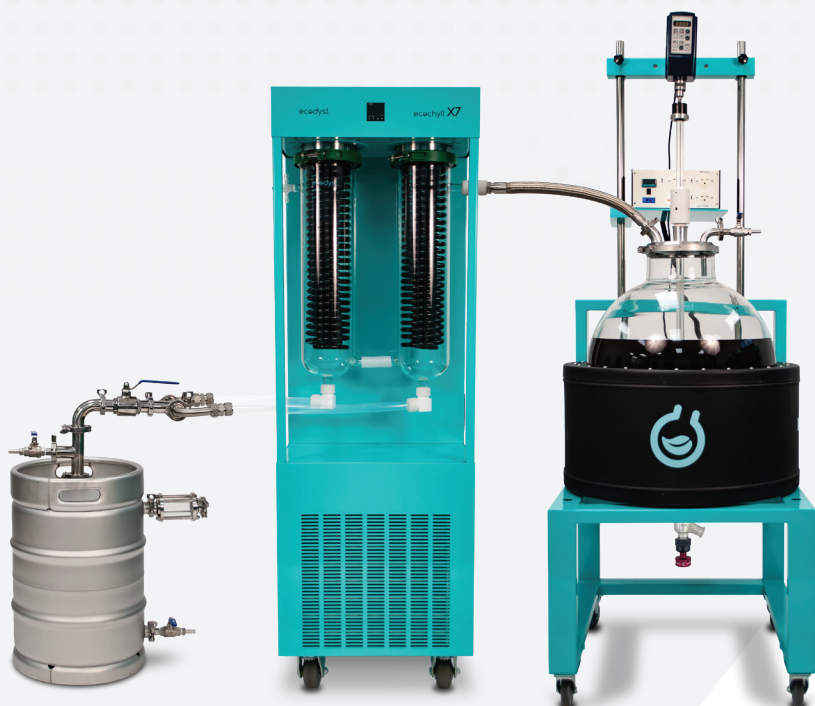


# ecodyst

Accelerating the  
Extraction Process®



The global leader of high-speed solvent  
recovery and decarboxylation equipment

# Ecodyst has created a new generation of evaporators and concentrators.

For many years, rotary evaporators (rotovaps) have been the lab standard across industrial sectors, including pharmaceutical, academic, government, chemical, life sciences, food and beverage, cleantech, materials, environmental, and cannabis. Rotovaps consist of a heating fluid bath, rotating motor, evaporating flask, receiving flask, vacuum source, and condenser. The conventional rotovap condenser requires an external source of cooling material such as dry ice, liquid nitrogen, water, or glycol. Glycol requires additional recirculating equipment.

Using a proprietary and innovative self-cooling technology, Ecodyst has revolutionized the evaporator. With a smaller footprint and greater output, the Ecodyst systems increase efficiency while reducing operational costs. The modern smart technology from Ecodyst boosts productivity and minimizes downtime. Shifting paradigms and setting a new benchmark for solvent recovery without the use of glycol, dry ice, or water, our groundbreaking technology eliminates the major sources of material waste associated with conventional evaporators and concentrators.

## EcoChyll High-Speed Evaporator System Recovery Rates

EcoChyll System	Recovery Rates* (Liters/Hour)
12 EcoChyll X3	5-8
22L EcoChyll X5	8-12
50L EcoChyll X7	15-25
72L EcoChyll X7	25-40
100L EcoChyll X7	45-60
200L EcoChyll X9	80-120

\*Estimates are for ethanol, other solvents have different evaporation rates

## Hydrogen

Up to 3L flask



All-in-one modern rotovap

## EcoChyll X1



Upgrades any brand rotovap up to 5-liter flask

## EcoChyll X3

Two sizes: 12L, 20L



## EcoChyll X5

Two sizes: 22L, 50L



## EcoChyll X7

Four sizes: 22L, 50L, 72L, 100L



## EcoChyll X9

200L



# EcoChyll®



Hydrogen



EcoChyll X1



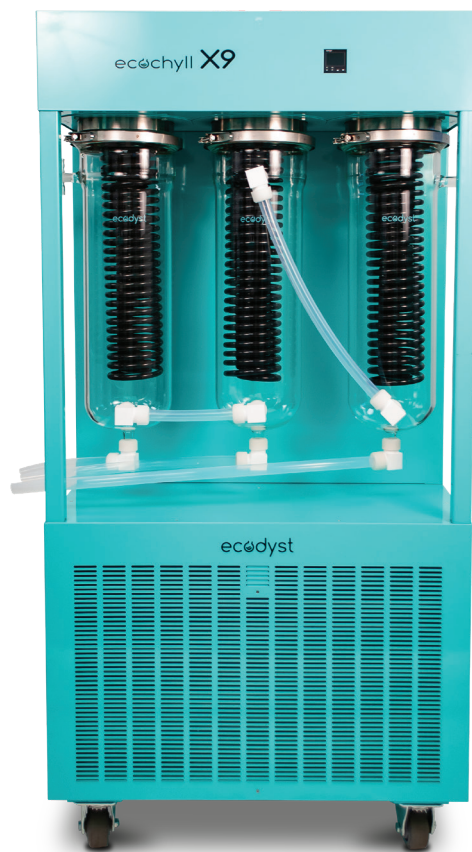
EcoChyll X3  
(12L, 20L)



EcoChyll X5  
(22L, 50L)



EcoChyll X7  
(22L, 50L, 72L, 100L)



EcoChyll X9  
(200L)



# EcoChyll® Evaporators



12L



22L



50L



72L



100L



200L

# EcoChyll X3 High-Speed Evaporator

Available Sizes: 12 & 20 Liters



Engineered for high-speed solvent recovery and evaporation in small- to medium-sized laboratories, the EcoChyll® X3 is our most robust medium-size cooling system for botanical extractions. Based on the same pioneering technology as our disruptive EcoChyll® range of evaporators, the EcoChyll® X3 bridges the gap between small-footprint lab equipment and the full-scale, high-throughput alternatives. With a 12L or 20L size and compact form factor, it is the ideal supplement for rotary evaporators lab equipment.

The EcoChyll® X3 is routinely used downstream of botanical extractions via BHO, CO<sub>2</sub>, or ethanol. With twin metallic condenser coils, the EcoChyll® X3 carries out continuous direct cooling of incoming vapors in an efficient and environmentally friendly manner. A key performance indicator of the entire range of EcoChyll®

lab equipment is the ability to free up operator time due to low-intervention requirements. The EcoChyll® X3 enables scientists in smaller facilities to automate their processes, ultimately saving time and money without compromising the quality of results.

## EcoChyll X3 Continuous Cooling: Key Advantages

- Best-in-class evaporation rates
- Continuous sample feed valve for uninterrupted operation
- Cost-effective by eliminating expensive rotary motor with overhead stirring
- Easy-to-use, with simple product drainage not requiring removal of large evaporation vessels
- Excellent energy efficiency

# EcoChyll X5 High-Speed Evaporator

Available Sizes: 22 & 50 Liters



Designed for budget-conscious users of evaporation lab equipment, the EcoChyll® X5 is an extremely efficient alternative to existing evaporative technologies. Based on the same metallic condenser coil technology that elevates each instrument in the EcoChyll line, the EcoChyll® X5 features a single coil in a robust, space-friendly unit. With a 22L capacity and a small footprint, it is a premium compromise between cost and convenience.

This high-value evaporation unit is a turnkey solution for solvent recovery and decarboxylation. Built with pioneering smart-cooling technology, the EcoChyll® X5 automates the vapor cooling process to free up user time for other operations. This method is now the preferred solution for evaporation in a wide range of botanical extraction applications.

## EcoChyll X5 Lab Equipment: Key Advantages

- Best-in-class evaporation rates
- Continuous sample feed valve for constant operation
- Cost-effective compromise for mid-volume extractions (22L)
- Easy-to-use, with simple product drainage
- Exceptional energy efficiency
- Low cost of ownership—pays for itself within three years
- Stationary glassware for guaranteed safety

# EcoChyll X7 High-Speed Evaporator

Available Sizes: 22, 50, 72 & 100 Liters



Built for industrial-scale evaporation, the EcoChyll® X7 high-speed evaporator from Ecodyst combines high-loading capacities with rapid, continuous cooling for efficient and fast solvent recovery. Thanks to proprietary intelligent direct self-cooling condensers, the EcoChyll® X7 high-cooling capacity and large-surface-area condensers can reliably condense large volumes of solvents.

Our industrial-scale rotary vacuum evaporator is a turnkey solvent recovery system trusted by chemists and botanical extraction processors in both research and commercial laboratory settings. Based on innovative self-cooling technology, our smart system is both eco-friendly and efficient. The EcoChyll® X7 continuous cooling solution is guaranteed to increase productivity for high-throughput solvent recovery and decarboxylation applications, while keeping user safety and usability at the forefront of all botanical extraction applications.

## **EcoChyll X7 Rotary Vacuum Evaporator: Key Advantages**

- Best-in-class evaporation rates
- Continuous sample feed valve for uninterrupted operation
- Cost-effective by eliminating expensive rotary motor with overhead stirring
- Easy-to-use, with simple product drainage not requiring removal of large evaporation vessels
- Excellent energy efficiency
- High-speed stirring for increased surface area and vapor generation
- System modularity for easy upgrades
- Safety guaranteed, with all glassware remaining stationary throughout operation
- Twice the loading capacity of traditional rotovaps (<100 L)
- Chemical-resistant dual condenser with over 9000 cm<sup>2</sup> cooling surface area



# EcoChyll X9 High-Speed Evaporator

200 Liters



For many years, rotary evaporators (rotovaps) have been standard in chemistry labs across multiple industries requiring botanical extractions. Rotovaps consist of a heating fluid bath, rotating motor, evaporating flask, receiving flask, vacuum source, and condenser. The conventional rotovap condenser requires an external source of cooling material, such as dry ice, liquid nitrogen, water, or glycol. Glycol requires additional recirculating equipment.

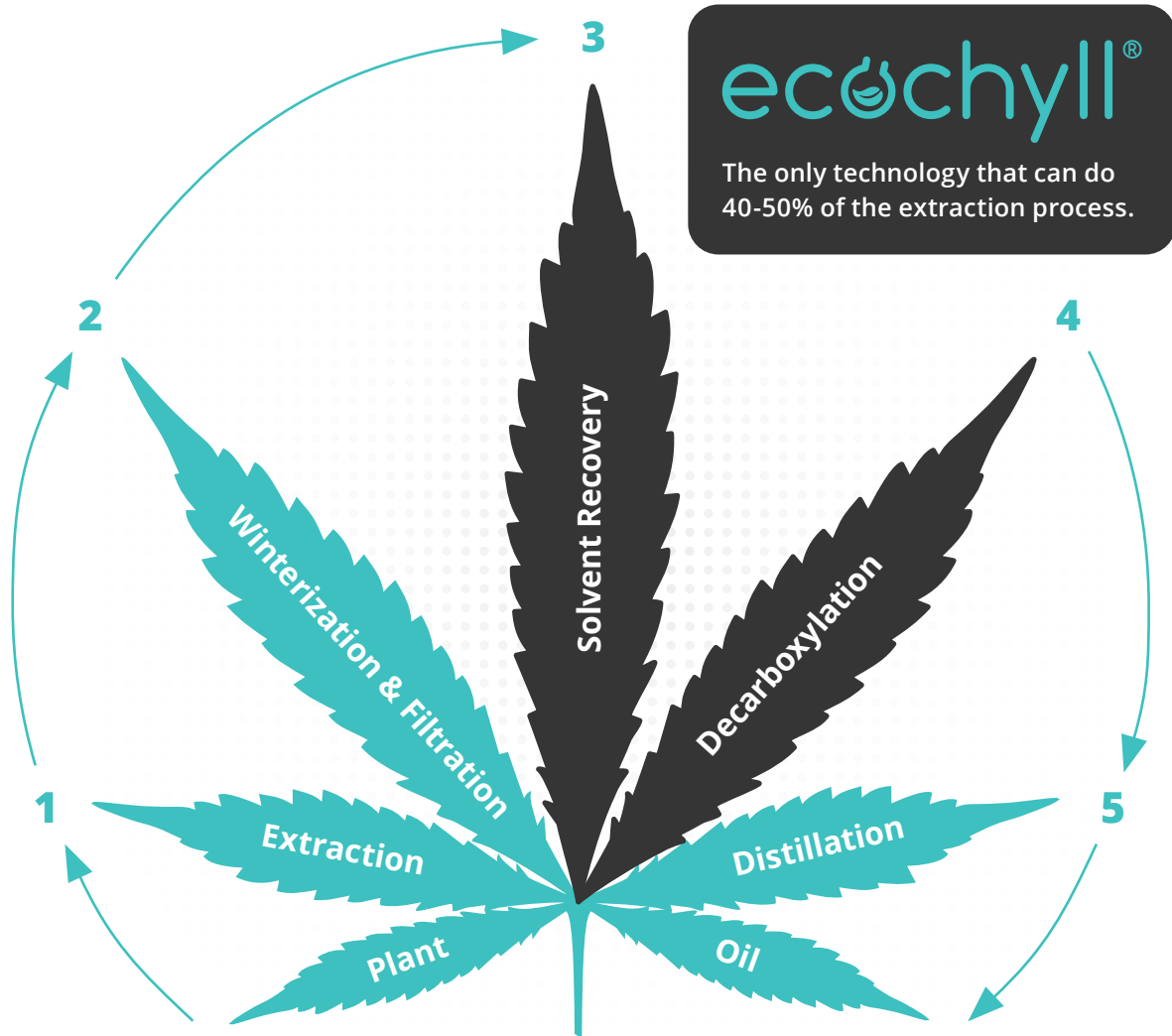
The EcoChyll® X9 large capacity evaporation unit is a high-speed and ultra-efficient system for demanding botanical extractions. Based on unique triple-coil self-cooling technology, this workhorse solution is the best evaporation unit for large-scale extractions, with a greater maximum capacity than any alternative on the market. The EcoChyll® X9 evaporation unit was

engineered to address the bottleneck in botanical extraction laboratories servicing the booming hemp industry. With a 16,000-watt heating mantle and high-cooling capacity, the EcoChyll® X9 comprehensively exceeds the performance of up to eight 50-liter traditional rotovaps.

## EcoChyll X9: Key Advantages

- Extremely high evaporation rates at a fraction of the falling-film evaporator energy usage
- No special infrastructure modification required
- Multifunctional evaporation unit enabling both solvent recovery and decarboxylation
- One-man operation with minimal interference required
- Continuous inlet feed valve for uninterrupted operation

# Ecodyst's position in the cannabis industry



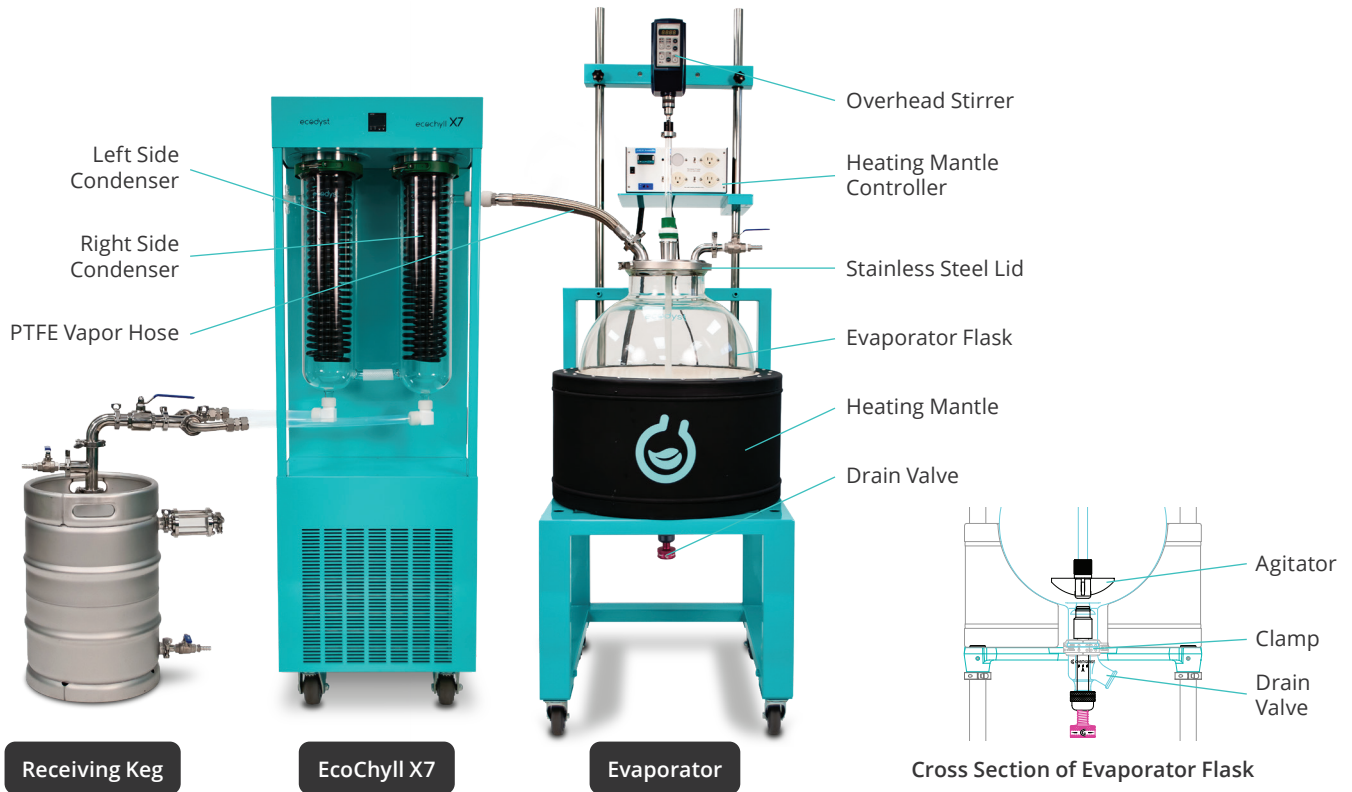
## Cutting-edge in situ decarboxylation equipment

At Ecodyst®, we have leveraged our expertise in organic chemistry in the development of a unique evaporation system for solvent recovery and decarboxylation. Using pioneering direct-cooling technology and continuous feeds to maintain vacuum conditions throughout extraction processes, EcoChyll® solutions exceed traditional decarb systems on virtually every front.

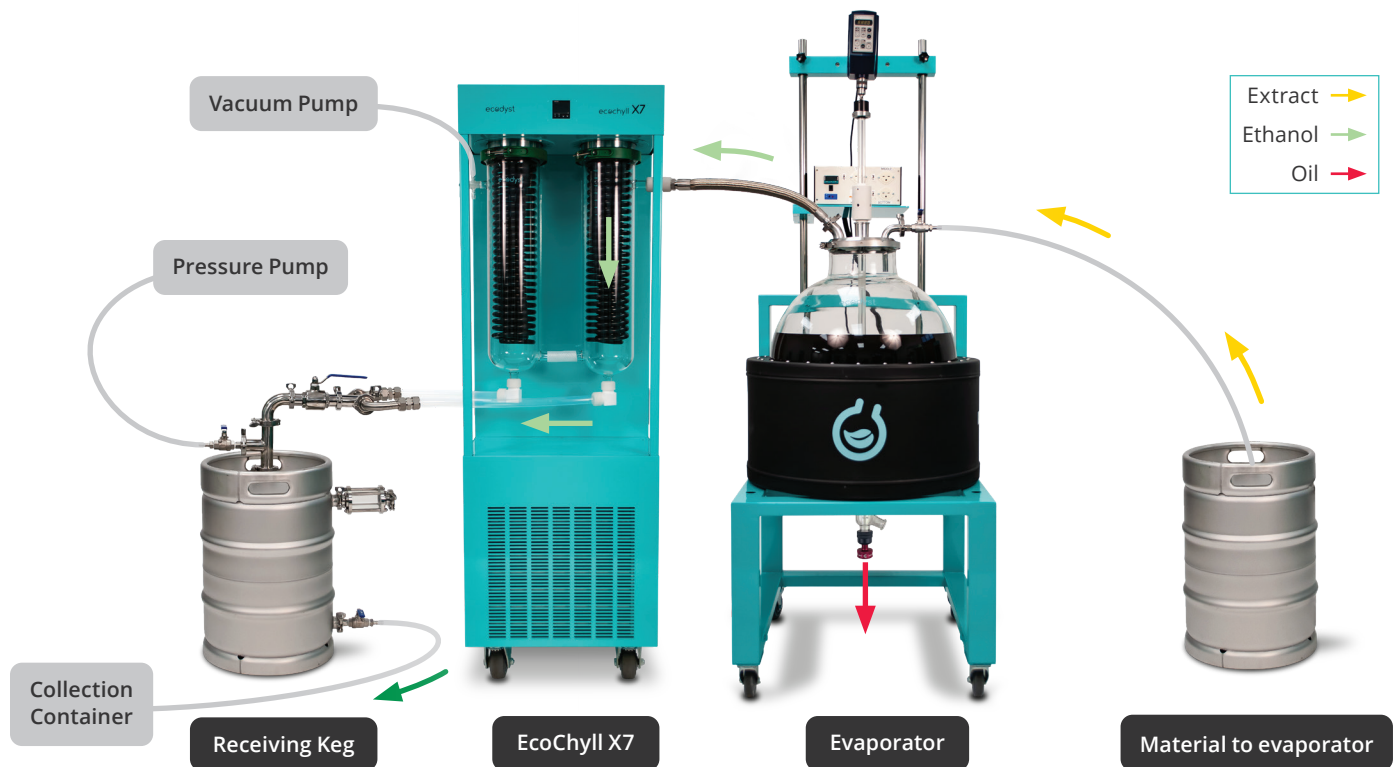
Available at a lower up-front price point with consistently greater ROI, the EcoChyll® line can decarb comparable volumes of cannabis oils in just under

two hours. This is possible through our efficient heating-mantle design that reaches optimal decarb temps in matter of minutes—and maintains heat. Our actual-volume evaporators and EcoChyll® intelligent self-cooling technology require just a single action to initiate continuous decarboxylation of high volumes of sample materials at unprecedented scales. From the medium-scale 12L to large-scale 200L capacity, Ecodyst provides evaporation systems suitable for every level of cannabis decarboxylation. Solvent recovery with in situ decarboxylation saves significant extraction process time and is ideal for most extraction processors.

# EcoChyll X7 High-Speed Evaporator



# Solvent-recovery operational diagram



# EcoChyll X1 Benchtop Rotovap

EcoChyll S redesigned and relaunched as EcoChyll X1



W x D x H  
12 x 12 x 29 inches



EcoChyll X1 upgrades any brand rotovap

Engineered for convenient evaporation and concentration of samples where space is at a premium, the EcoChyll® X1 pioneers tankless evaporation technology for rotary evaporators. Based on a chemical-resistant metallic coil condenser with completely stationary glassware, the EcoChyll® X1 provides an efficient and safe alternative to glycol chillers, dry ice, or water condensers.

This smart self-cooling condenser is compatible with traditional rotary evaporators and has a compact footprint of less than one square foot. The EcoChyll® X1 is designed to provide labs with a cutting-edge and powerful condenser solution for faster sample dry downs, including aqueous solutions. It can also be used as a cold trap for any other applications, such as short path or concentrators.

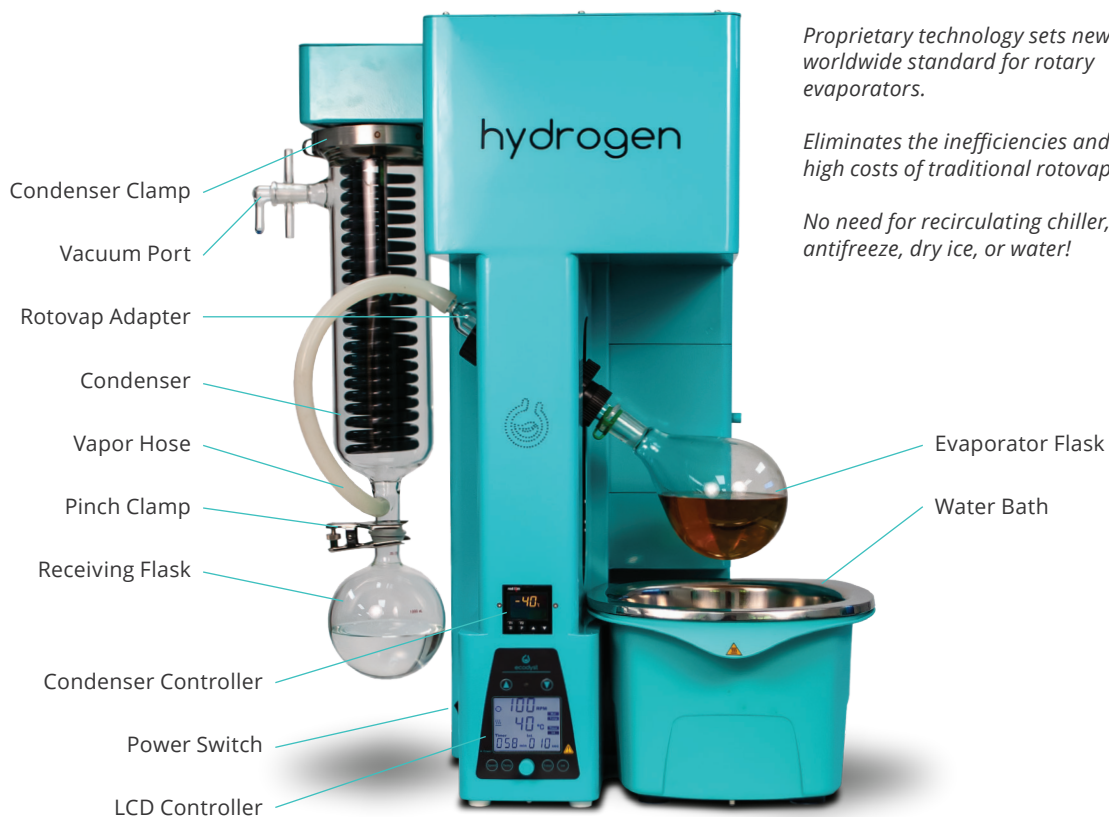
## EcoChyll Benchtop Rotovap: Key Advantages

- Small footprint
- Smart self-cooling condenser with chemically resistant coils and a huge surface area
- Always-available condenser eliminates recirculating chiller, antifreeze, dry ice, and water
- No associated operational expenses
- Eco-friendly and energy efficient
- Designed for an extremely wide range of solvents, including water and all solvents used in the cannabis and hemp industries
- Single-user operation with minimal interference required



# Hydrogen Rotary Evaporator

Up to 3L Flask



*Proprietary technology sets new, worldwide standard for rotary evaporators.*

*Eliminates the inefficiencies and high costs of traditional rotovaps.*

*No need for recirculating chiller, antifreeze, dry ice, or water!*

A true all-in-one rotary evaporator system, the Ecodyst Hydrogen is a remarkably compact apparatus that redefines what rotovap technology can achieve. Condensing the entire footprint of a conventional evaporation system (chiller, rotovap, and pump) into a single instrument with a footprint of just 1.8 square feet, the Ecodyst Hydrogen offers space savings of up to 55%, making it invaluable for small-scale laboratories.

Built for convenient, fast sample dry down, the Ecodyst Hydrogen hosts an integrated self-cooling condenser and rotovap. This eliminates the need for dry ice, glycol chiller, or water condensers.

### EcoChyll Hydrogen Rotovap: Key Advantages

- Autonomous self-cooling condenser requires no user intervention after initiation
- Eco-friendly operation
- No associated operational costs
- Suite of built-in safety features
- Significantly reduced downtime

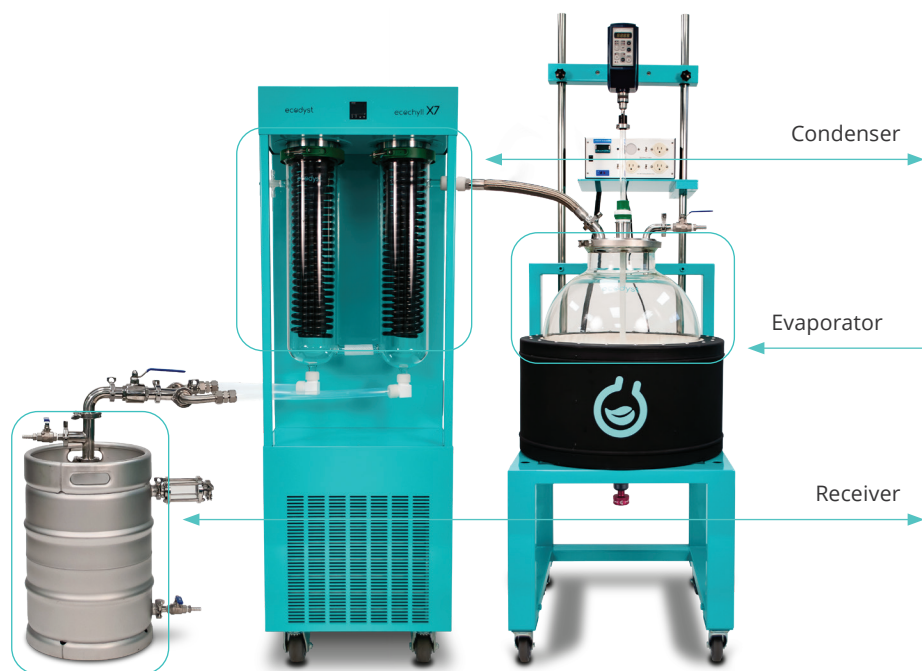
### EcoChyll X1 and Hydrogen Cooling Capacity

Evaporation Temperature		Capacity
°F	°C	BTU/h (+/-5%)
-40	-40	122
-30	-34	482
-20	-29	909
-13	-25	1257
-10	-23	1420
0	-18	2034
10	-12	2769
14	-10	3101

# Reduced Glassware Footprint

## EcoChyll X7 High-Speed Evaporator

Capacity: 50 liters



## Traditional Rotovap

Capacity: 25 liters



3x faster rates of evaporation

50 liters — 6kW

Double capacity, half energy

Complete system

Slow rates of evaporation

25 liters — 12kW

Half capacity, double energy

Requires additional external  
chiller equipment

### Reduced glassware footprint benefits



Saves time  
and money



Safety for personnel,  
products, and property



Increases  
productivity



Eliminates unnecessary  
downtime and maintenance

# Praise for Ecodyst

I know I'm not the first to say this, but our addition of the X7 was one of best pieces of equipment I've purchased in years. It runs circles around two 100L units from one of the leading companies in the industry—and it's the 72L unit. It's refreshing to buy a piece of equipment that actually performs as advertised. It's simply one of the best pieces of equipment I've purchased for our lab.

**Jack Tatum, CEO**

Isolera Extracts, North Carolina

*Customer has one 100L X7 & one 72L X7*

EcoChyll is very versatile equipment and easy to operate. At United Hemp Extracts, we have two 100L and one 50L EcoChyll X7s that we use to reclaim hundreds of liters of ethanol daily, as well as for decarboxylation of crude oil.

**Joseph Kofi Dzisam, Ph.D.**

Vice President, Lab Operations

United Hemp Extracts, North Carolina

*Customer has two 100L X7's & one 50L X7*

The Ecodyst system allows us to continuously evaporate ethanol during production, with minimal handling due to the inventive drip-feed mechanic. The bottom discharge port and simple operation of the system make it easy to work with during day-to-day operations.

**Ties van de Laar, PhD**

Senior Researcher

Becanex GmbH, Germany

*Customer has two 100L X7's & one 50L X7*

I've using Ecodyst's 50 Liter EcoChyll unit for over two years now and couldn't imagine life in the lab without it. The advantages it offers over traditional rotary evaporators is truly something special. The condenser coils reach temperature (and hold!) in only 30 seconds, cutting down warm up times by about an hour. And the discharge valve not only saves time and energy by not having to pour out of a 50-liter flask, but it also allows for Clean In Place (CIP) processes saving even more time and energy that is usually attributed to non-production overhead. We have two 100 Liter units on the way and I'm never going back to the rotovaps of old.

**Drew Ford, Chief Scientific Officer**

Starling Brands and Kase Manufacturing, California

*Customer has one 100L X7 & one 50L X7*

## Some of Our Valued Clients



ecodyst

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