

**Innovation
is sweeping
every sector of
the cannabis
industry and
transforming
how companies
do business**

By Omar Sacirbey

10 Killer Technologies



MSP's dehumidification technology is also used in archives, clean rooms and indoor swimming pools. *Courtesy Photo*

It's a Wrap

COMPANY | MSP Technology | **WHERE** Huntington, New York
FOUNDED 2001 | **PRODUCT** So-called "wrap-around dehumidification systems" developed by MSP take small-plate heat exchangers and wrap them around traditional cooling coils for extra and more efficient cooling and heating of air. The system can reduce energy costs in cultivation facilities and also recapture significant amounts of water, founder **Walter Stark** said.
TARGET MARKET Indoor and greenhouse cultivators
PRICE Five figures and up.

MSP Technology had been humming along outfitting indoor swimming pools, supermarkets, archives, clean rooms and other types of businesses needing dehumidification systems. But sales began to flatten, so Stark started looking for potential new revenue streams.

Stark found it the cannabis industry. He made his first marijuana-related industry sale in 2017. Today, MSP has at least six large cultivators as clients, and all the facilities are larger than 100,000 square feet.

The heat-exchange plates cool and dehumidify warm air. This precooled, pre-dehumidified air passes twice over the cooling coils to further lower the temperature and humidity.

The main benefit of this "regenerative thermal exchange" is that air that's been previously cooled and dehumidified can be treated much more efficiently using smaller compressors that require as little as half the power of regular compressors. The job of a compressor is to raise the temperature and pressure of vapor that evaporates from coils. The energy savings can be 40% or more, Stark said.

While MSP's cannabis clients have so far been large cultivation facilities, Stark said the company can outfit small, craft facilities as well.

Larger projects can run in the hundreds of thousands of dollars, but craft grows can cost in the high-five- or low-six-digit range, Stark said.

The good news is that many utilities offer significant rebates—some approach close to 50%—to businesses that buy MSP's wrap-around technology. "Rebates from utilities can help customers recover a big portion of the cost, but they also give the product legitimacy," Stark said.

Drain Brain

COMPANY United Science | **WHERE** St. Croix Falls, Wisconsin
FOUNDED 2009 | **PRODUCT** The DrainDroyd is a stainless-steel piece of equipment that removes waxes from cannabis-extracted oils significantly faster than typical dewaxing equipment.
TARGET MARKET Extractors and product manufacturers
PRICE \$14,000-\$20,000, depending on add-on features

A fundamental post-extraction step is dewaxing, whereby waxes that have accumulated in extracted oils are filtered out. Typically, dewaxing is accomplished by dissolving the oil in ethanol and chilling it to subzero temperatures. The wax precipitates at low temperature, leaving the cannabinoids in a solution that is subsequently filtered to remove the precipitated waxes. Because traditional filtering is so slow, the ethanol solution warms up, and the wax that is supposed to be removed often redissolves in ethanol. This creates the need to filter more than once in the case of all solvent-based extraction methods, including butane, ethanol and CO₂.

United Science founder Jon Thompson wanted to accelerate the process and saw that one of the weak links in conventional dewaxing was so-called Buchner funnels, through which extracted oils flow during the filtering process. Narrow and made from glass, the funnels at best can handle only a slow throughput that can take hours—and, at worst, can break, leaving potentially thousands of dollars of oil stuck in the filtering machines.

Thompson developed a funnel that is wider and made from stainless steel. Because it's wider and more durable than glass, the DrainDroyd, as Thompson dubbed his invention, can process 4-5 liters of oil in 30 minutes or less. Conventional equipment with Buchner funnels can take hours, Thompson said.

Since the DrainDroyd hit the market in late 2017, more than 1,000 have been sold, Thompson said. About half of those have gone to cannabis companies and most of the rest to businesses in the food, beverage and chemical industries.



The DrainDroyd accelerates oil dewaxing. *Courtesy Photo*