas permeability measurement apparatus is designed to measure the permeability of plug-sized core samples to gases (such as air, nitrogen, etc.) at room conditions and reservoir overburden pressures up to 20 bar using the steady-state method. The instrument allows for the investigation of slip factor and Klippenberg permeability versus reciprocal mean pressure relationship at different flow rates, back pressures, and injection pressures by injecting gas through the test sample. The differential pressure on both sides of the core is measured using two differential pressure transmitters, and a precise gas mass flow meter is employed to measure the gas flow rate through the sample.

### Technical Specification:

- Core holder (easy load)
- Core diameter: 1.5"
- Maximum core length: 3.5"
- Maximum injection pressure: 10 bar
- Maximum confining pressure: 20 bar
- Differential pressure transmitters ×2
- Differential pressure transmitter accuracy: 0.1% full scale
- Permeability range: 0.001-5000 mD
- Mass flow meters ×2
- Flow rate range: 0-20 cc/min, 5-2000 cc/min
- Mass flow meter accuracy: 0.5% full scale
- Pressure gauges ×2
- Dead billet for confining examination ×1 set
- Special software for considering slippage factor and Klippenberg effect



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Email: eortech.official@gmail.com

Phone No: +98 9177106084

Website: fet-co.com



# Liquid Permeameter

## LP-R20



### Description:

Permeability is a crucial property of rocks, indicating their capacity to allow the flow of fluids, whether gas or liquid. Typically, permeability is measured using gas (often nitrogen) or liquid (usually water). Gas injection for permeability measurement is rapid, enhancing its applicability. However, relying solely on gas injection may require corrections, necessitating additional tests using liquid injection for validation. To address this, a liquid permeameter has been designed, capable of measuring permeability in the range of 0.1 mD to 5000 mD. The apparatus is also equipped to handle confining pressures up to 400 bar, allowing consideration of the impact of upper layers on permeability.

### Technical Specification:

- Hassler core holder
- Core diameter: 1.5"
- Maximum core length: 3.5"
- Maximum confining pressure: 400 bar
- Pressure transmitter×2
- Pressure transmitter accuracy: 0.1% full scale
- Permeability range: 0.1-5000 mD
- Pressure indicator×2
- Pressure gauge
- Hydraulic pump
- Injection pump not included
- Specialized software



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com

# Saturator and Gravimetric Porosimeter

GPO-R10



## Description:

Various methods have been developed to measure the porosity and pore volume of a sample, and one such method is the fluid resaturation method. In this approach, a clean and dried sample is weighed, saturated with a liquid of known density in a desiccator, and then reweighed. The change in weight divided by the density of the fluid yields the pore volume.

## Technical Specification:

- Desiccator volume: 10 liters
- Desiccator equipped with a valve
- Vacuum pump
- Digital balance
- Weighing accuracy: 0.01 g
- Vacuum Erlenmeyer flask
- Silica gel



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com



# Helium Porosimeter

## PO-R30



### Description:

The bench-top automatic helium gas expansion porosimeter is specifically designed for 1.5" cores in diameter with a length of up to 3.5". It is constructed to measure porosity in the range of up to 50%. Upon client request, it can also be designed and constructed for a whole core matrix cup. The system utilizes a highly accurate 0-10 bar transducer, and the exclusive use of computer-controlled valves allows automated control of the measurement process.

The software ensures that the system is fully calibrated, and equilibrium is established before logging all pressure measurements. Output files are generated, allowing easy transfer of results to databases and spreadsheets for report generation.

### Technical Specification:

- Core holder
- Core diameter: 1.5"
- Core length: 3.5"
- Maximum injection pressure: 10 bar
- Pressure transmitter
- Pressure transmitter accuracy: 0.1% full scale
- Porosity range: 0.2-50%
- Standard billets for calibration × 1 set
- Standard check plugs with known porosity × 1 set
- Automatic valves for automatic control of the system
- Special software for calibration, automatic initial and final pressure recording, calculation of porosity, pore volume, grain density, and bulk volume"



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com

# General Core Flooding

## CF-E20



### Description:

The CF-E20 apparatus is designed to evaluate and optimize oil recovery for various injection protocols and fluids, such as miscible and immiscible gas injection, surfactant injection, polymer injection, etc. It is capable of performing displacements under unsteady state conditions with a maximum pressure and temperature rating of 400 bar and 100°C, respectively, at confining pressures up to 400 bar. The system comprises four different transfer vessels and one core holder, enabling it to execute various injection scenarios. One of the transfer vessels is a miniature type that can be utilized for rinsing the lines with solvents and is suitable for small-scale chemical or microbial flooding with injected slugs.

### Technical Specification:

- Hassler core holder
  - o Core diameter: 1.5", Maximum core length: 3.5"
- Differential pressure transmitter × 2, transmitter accuracy: 0.1% full scale
- Miniature fluid accumulator: 100 cc for rinsing the system
- Maximum working pressure: 400 bar
- Maximum confining pressure: 400 bar
- Pressure transmitter
  - o Pressure transmitter accuracy: 0.1% full scale
- Back pressure regulator: 400 bar
- Maximum working temperature: 100°C
- Temperature resolution: ±1°C
- Fluid accumulator × 3: 500 cc
- Pressure gauge × 2
- Hydraulic pump
- Data acquisition system
- Touch panel



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: [eortech.official@gmail.com](mailto:eortech.official@gmail.com)

Website: [fet-co.com](http://fet-co.com)

# General Core Flooding

## CF-E30



### Description:

The CF-E30 apparatus is dedicated to evaluating and optimizing oil recovery for various injection protocols and fluids, such as miscible and immiscible gas injection, surfactant injection, polymer injection, etc. This system is designed to operate under unsteady state conditions with a maximum pressure and temperature rating of 600 bar and 100°C, respectively, at confining pressures up to 600 bar. The apparatus consists of four different transfer vessels and one core holder, enabling the system to perform various injection scenarios. One of the transfer vessels is a miniature type that can be used for rinsing the lines with solvents or for small-scale chemical or microbial flooding.

### Technical Specification:

- Hassler core holder, Core diameter: 1.5", Maximum core length: 3.5"
- Maximum working pressure: 600 bar, Maximum confining pressure: 600 bar
- Pressure transmitter × 2, Pressure transmitter accuracy: 0.1% full scale
- Differential pressure transmitter × 2, accuracy: 0.1% full scale
- Software for automatic pressure and temperature recording
- Maximum working temperature: 100°C, Temperature resolution: ±1°C
- Miniature fluid accumulator: 100 cc for rinsing the system
- Gas back pressure regulator: 600 bar
- Fluid accumulator × 3: 750 cc
- Gasometer × 1: Equipped with a linear encoder
  - o Volume: 4 liters
  - o Pressure accuracy: 0.5% full scale
  - o Temperature accuracy: 0.5% full scale
  - o Linear encoder accuracy: 5 μm
- Wetted parts: Stainless steel 316
- Hydraulic pump
- Data acquisition system



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com



# Core Acidizing

## CA-S20



### Description:

The core acidizing system is designed to inject an acid solution into a rock sample at reservoir conditions to modify the natural permeability of the rock by dissolving certain minerals present. Utilizing hastelloy as the wetted material allows for the investigation of the efficiency of different HCl-HF formulations in attacking plugging minerals. Additionally, the system facilitates the study of the effects of flow rate and temperature on core sample permeability.

### Technical Specification:

- Maximum working pressure: 400 bar, Maximum confining pressure: 400 bar
- Equipped with software for automatic data acquisition and monitoring system (automatic pressure and temperature recording, core pressure drop, system temperature, and system pressure)
- Glass walls for easy monitoring of the process and for the protection of operators
- Fluid accumulator × 2: 500 cc (Hastelloy or Titanium)
- Fluid accumulator: 500 cc (Stainless steel 316) for rinsing the system
- Wetted parts for acid: Hastelloy or Titanium and others: stainless steel 316
- Pressure transmitter, accuracy: 0.1% full scale
- Differential pressure transmitter, accuracy: 0.1% full scale
- Maximum working temperature: 100 °C with thermal jacket
- Temperature resolution:  $\pm 1^{\circ}\text{C}$
- Gauge Pressure × 3
- Hassler core holder
  - o Core diameter: 1.5"
  - o Maximum core length: 3.5"



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com

# Core Acidizing

## CA-S30



### Description:

The core acidizing system is designed to inject an acid solution into a rock sample at reservoir conditions, modifying the natural permeability of the rock by dissolving minerals present in it. The wetted material, Hastelloy, allows the investigation of the efficiency of different HCl-HF formulations to attack plugging minerals. The system also enables the study of the effects of flow rate and temperature on core sample permeability.

### Technical Specification:

- Hassler core holder × 2 (Core diameter: 1.5" - Core length: 2-6")
- Maximum working pressure & Temp.: 400 bar & 100 °C with Thermal jacket
- Gas back pressure regulator × 2: 400 bar (Hastelloy or titanium)
- Fluid accumulator × 2: 500 cc (Hastelloy or Titanium)
- Fluid accumulator × 2: 750 cc (Stainless steel 316) for rinsing the system
- Asymmetric design for two parallel acid injections into different cores
- Equipped with a manual rocking system for core holder rotation at 90, 180, 270, and 360 degrees
- Vertical, horizontal, and reverse injection of fluid
- Pressure gauges for confining and accumulator pressures
- Software for automatic data acquisition and monitoring system
- Glass walls for easy monitoring of the process and for the protection of operators
- Wetted parts for acid: Hastelloy or Titanium and others: stainless steel 316
- Pressure transmitter × 4: 0.1% full scale
- Differential pressure transmitter × 2: 250 bar
- High-pressure single pump × 1 (600 bar)
- o Pressure transmitter: 0.5% full scale
- o Constant pressure
- o Constant flow rate mode
- o Cylinder volume: 500 cc
- o Flow rate: 0.01, 10 cc/min



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com

# Recombination Cell

RC-S30



## Description:


The HP-HT Recombination Cell is designed to create a homogeneous mixture of oil and gas using a mixing and cell rocking (optional) system. All you need is an oil and gas sample with predefined volumes. The pressurizing system allows you to reach your ideal pressure, and temperature is controlled using heating elements or jackets. The apparatus also offers a powerful magnetic mixing option.


## Technical Specification:

- Maximum Working Pressure: 600 bar
- Pressure Transmitter, Accuracy: 0.1% full scale
- Maximum Working Temperature: 100 °C
- Temperature Resolution:  $\pm 0.1$  °C
- Cell Volume: 2000 cc
- Hydraulic Pressurizing System
- Magnetic and Rocking Mixing Mechanism
- Includes 500 cc, 600 bar stainless steel shipping bottle (1 pc)
- Wetted Parts: Stainless Steel 316
- Touch Panel: Equipped with data acquisition software and PC connection port



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

 Tel No: +98 7137744659

 Phone No: +98 9177106084

 Email: eortech.official@gmail.com

 Website: fet-co.com





# PVT

## PV-S20



### Description:

The PVT system is designed to study the phase behavior of hydrocarbon fluids under reservoir conditions of pressure and temperature. It can be used to perform PVT tests on black oil, volatile oil, etc. The system utilizes an embedded high-pressure pump to control the pressure and volume of the reservoir fluid in the cell. The unit can be configured for either oil or gas condensate studies by inverting the position of the cell using the rocking system. A video camera system helps the operator determine the gas/liquid interface. A magnetically coupled stirrer mounted inside the sample chamber provides efficient fluid mixing and ensures fast equilibrium of sample phases. Homogeneous sample heating is provided by a controlled temperature jacket.


### Technical Specification:

- Maximum Working Pressure: 400 bar
- Image Capturing System to Observe and Record Changes in Phase Behavior
- Pressure Transmitter, Accuracy: 0.25% full scale
- Maximum Working Temperature: 100°C
- Temperature Resolution:  $\pm 0.2^{\circ}\text{C}$
- Heating System: Thermal jacket
- High-Pressure Visual Cell Equipped with 2 Sight Glasses
  - o Cell Volume: 300 cc, Volume Accuracy: 0.01 cc
- Rocking System, Magnetic Mixing System
  - o Mixing Motor Power to Provide More Force for Better Stirring
  - o Induction Magnetic Stirrer (High Speed)
- Constant Pressure Mode, Constant Flow Rate Mode
  - o Minimum Flow Rate: 0.01 cc/min, Maximum: 10 cc/min
- Visual Detection Capability of Bubble Point and Dew Point
- Online Image Processing System, Digital Camera (200x), Backlight
- Touch Panel: Equipped with Software for Controlling the System
- Computer System: Equipped with Software for Controlling the System



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

 Tel No: +98 7137744659

 Phone No: +98 9177106084

 Email: [eortech.official@gmail.com](mailto:eortech.official@gmail.com)

 Website: [fet-co.com](http://fet-co.com)

# PVT

## PV-S30



### Description:


The PVT system is designed to study the phase behavior of hydrocarbon fluids under reservoir conditions of pressure and temperature. It can perform PVT tests on black oil, volatile oil, etc. The system utilizes an embedded high-pressure pump to control the pressure and volume of the reservoir fluid in the cell. The unit can be configured for either oil or gas condensates studies by inverting the position of the cell using the rocking system. A video camera system allows the operator to determine the gas/liquid interface. A magnetic-coupled stirrer inside the sample chamber provides efficient fluid mixing and ensures fast equilibrium of sample phases. Homogeneous sample heating is achieved through a controlled temperature jacket.


### Technical Specification:

- Image capturing system to observe and record changes in phase behavior
- Computer system: Equipped with a software for controlling the system
- Constant pressure and flow rate mode, Flow rate range: 0.01-15 cc/min
- Online image processing system, Digital camera 200x, Back light
- Mixing motor power to provide more force for better stirring
- Visual detection capability of bubble point and dew point
- Maximum working temperature: 100 °C, resolution: 0.1 °C
- Pressure transmitter, accuracy: 0.1% full scale
- Heating system: Thermal jacket
- HP Visual cell equipped with 2 sight glasses
- Cell volume: 500 cc, Volume accuracy: 0.001 cc
- Rocking system, Magnetic mixing system
- Induction magnetic stirrer high speed
- Maximum working pressure: 600 bar



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

 Tel No: +98 7137744659

 Phone No: +98 9177106084

 Email: eortech.official@gmail.com

 Website: fet-co.com



# Gas-Oil Ratio Measurement

## GO-S10



### Description:

The Gas-Oil Ratio (GOR) is a crucial property of any oil reservoir as it determines the amount of gas separated from a unit volume of reservoir liquid (oil) measured at standard conditions. GOR plays a vital role in assessing the hydrocarbon volume in place and formulating the best production scenario. To address this importance, the GOR apparatus is designed to flash pressurized liquids, measure the liberated gas at equilibrium conditions, and collect dead liquid using calibrated devices. The system is equipped with a manual 4-liter gasometer to measure the liberated gas with an accuracy of 1 cc, while the pressure and temperature of the system are indicated.

### Technical Specification:

- Maximum Working Pressure: 400 bar
- Pressure Transmitter, Pressure Accuracy: 0.5% full scale
- Back Pressure Regulator: 400 bar
- Vials for Separation of Liquid and Gas
- Live Oil Accumulator: 200 cc
- Gasometer × 1: Equipped with a linear encoder
  - o Volume: 4 liters, Pressure Accuracy: 0.5% full scale
  - o Temperature Accuracy: 0.5% full scale
  - o Linear Encode Accuracy: 5  $\mu$ m
  - o Wetted Parts: Stainless steel 316
- Separator: 500 cc



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com



# Liquid-Liquid Unsteady State Relative Permeameter URP-ES30

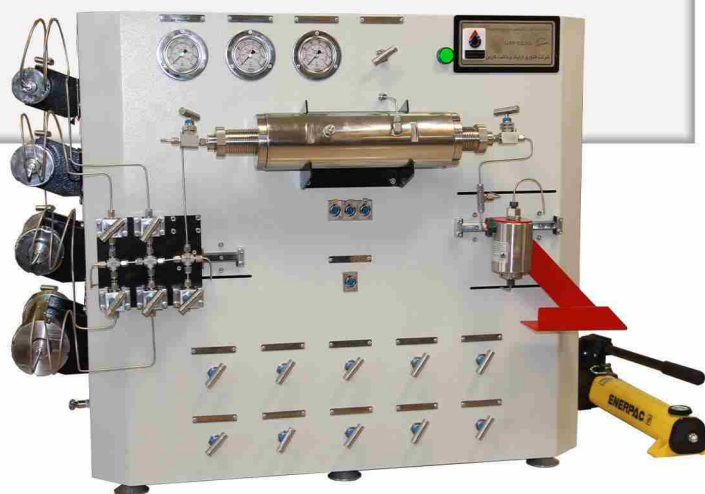


## Description:

The Unsteady-State Relative Permeability Measurement System, URP-ES30, is designed to conduct basic and cost-effective linear displacement tests for immiscible and incompressible fluids. This system is versatile, capable of performing various injection protocols to measure relative permeability using different analysis methods, including Johnson-Bossler-Naumann (JBN), modified JBN, Toth et al., and the Jones-Roszelle methods. The unsteady-state method is particularly well-suited for measuring endpoint values of the non-wetting phase. The URP-ES30 system offers a flexible platform for conducting unsteady-state relative permeability studies for liquid/liquid at reservoir pressure and temperature.

## Technical Specification:

- Hassler Core Holder
  - o Core Diameter: 1.5", Maximum Core Length: 3.5"
  - o Maximum Working Pressure: 400 bar and Maximum Confining Pressure: 600 bar
- Off-line software for calculating relative permeability using JBN, modified JBN, JR, and Toth et al. methods.
- Pressure Transmitter × 2, Accuracy: 0.1% full scale
- Differential Pressure Transmitters × 2, Accuracy: 0.1% full scale
- Maximum Working Temperature: 100°C
- Fluid Accumulator × 3: 500 cc, Miniature Fluid Accumulator: 100 cc for system rinsing
- Gasometer × 1
  - o Volume: 4 liters
  - o Pressure Accuracy: 0.5% full scale, Temperature Accuracy: 0.5% full scale
  - o Linear Encode Accuracy: 5 μm
  - o Wetted Parts: Stainless Steel 316
- Hydraulic Pump, Wetted Parts: Stainless Steel 316
- Data Acquisition System
- Software for recording temperature and pressure



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com

# Pendant Drop Contact Angle and IFT Measurement



CA-ES20

## Description:

Interfacial tension (IFT), as an indicator of energy at the interface of two immiscible fluids, is a crucial parameter for any Enhanced Oil Recovery (EOR) process. Drop shape analysis, specifically the pendant drop method, provides a convenient way to measure surface tension. Pendant drop tensiometry, enhanced by video-image analysis, is considered a highly accurate method for measuring the IFT of fluid/fluid interfaces across a wide range of IFT values. In this method, video images of pendant drops are digitized to determine the interface loci, enabling the measurement of IFT through the solution of the Young-Laplace equation. The wettability of the reservoir rock and interfacial tensions between reservoir fluids play a crucial role in oil recovery efficiency.

## Technical Specification:

- IFT range: 3-72 mN/m
- Contact angle range: 5°-179°
- Working pressure: Ambient
- Online special software for analyzing the shape of the drop to measure IFT and contact angle in liquid-liquid systems
- Maximum working temperature: 50 °C (not suitable for volatile solvents)
- Three degrees of freedom camera positioner
- Automatic control of moving parts
- Glass visual cell
- Digital camera 200x
- Backlight



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com

# HP-HT Pendant Drop IFT Measurement

VIT-ES20



## Description:

The Pendant Drop Interfacial Tension system is designed to measure interfacial tension between liquid-gas and liquid-liquid interfaces using the pendant drop method, as well as the contact angle between liquid and solid interfaces under reservoir pressure and temperatures up to 400 bar and 100°C. The cell is adaptable for different needle sizes, ensuring a wide measurement range. Two manual pumps facilitate the independent discharge of bulk fluid and drop fluid into the visual cell, which is equipped with sapphire sight glasses and metallic seals.

## Technical Specification:

- IFT range: 3-72 mN·m<sup>-1</sup>
- Maximum working pressure: 400 bar
- Pressure transmitter
- Pressure accuracy: 0.5 % full scale
- Maximum working temperature: 100 °C
- Temperature resolution: ±0.5 °C
- High-pressure cell equipped with 2 HP sight glasses
- Two high-pressure manual pumps
- Digital camera 200x
- Four degrees of freedom camera positioner
- Backlight
- Online drop shape analysis software



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: [eortech.official@gmail.com](mailto:eortech.official@gmail.com)

Website: [fet-co.com](http://fet-co.com)



## Piston Cylinder Type Shipping Bottle for Oil and Gas Sampling (SS316)

CS250-E30, CS500-E30, CS750-E30

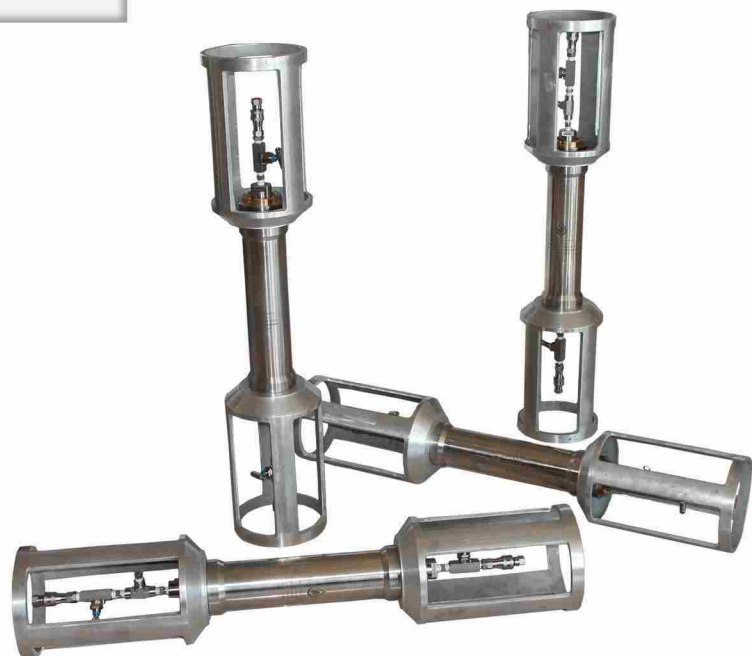


### Description:


The high-pressure piston-cylinder type transfer vessels are commonly used in the oil and gas industries to transfer liquid/gas samples to the laboratory for analysis. In this context, Fars EOR Tech. Co manufactured a double-ended piston-type cylinder for the safe transportation of reservoir fluid to the laboratory. All bottles are equipped with multi-port gauge valves for each end plug to easily control the injection pressure and injection fluid. On the sample side, an evacuation port nipple and plug are incorporated, crucial if the valves face malfunction. All valves, connections, and fittings are protected using a newly designed protection cap, which not only introduces protective capabilities but also acts as support for handling the shipping bottle. The cylinders are made of stainless steel 316, which can also be manufactured in titanium based on the client's order.


### Technical Specification:

- Maximum working pressure: 600 bar
- Maximum working temperature: 100 °C
- Volume: 250, 500, and 750 cc
- Rolling stainless steel ball for agitation and mixing
- Connections and fittings: Stainless Steel 316
- Wetted parts: Stainless steel 316




Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

 Tel No: +98 7137744659

 Phone No: +98 9177106084

 Email: eortech.official@gmail.com

 Website: fet-co.com

## Piston Cylinder Type Shipping Bottle for Oil and Gas Sampling (SS316)

CT250-E30, CT500-E30, CT750-E30



### Description:


The high-pressure piston-cylinder type transfer vessels are commonly used in the oil and gas industries to transfer liquid/gas samples to the laboratory for analysis. In this context, Fars EOR Tech. Co manufactured a double-ended piston-type cylinder for the safe transportation of reservoir fluid to the laboratory. All bottles are equipped with multi-port gauge valves for each end plug to easily control the injection pressure and injection fluid. On the sample side, an evacuation port nipple and plug are incorporated, crucial if the valves face malfunction. All valves, connections, and fittings are protected using a newly designed protection cap, which not only introduces protective capabilities but also acts as support for handling the shipping bottle. The cylinders are made of stainless steel 316, which can also be manufactured in titanium based on the client's order.


### Technical Specification:

- Maximum working pressure: 600 bar
- Maximum working temperature: 100°C
- Volume: 250, 500, and 750 cc
- Rolling titanium ball for agitation and mixing
- Connections and fittings: Stainless steel 316
- Corrosion resistance
- Wetted parts: Titanium




Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

 Tel No: +98 7137744659

 Phone No: +98 9177106084

 Email: eortech.official@gmail.com

 Website: fet-co.com

# HP Single Pump (600 bar)

P1-600P



## Description:

The pumps consist of a general base unit incorporating a Servo Motor, Gear Box, and an HMI-based controlling unit. They are engineered for applications demanding precise, pulseless flow, and pressure control for the delivery of fluids, solvents, and solutions. The pump features a single injection unit with a maximum barrel volume of 100 cc, offering the capability to inject fluids in constant flow and constant pressure modes.

## Technical Specification:

- Maximum injection pressure: 600 bar
- Pressure transmitter
- Pressure transmitter accuracy: 0.5% full scale
- Constant pressure mode
- Constant flow rate mode
- Cylinder volume: 500 cc
- Minimum flow rate: 0.01 cc/min
- Maximum flow rate: 10 cc/min
- Wetted parts: Stainless steel 316
- Touch panel



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: eortech.official@gmail.com

Website: fet-co.com



# Asphaltene Detection and Analyzing System

PSA-S10



## Description:

Asphaltenes and waxes pose significant challenges in the petroleum industry, impacting both oil recovery and processing. The precipitation of these complex mixtures is a major factor that leads to difficulties such as plugging, flow interruptions, wettability alteration, and formation damage. This apparatus is specially designed to precisely study different aspects of asphaltene precipitation under field conditions. The flexibility associated with this equipment makes it more appropriate for conducting comprehensive research in various areas of asphaltene problems, including precipitation detection and asphaltene size analysis.

## Technical Specification:

- Maximum Working Pressure: 400 bar
- Pressure Transmitter
- Pressure Accuracy: 0.1% full scale
- Maximum Working Temperature: 100 °C
- Temperature Resolution:  $\pm 0.2$  °C
- Cell Volume: 250 cc
- High-Pressure Cell Equipped with High-Pressure Sight Glass
- Backlight
- Microscope
- Digital Camera
- High-Pressure Hand Pump
- Wetted Parts: Stainless Steel 316
- Particle Size Analyzer Software



Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

Tel No: +98 7137744659

Phone No: +98 9177106084

Email: [eortech.official@gmail.com](mailto:eortech.official@gmail.com)

Website: [fet-co.com](http://fet-co.com)

# Surface Sampling Bench

SSB-ES30

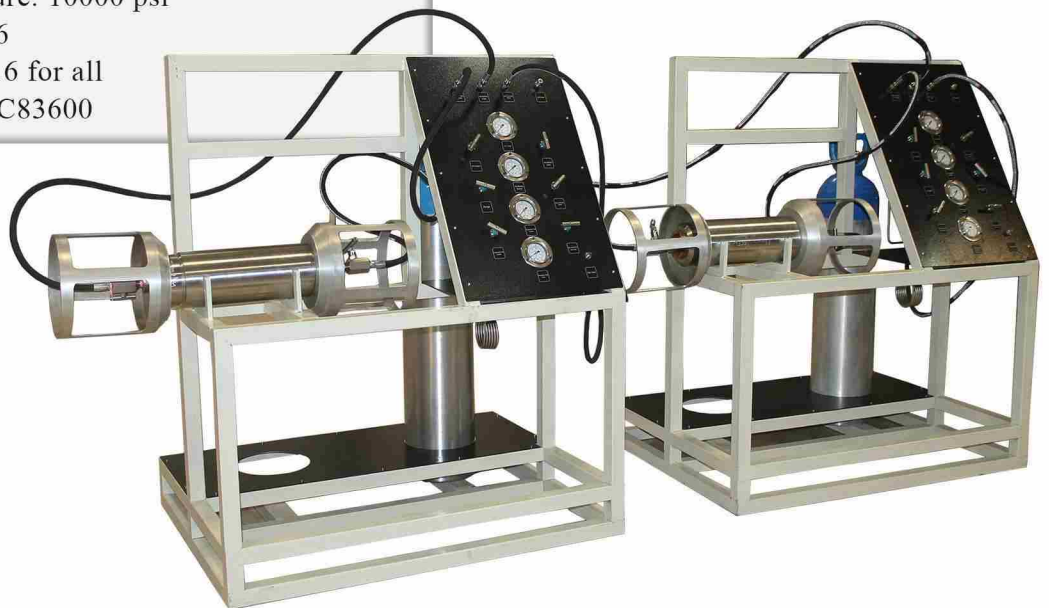


## Description:


The Surface Sampling Bench (SSB) is utilized for obtaining reservoir samples from the test separator during the production testing of oil and gas wells. Simultaneous samples of the separated fluids, oil collected in a piston-type sample cylinder, and gas in one or two gas sample cylinders are taken. In the laboratory, oil and gas are recombined for further analysis. The SSB can accommodate one piston-type oil sample cylinder and one or two gas cylinders.


## Technical Specification:

- Maximum operating pressure: 3000 psi (higher pressure ranges available upon request)
- Al Gas Bottle: 1
  - o Capacity: 20 Lit (or different ranges upon request)
  - o Material: Al alloy
- Maximum operating temperature: 150 °F (65 °C)
- Dimensions: Approximately 800 mm x 1000 mm x 1250 mm
- Material of construction: ST37
- Tubes & Fittings: Stainless steel 316
- Pressure Gauge: 4
- Piston-type Sampling cylinder: 1
  - o Capacity: 700 ml (or different ranges upon request)
  - o Maximum operating pressure: 10000 psi
  - o Fittings: Stainless steel 316
  - o Material: Stainless steel 316 for all parts besides caps, which are C83600




Shiraz Technology Park of Chemical Industries, Industrial Estate, Shiraz, Iran

 Tel No: +98 7137744659

 Phone No: +98 9177106084

 Email: [eortech.official@gmail.com](mailto:eortech.official@gmail.com)

 Website: [fet-co.com](http://fet-co.com)