EthoEx
CERRX CUTSHEET™

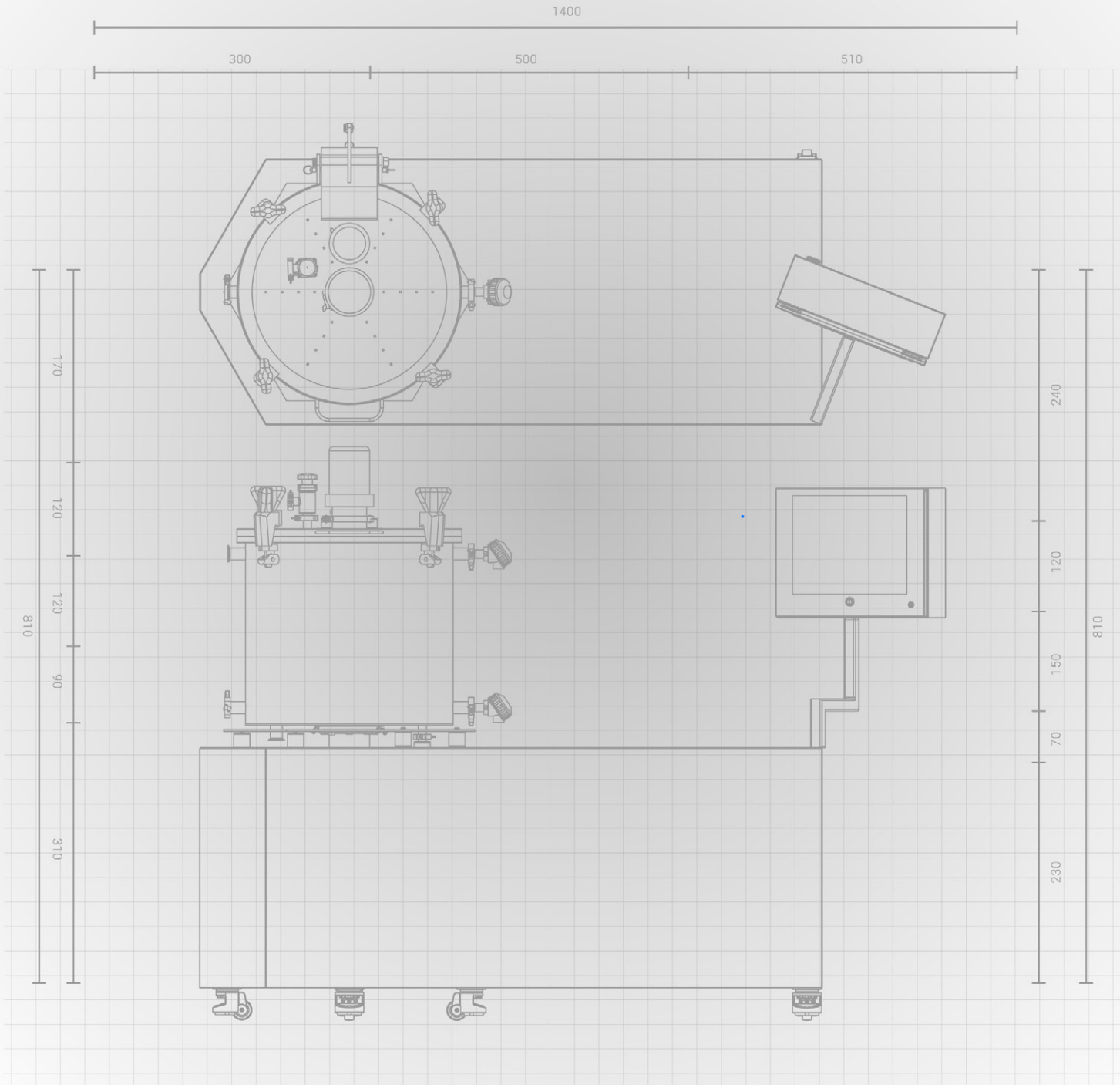
PROJECT: CERRX				SHEET 1 of 2	CAGE CODE:
DWG. NO. 1000-000-000-01					THIRD ANGLE PROJECTION:
TITLE: CERRX ETHANOL, EXTRACTION					SURFACE FINISH: SEE NOTES
DRAWN BY: ETHO	CHECKED BY: ETHO	COG ENGINEER: ETHO	SCALE: NTS	UNITS: INCH	

DRAWING SYMBOLS & TOLERANCE PER ANSI Y14.5-2009

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES
TOLERANCES ARE:

DECIMALS	LINEAR	ANGULAR
.X	±0.020	±1°
.XX	±0.010	±0.2°
.XXX	±0.005	±0.01°

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONTROLLED | ETHOEX.COM



150 | 150 | 300 | 150 | 450 | 80 | 120

1400

ETHOX CERRX

PLATFORM

The **ETHOEX CERRX** platforms are the ultimate extraction processing technology that increases production rates and decreases overall production costs.

Often, extraction labs encounter unbalanced productions rates because equipment is purchased from different manufacturers that offer different production flow rates.

The **ETHOEX CERRX** Cryogenic Extraction Rotary and Re-Circulation Extraction System is the first in class is a stand alone extraction unit that extracts, spin dries and offers continuous cooling.

The **CERRX** is controlled and monitored with a customized HMI. This system offers the capability of maintaining extraction temperatures throughout the extraction processes which offers high precision and repeatability with capable of 35-45 lb per batch. The spin drying sequence offers 98% tincture recovery from the biomass which provides maximum yields.

Chilling ethanol can also be done in the system removing the need for deep freezers or chillers.

The **CERRX** is the complete package for your extraction needs.

CERRX CENTRIFUGE
INCLUDED

FEATURES AT A GLANCE

- *35-45lb Biomass Capacity
- Chlorophyll & lipid free extracts
- Winterization not required
- Temps down -50c
- Temp cooling @ 10 celcius per 30 seconds
- Automated fill and drain sequences
- Recordable process parameters

ANCILLARY EQUIPMENT

- Cascade Chiller Required or Liquid N2
- FFE/Rotovap
- Tincture Holding Tank
- Air Compressor

SYSTEM DESIGN

SUPER CHILLED PROCESS

Temperature

Many were reluctant to use Ethanol for Cannabis and Hemp biomass extraction because it was known to have extracted high amounts of chlorophyll resulting in a poor crude oil. Other post processing methods were known to remove the unwanted constituents, but it only increased the filtration time and therefore the overall production time.

However, EthoEx™ discovered that at extremely cold temperatures (-50 Celsius to -114 Celsius) chlorophyll and other unwanted constituents were not extracted. This, coupled with reduced filtration time, increased the overall production rate.

Super Chilled Ethanol, an Engineering Challenge

Another reason this solution has yet to be tackled is the difficulty to find equipment that operates at these low temperatures. Pumps, seals, valves, and other equipment are simply difficult to buy "off the shelf." The Engineering team developed a process from scratch, custom designed components and the equipment to create a full process system that is efficient, balanced, fully automated and scalable; a beginning to end, biomass to full spectrum oil solution.

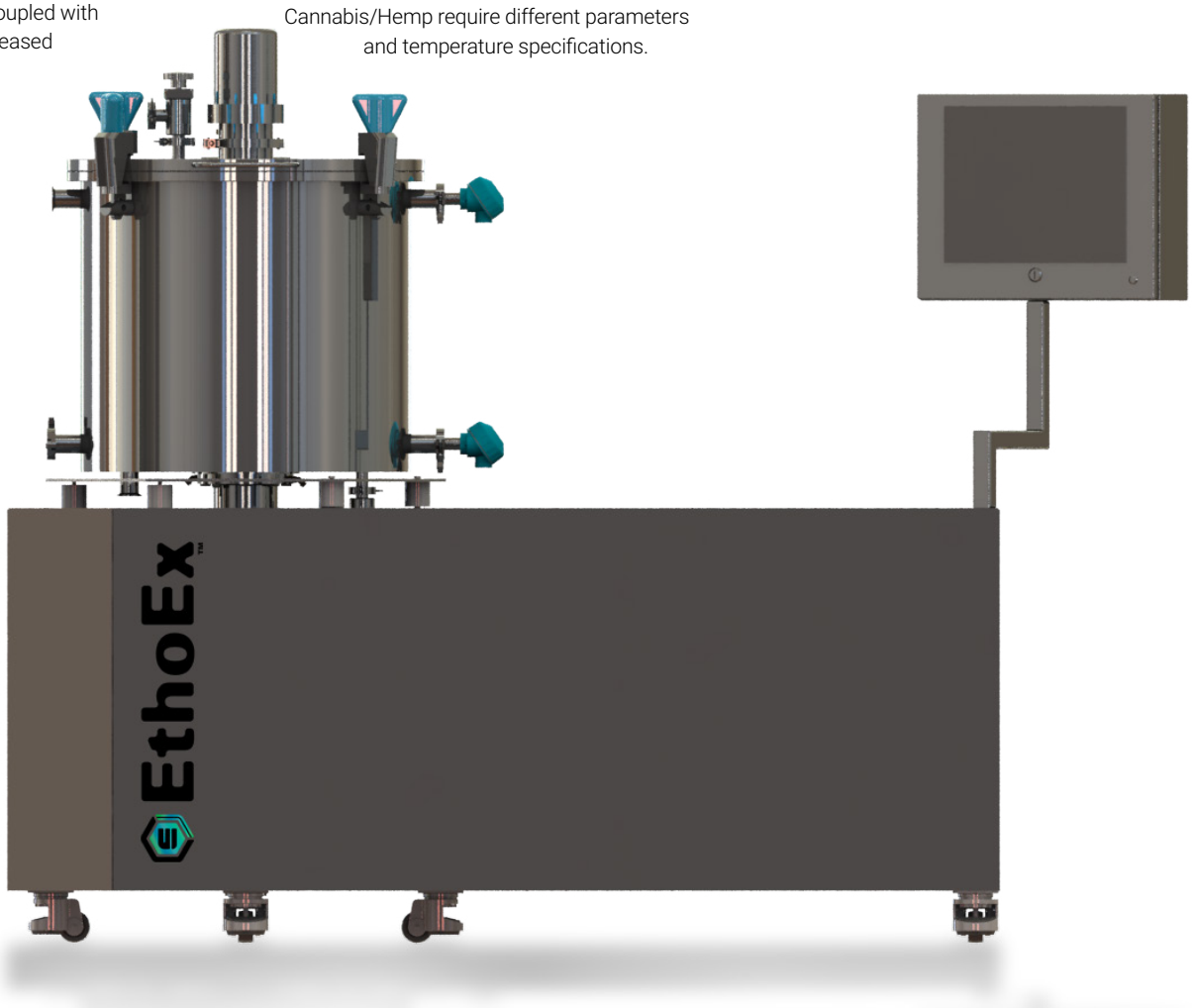
Designed for the Cannabis & Hemp Industry Ethanol Storage

Bringing to and maintaining the low temperatures of Ethanol require a very well insulated holding volume. Most production facilities use off the shelf tanks from the brewery or wine industries, but these were not designed for those processes. Cannabis/Hemp require different parameters and temperature specifications.

Cryogenically Rated Extraction with Recirculation and Rotary Action

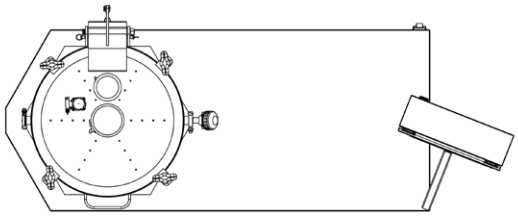
Batch rotary centrifuges are not a new concept. However, a batch centrifuge rated down to these temperatures is considered new. Our centrifuge is fully vacuum insulated with a vacuum insulated bottom, side walls and top hatch. Seals, bearings, and rotor shafts are designed specifically to operate in these parameters. The CERRX comes with internal cooling capabilities.

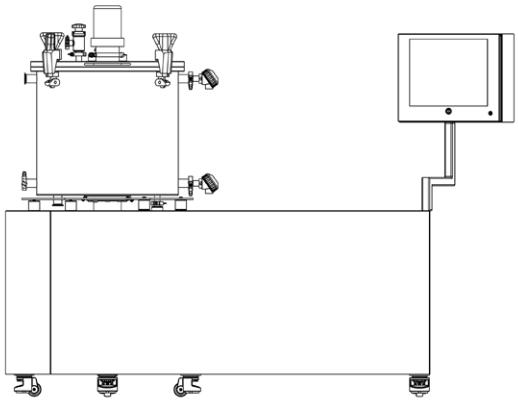
More novel is the temperature control throughout the extraction process. The batch centrifuges utilize one of our N2 cooling systems to recirculate the tincture and maintain the set target temperature during the extraction process. Thus, the extraction temperature is tightly controlled within as little as 1 degree C shift.



ETHOEX CERRX

Ethanol Chilling and Holding Tank, CERRX & Filtration





ADDITIONAL FEATURES

WEIGHT
- 750 lb

ELECTRICAL & MISC
PUMP
- Explosion proof motor, 5 horse-power pump

Electrical Panel
- Class I Division 2 electrical control panel including pump Variable Frequency Drives

Diverter Valves
- Two pneumatically driven diverter valves for ethanol loading, re-circulation and draining

304 STAINLESS SANITARY TUBING
- All wetted components are sanitary 304 stainless steel. Batch reactor is electropolished to meet biopharmaceutical 25 RA surface finishr

12 MOTNH PARTS/LABOR WARRANTY
- EthoEx offers a 12 month warranty on all Parts and Labor

TECHNICAL SUPPORT
- EthoEx offers technical support. Our team of experts can be reached during normal business hours via both phone and email in attempt to answer any questions or schedule service.

MADE IN USA
- Manufactured and assembled in the U.S.A

CIP (CLEAN IN PLACE)
- The CERRX system can be cleaned without disassembly and offers Clean in Place connections

SPECIFICATIONS

- Ethanol Chilling: -50 celcius to 0 celcius
- Extraction Temp: -50 celcius to 0 celcius
- Explosion proof pumps and electronics rated for hazardous locations

DIMENSIONS

- 3’ X 6’ X 5’ tall

ELECTRICAL

POWER

- Three phase or
- Single phase

HIGHLIGHTS

- Fully optimized and automated extraction system that cuts production times by 24 hours (skips winterization), decreases labor costs (requires only one operator), increases repeatability and quality control (temperature management before, during and after extraction) and industry leading processing throughput (Aprox. 3000 biomass lb/day). Explosion proof feed pumps with automated on/off control

FULL SPECTRUM
High Key Notes

SUPER CHILLED
Down To -50°C

MOVING PARTS
UL LISTED

* EthoEx equipment performance, as pertaining to batch capacity, optimum operating temps, consumable use, and ethanol recovery rates may vary. This is due to biomass quality in, biomass moisture, humidity, external/internal environmental factors, processing temperatures, budget constraints, operator competency, third party chiller specifications and/or liquid N2 consumption rates.

* When addressing regulatory compliance, confirm with your local municipalities regarding regulations and codes; including solvent storage and fire marshal satutes.

For general inquiries | sales@ethoex.com | 530.339.5492 | ethoex.com