SUPERCRITICAL EXTRACTION PILOT PLANT FOR SOLID SAMPLES

Automated and computerized laboratory-pilot plant for extraction of solid samples by means of supercriti

dular-type built for easy return to factory for service. Each module (feed section, Extractor module and two Separator modules) ystem and electronic control system. All these systems are supervised for distributed control system PC based. The security ted in each one of these modules.

Feed system

Roy CO_2 pump, 4.7 l/h, 380 bar, SS-316 hydraulic membrane, refrigerated head. Inverter for computerized control. Check- nd other components.
(-10ºC) for cooling CO_2 line feed and CO_2 pump head.
Roy Co-solvent pump 0.3 l/h, 100 bar, SS-316 piston head. Inverter for computerized control.
ystem and bypass for flow measures at high pressure in Co-solvent pump.

Column System

- Furnace for CO_2 preheater. Two control actions: heating by electrical power and cooling by furnace opening and closing.
- 350 cc Head Line vessel, 400 bar, easy closure system, for solid sample. Porous plate 20 microns. Quick connectors for agreeable work.
- Furnace for control temperature of extraction operation, internal thermocouple. Two control actions: heating by electrical power and cooling by furnace opening and closing.
- Bypass system (two-three way valves) for cleaning procedures.
- Pneumatic security valve put into operation by pressure control system.
- Pressure control system based on micrometric regulation servocontrolled valve. High precision in pressure control and fast response. Maximum pressure 340 bar.
- Rupture discs, check valves, filters and other components.

Three Separators

- 40 cc Head Line vessel, 400 bar, easy closure system, for extracts collection. Valve for sample.
- Furnace for control temperature of separation operation, internal thermocouple. Two control actions: heating by electrical power and cooling by furnace opening and closing.
- Pressure control system based on micrometric regulation servocontrolled valve. High precision in pressure control and fast response. Max pressure 220 bar in Separator 1, 120 bar in Separator 2.
- Separator 3 at atmospheric pressure and MFM for CO_2 flow measurement.

Distributed control system

trol systems are linked with PC computer by means of Process@ ote control with digital communications. The system can be controlled matically.

are allows the operator to design automatic procedures for the

al independent safety levels: automatic switch-off in case of any re and temperature security systems, all that based on electronic or ces and independent of PC.

Test

be tested during 24 hours at 360 bar closing (except MFM and

be tested during 4 hours at 340 bar in Extrac-