In these conditions, sensitive cannabis plants become vulnerable to mold, powdery mildew, and bud rot (Botrytis). In addition, moisture-saturated environments inhibit the uptake of nutrients from the soil. This scenario creates further stress for the plants, which thrive only when humidity is precisely controlled.

Many growers attempt to manage humidity levels through the use of air conditioning, supplemented by the strategic placements of fans. Temperature control and air circulation can contribute to the process of moisture management, but to preserve optimum humidity levels at all times, dehumidification equipment is strongly recommended.

Like any electrical equipment, however, dehumidification systems consume energy. Depending on the variables, dehumidification demands can boost power bills by a significant and potentially disastrous percentage, if the workload is too high.

This is not an area where it makes sense to cut corners. Inadequate dehumidification can ruin crops and put otherwise well-run cannabis companies out of business. But high-efficiency dehumidification systems can protect plant health without causing excessive energy use, making them well worth the upfront investment.

The unique wraparound dehumidification systems designed by MSP Technology from Huntington, New York, have certainly earned the high-efficiency designation. Testing confirms their superior performance capabilities, wrapped in a sleek, high-tech package that delivers unprecedented levels of energy savings.

How It Works

MSP's wraparound dehumidification systems don't exploit any radical breakthroughs. Instead, they achieve impressive efficiency gains through the creative use of established technologies.

MSP dehumidification systems merge small-plate heat exchangers with traditional compressor-style dehumidification equipment, wrapping the exchangers around the dehumidifier's cooling coils to create a two-layered arrangement.

First, the heat exchangers cool and de-moisturize the air before passing it through to the cooling coils. The precooled and dried air is then circulated over and around the cooling coils, which removes still more moisture for collection and eventual reuse.

Working with cooler and drier air dramatically decreases the dehumidifier's workload, so much so that MPS units can replace standard large-sized compressors with smaller units. Energy consumption is thereby reduced by 30 to 65 percent, depending on the design of the dehumidifying system in question.

Smaller compressors are less noisy than larger compressors, which makes MPS wraparound dehumidifiers among the quietest available. These systems also have an extended lifespan in comparison to many other dehumidifiers, since they include no moving parts. Finally, these

systems are highly effective water collectors, making them useful for the recycling of water in facilities that aspire to reduce waste.

Wraparound Dehumidification and Cannabis: A Match Made in Heaven

The patented MSP dehumidification system was invented by Walter Stark, who founded MSP Technology in 2001. The adaptability, capacity, and energy-efficiency of wraparound dehumidification systems make them ideal for environments where the challenges of regulating humidity are daunting. MSP systems have now been installed in a wide variety of commercial and industrial settings, although it wasn't until 2017 that Stark decided to begin approaching cannabis growers to gauge their interest.

"The cannabis cultivation industry has one of the highest energy consumption rates," Stark noted in a 2017 interview. "Therefore, we saw our technology as helping to solve a critical problem."

Growers who rely on air conditioning systems to dehumidify their facilities may achieve decent results. Air conditioners cannot function continuously, but when in use, they can remove impressive quantities of moisture from the air in enclosed spaces. The downside is that air conditioners are energy hogs, as homeowners in sweltering climates know all too well. Consequently, full-scale dehumidification through temperature control is too costly to be viable in the long run.

There is a clear match between MPS technology and the needs of cannabis growers. Even Walter Stark has been surprised by the tremendous efficiency gains his hybrid heat-exchanger/cooling coil system has been able to exhibit, in the field and the laboratory.

Stark arranged to have his system independently tested by researchers from the Western Cooling Efficiency Center at the University of California-Davis. The testing was paid for by Xcel Energy, a western utility company, concerned about the strain on the grid caused by the prodigious consumption of large-scale cannabis facilities.

"The MSP unit was tested under conditions typical of an indoor agricultural environment," Stark explained. "The results were outstanding, showing energy efficiency far greater than competitive technologies, including other wraparound technologies."

Tapping into an Unlimited Market

So far, Stark has landed six large-scale cannabis cultivators as clients. While scaled-up versions of the wraparound system have made the early impact, MSP insists its technology can work just as well for craft growers, and the company hopes to expand into this niche soon.

In addition to the efficiency gains and the reductions in energy use, there is another factor that should make MPS Technology's wraparound system attractive to cannabis entrepreneurs. Growers who choose to install superior-quality dehumidification equipment may be eligible for

energy-efficiency rebates, which are being awarded by an increasing number of utility companies. These savings can be surprisingly substantial, possibly covering up to half the cost of equipment purchase.

Given the undeniable cost-effectiveness of the MPS system, dehumidification equipment of this type may eventually become standard in the cannabis industry. Under such a scenario, MPS wouldn't control the marketplace entirely, since competitors will be able to take advantage of the same engineering principles to produce similar products. But MPS will likely remain preeminent, secure in their status as a pioneer and an innovator.