

ecodyst

Accelerating the
Path to Discovery™



EcoChyll X1 & Hydrogen

Accelerating organic synthesis R&D at
North Carolina State University.

No More Dry Ice Blues

The Vincent Lindsay lab at NC State develops new catalytic modes of activation of small molecules to accelerate the synthesis of biologically relevant organic compounds. In 2021, they received a \$1.8 million grant from the National Institutes of Health to investigate the chemistry of cyclopropanones, a class of highly reactive chemicals that can be employed as starting materials for a range of biologically active compounds. As would be expected for a lab performing a lot of organic synthesis, they also perform a lot of evaporative separations, which means their lab is stocked with rotary evaporators.

Prior to 2021, the Lindsay lab used dry ice condensers, which were only as reliable as the supply of dry ice. As Dr. Lindsay said: *“Some days in the building there is no more dry ice, so we used to not be able to evaporate or concentrate on using the minimum amount of dry ice. Now we don’t have to do this anymore and we can just keep working.”*

“

We use the EcoChyll X1 to accelerate the evaporation of solvent mixtures which we often do in organic chemistry, actually we constantly do. The X1 allows us to avoid the use of dry ice. It’s quicker and allows us to accelerate our research.

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Dr. Vincent Lindsay,
Assistant Professor, Dept. of Chemistry
at North Carolina State University

Why Not Use A Recirculating Chiller?

Recirculating chillers are slow, inefficient, and have relatively low cooling capacity. Whereas it can take over an hour for a recirculating chiller to pull down to -10°C , the EcoChyll X1 and Hydrogen do so in just one minute! This not only reduces start up and run times, but saves a substantial amount of energy. Data from the University of Oxford shows that the Hydrogen all-in-one rotary evaporation system uses 60% less electricity than a rotary evaporator and recirculating chiller.

That time savings is a critical factor for a high-throughput synthesis lab like the Lindsay lab: *“It cools really quickly, and it evaporates really quickly. Since we constantly evaporate solvents in this type of research, overall we save a lot of time.”* His students are keen on the pull down times as well. According to Zach, a graduate student in the Lindsay lab: *“You can flip the switch and immediately it’s down to -40 and you’re ready to rotovap your solvent.”*

If you need to perform a lot of evaporation, space rapidly becomes a factor as well. Combining a cooling system with a rotary evaporator in a footprint akin to a standard benchtop rotary evaporator, the Hydrogen saves a lot of space, which Dr. Lindsay is acutely aware of.

“The Hydrogen really takes less space on the bench, which is a big advantage,” he said.

You Have How Many X1s?

"We got our first EcoChyll X1 in April of 2021 so it's been a little bit more than a year now. Right now in our lab we have three different EcoChyll X1s." We suppose you can say Dr. Lindsay is a fan! He was kind enough to offer a recommendation as well: **"I would definitely recommend other chemists to have at least one EcoChyll X1 in their labs."** Thank you for your vote of confidence, Dr. Lindsay!

Hydrogen	EcoChyll X1
All-in-one rotary evaporator & cooling system	Incredibly fast & highly efficient cooling
Shortens run times	Connects to any benchtop rotary evaporator
Cools to -10°C in 1 min / -40°C in 5 min	Tankless cooling system.
Reduces electricity consumption by 50%	Cools to -10°C in 1 min / -40°C in 5 min
Smaller footprint than a rotovap & chiller	Footprint under 1 ft ² / 0.1 m ²
Eliminates the need for ALL coolants or dry ice	No dry ice, no coolants to replace
	Virtually no maintenance

ecodyst

Highly efficient evaporation systems
from benchtop to 200 liters.

See the video interview with the
Vincent Lindsay lab on our website!



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