INDUSTRIAL SCALE EXTRACTION:
The Most Powerful & Most Advanced

Automatic process control by recipes. Unlimited number of recipes. Membrane pumps, motor speed controlled by electronic vectorial inverter. Flow control by Coriolis mass flow meter with inverter interlock. Automatic pressure control by controlled back pressure globe valve. Electric hoist on board for the extractor lid and basket lift. GAMP5 compliance software is available. HACCP and GMP compliance ready. Trend analysis tool included in the standard software.

Fully Automated Supercritical CO2 Extraction Plants, from 100 to 8,000 liters.

Introducing the SCF Industrial Series
Supercritical Fluid CO2 Extraction Systems, Distributed Exclusively in North America by Hightech Extracts
**Features**

- From 100 to 8,000 liter extractor
- Super critical or liquid CO2 extraction
- Full automatic process control
- Process by recipes
- Liquid CO2 floating level probe
- CO2 + co-solvent extraction
- Reverse flow CO2 + H2O extraction
- Extractor fast closing system
- Pressure up to 450 bar
- Temperature up to 90°C
- Triple separator (gravity/cyclonic)
- CO2 reservoir/phase separator
- Liquid CO2 floating level probe
- Pressure and temperature probes
- CO2 membrane pump up to 6000 kg/h
- Co-solvent membrane pump
- Electronic inverter pumps speed control
- CO2 Coriolis mass flow meter
- Vessels safety valves (PED certified)
- Stainless steel vessels and pipes
- Electronic chiller
- Electronic boiler
- 400 V power supply
- Network Ethernet connection
- PLC on board
- SCADA process control
- Process history database
- Stainless steel skid
- Dimension (m): 10 x 5 x h: 5.5 meters

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**Sequential Extraction**

Sequential extraction, CO2 only followed by CO2 + EtOH and finally CO2 + H2O shows different kind of fractionated extracts (Lypo » Hydro Extraction).

**Co-solvent Process Enhancement**

High pressure extractions of polar compounds using supercritical CO2 followed by enhanced solvent extraction (ESE) with diverse CO2/ethanol/H2O solvent mixtures (0–90%, 0.5–100%, 0–95%, v/v/v), shows that this ESE solvent mixtures has a substantial effect on extracts yield and composition.

**The Super Critical Fluid Process**

Supercritical Fluid Extraction (SFE) is the process of separating one component (the extractant) from another (the matrix) using supercritical fluids as the extracting solvent. The basic principle of SCF extraction is that the solubility of a given compound (solute) in a solvent varies with both temperature and pressure. In a SCF, solute solubility of up to 10 orders of magnitude greater than those predicted by ideal gas law behavior have been reported.

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**4 Extraction Modes**

- Supercritical CO2 only
- Supercritical modified CO2
- Reverse flow
- Liquid CO2

**Sequential Extraction**

Sequential extraction, CO2 only followed by CO2 + EtOH and finally CO2 + H2O shows different kind of fractionated extracts (Lypo » Hydro Extraction).
Automation
- Process pressure control (set-point);
- CO2 flow rate and feeding pump flow rate;
- Electronic inverter pumps speed control;
- The temperature and pressure of each single vessel, reactor or exchanger;
- CO2 liquid level inside the reservoir/phase separator with automatic refilling;
- Electronic boiler temperature (PID);
- Electronic chiller temperature (PID);
- Warning and emergency alarms and stop alarms;
- Temperature/pressure of each test point;
- Pumps flow rate in Kg/h;
- Amount of CO2 and co-solvent or feeding liquid pumped during the cycle;
- On screen warning messages (real time and history);
- Real time graphs and trend analysis tool with limits indications;
- Manual Process control or, by process recipes
- Full CO2 recirculation (with no CO2 loss during the process).
**Classes of extracted compounds**

SCF is a technology suitable for extraction and purification of a variety of compounds, particularly those that have low volatility and/or are susceptible to thermal degradation. The interest in SCFE is promoted by legal limitations of conventional solvents for food and pharmaceutical uses. The physicochemical properties of supercritical CO₂ (higher diffusivity, lower viscosity, and lower surface tension than conventional solvents) facilitate mass transfer and allow an environmentally friendly operation. Plants provide a large bank of rich, complex and highly varied structures which are unlikely to be synthesized in laboratories. Major classes of molecules include fatty acids (SCFA, MCFA, LCFA, VLCFA), terpenoids, phytosterols, alkaloids, natural phenols, polyphenols and waxes.

Hightech Extracts is an engineering company developing systems for the manufacturing of extract-based products. Our mission: revolutionize the entire extraction process.

The centerpiece of our approach is supercritical fluid extraction, the best way to selectively and cost-effectively extract chemically pure essential oils and natural compounds from botanical materials.

Hightech Extracts and the SuperCritical Fluid Network are partners, bringing next generation SCF technologies to the North American cannabis, essential oils and natural products industries. Together, we build systems to your specifications using a modular approach that allows us to maintain predictable results while providing the lowest total cost of ownership in the industry.

The Hightech advantage: from initial purchase to installation to technical support, we're there to help. We'll work with you through every step of the process — selecting the right extractor, building the feature set you need, creating custom recipes — to help you achieve the lowest possible extraction cost per gram.