



CryoEXS 400

CRYO-ETHANOL EXTRACTION SYSTEM

ROOT 
SCIENCES

CryoEXS 400

Key Features

- **Throughput Capability:** 400 lb per 8-hour shift
- **GMP Ready:** Made with cleanliness, efficiency, and reliability in mind, with tailored GMP documentation included
- **The Complete Solution:** Skidded, scalable system automatically performs solvent cooling, extraction, biomass desolventization, extract filtration, solvent recovery, and decarboxylation
- **Reliable, Powerful Chilling:** Reliable refrigeration solutions provided by industry leading experts, trusted by companies like Tesla, BP, Apple, Coca-Cola, among others
- **Modular Filtration:** Negating the need for winterization, our modular and reconfigurable filtration assembly allows for flexibility, and easy maintenance, cleaning, and element replacement
- **Evaporation and Decarboxylation:** Efficient solvent recovery capacity at a sustained 350 liters per hour, this essential function is highly automated, enabling reliable continuous operation
- **Energy Efficiency:** Recaptures latent heat from cold ethanol after extraction, translating into a lower utility bill and ensuring the lowest possible cost of operation
- **Materials Conveyance:** Capable of integrating into an automated materials conveyance system allowing for sanitary operation with automated biomass input and product discharge
- **Expert On-Site Training:** Detailed Standard Operating Procedures included for operation, maintenance, and troubleshooting of equipment
- **Service and Maintenance:** Service packages to keep equipment in top operational condition



How is Cryo-Ethanol Extraction Unique?

Cryo-Ethanol extraction is the most efficient and cost effective solution for large-scale cannabis processors. The cannabinoid-rich crude extract that is produced is ideal for further refinement into high purity distillates and isolates.

Traditionally, the most common extraction methods used in the creation of cannabis crude oil have been CO₂ extraction, light hydrocarbon extraction, and warm ethanol extraction. CryoEXS, entered the hemp and cannabis extraction market in 2019, cutting the extraction process down from days to hours by utilizing cryo-ethanol extraction (commonly referred to as cold-ethanol extraction) technology.

CryoEXS efficiently leaves all lipids behind during the extraction process, which allows processors to cut the process bottleneck down from a few days to just a few hours. Manufactured by DEVEX of Germany, our cryo-ethanol extraction systems provide the benefit of bypassing several steps that must be followed during other extraction methods. This type of cold-ethanol extraction technology offers a much more advantageous and time-efficient solution to the extraction process.

All-In-One Cryo-Ethanol Extraction Solution

Root Sciences' all-in-one cryo-extraction, solvent recovery and decarboxylation systems are designed for the recovery of cannabis crude extract from cannabis biomass. The used solvent can be recovered and reused for further extraction processes. This model handles approximately 400 lb (180 kg) per 8-hour shift (depending on the bulk density of the raw material).

The CryoEXS 400 is an all-in-one system, which provides several unrivalled benefits:

- **Equipment Included:** No need for separate equipment for winterization, solvent recovery, decarboxylation, or devolatilization
- **Rapid Process:** Processing time is reduced from several days to several hours
- **Reduced Labor:** Fewer operators are required, saving on labor costs
- **Scalable, Skidded System:** Scalable, skidded system with 400, 800, and 4,000 lb throughput (per 8-hour shift) options
- **Automation:** State-of-the-art sensors, controllers, and simple touch-screen interface allow a single operator to monitor the system



EXTRACTION

ROI / Estimated Payback Period

Material	Cannabis	Hemp	Cannabis	Hemp
Daily Processing Time	8-hour (one shift)		24-hour continuous (three shifts)	
Daily Concentrate Yield	26 kg		77 kg	
Daily Concentrate Value	\$77k	\$26k	\$230k	\$78k
Payback Period	22 days	68 days	8 days	23 days

TECHNICAL DATA

EXTRACTION	Extractor 1 x 300 L Solvent Ethanol (other solvents on request) Extraction Temperature -40 °C
EVAPORATION	Evaporation Capacity 264 kg/h ethanol (350 L/h) Feed Quantity 100 – 800 kg/h (variable) Solvent Ethanol Evaporation Pressure 50 – 600 mbar (abs)
ELECTRICAL SPECIFICATIONS	Mains Requirements 3Φ 480 V, N+PE, 60 Hz Power Consumption 67.5 kW
FACILITY REQUIREMENTS	Ambient Air Temperature 5 – 40 °C Ambient Humidity 25 g/kg dry air (90% RH) Machine Dimensions 17.62' x 5.09' x 7.97' (L x W x H)



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About Root Sciences

Root Sciences is the global leader in the distribution of equipment and support services for processing facilities in the cannabis and hemp industries, representing premium extraction, distillation, and other post-processing technologies. However, we are in the unique position of being much more than an equipment distributor. Backed by years of hands-on experience in both growing and processing, our collective knowledge as a team of seasoned practitioners and process engineers is unmatched in the industry.

For Root Sciences, the sale is just the beginning, as we aim to nurture a long-term partnership with all of our clients. After delivering and installing equipment, our training and after-sales support is where we really add value. This is where Root Sciences' in-house knowledge and experience becomes so crucial, as we will have everything set up and running efficiently on day one. Furthermore, we are always just a phone call or an email away whenever support is needed. We also offer extended service and maintenance packages to keep your equipment in top condition and minimize the risk of downtime for your operations. As your partner, we have your back.