

ECOMISTER

EVAPORATOR



Oil and Gas Industry Solutions

Next Generation Wastewater Disposal Technology



ecomister.ca

Slimline
MANUFACTURING
Engineered for the Future

LEVERAGING NATURE TO PRESERVE NATURE

The EcoMister Evaporator

Twenty five years ago, the wind and water engineering team at Slimline Manufacturing Ltd. developed the EcoMister Evaporator 1.0, the first highly effective portable Evaporator technology for the global mining industry. Since then, we have installed over 600 EcoMister Evaporator Units on sites around the globe.

The initial prototypes were developed and tested at Mascot Mine (currently owned by Barrick Gold) in 1996, in Hedley BC, Canada. The goal of the project was to harness and dramatically accelerate the natural process of evaporation, while sequestering any and all contaminants from the pond, allowing the site to undergo bioremediation, and return to its natural state.

BEFORE:



THE PROOF IS IN THE POND

The Mascot Mine in Hedley BC, in 1999. Slimline Engineers developed and tested the original prototypes between 1999 and 2003.

The original site of the tailings pond at Mascot Mine is now returned to near original condition.

AFTER:



THE SCIENCE BEHIND THE RESULTS

The EcoMister Evaporator

In designing the original EcoMister Evaporator (then called Turbo-Mister), the engineers at Slimline Manufacturing Ltd. accepted the following evidence, proven in separate studies at Virginia Tech and Ohio State University, as truths:

The smaller the water particle, the faster it will evaporate, but with a proportionate increase in the potential for “drift”. “Spray droplet size is by far the most important factor affecting drift. Spray droplet diameters are measured in micrometers. A Micrometer is 1/25,000 of an inch, and is usually referred to as a micron. For reference, the thickness of a human hair or a sheet of paper is roughly 75 microns.”



To achieve maximized evaporation while minimizing the potential for drift, the EcoMister exposes the maximum volume of water particles to air.

POWER CONSUMPTION ANALYSIS/HD30 SINGLE PACK

Calculated based on a \$0.06 US dollar per kWh

EVAPORIZATION AND PUMP EFFICIENCY FOR 7 MONTHS {210 DAYS} *

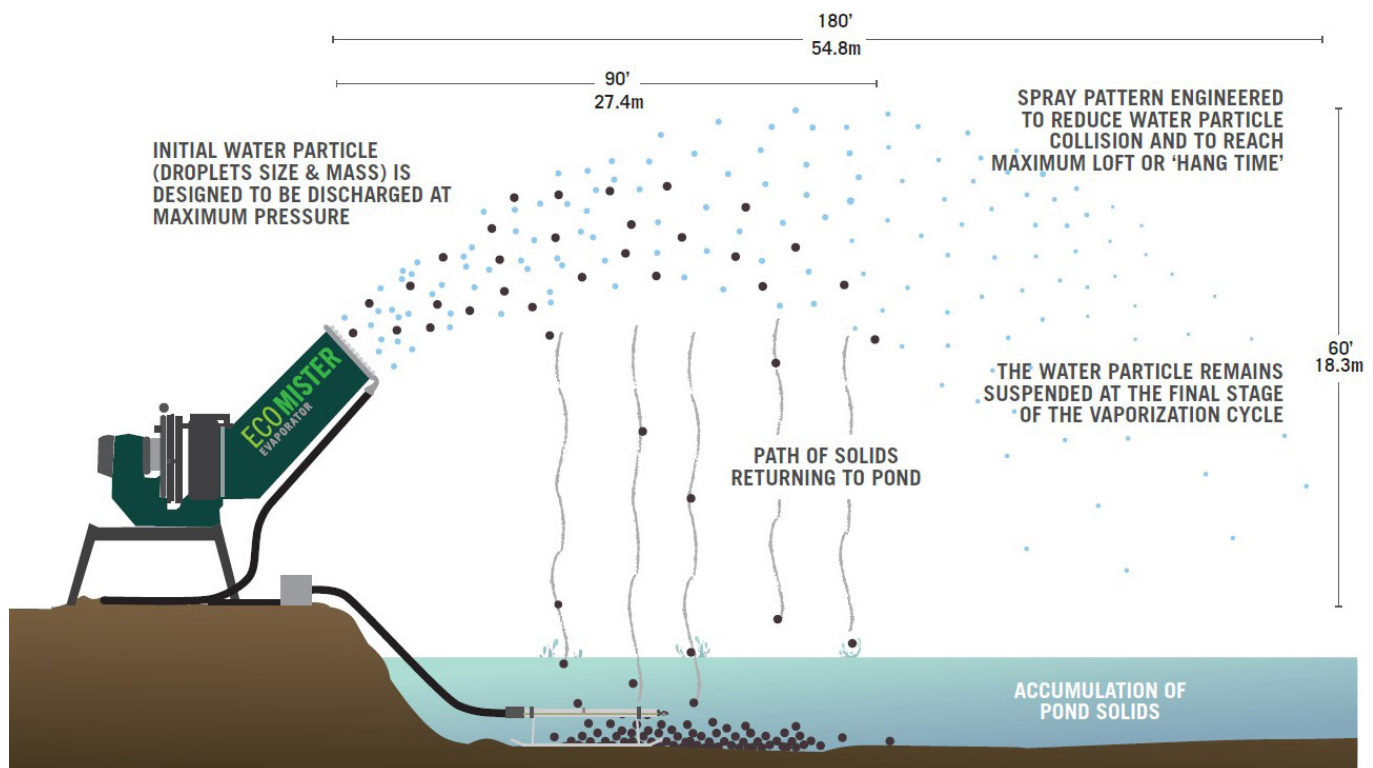
- Total Gallons Evaporated Over 210 Days= 10,019,934 US Gallons
- 5,112 total hours
- \$9,790.50 Total cost per 7 month evaporation season
- \$0.001 cost per US gallon

* Using the pan evaporation data from: <http://www.wrcc.dri.edu/htmlfiles/westevap.final.html>, a US government site, we have calculated the performance of the HD30 from the Beowawe U of N Ranch in Nevada.

PRECISION ENGINEERING. PREDICTABLE RESULTS.

The EcoMister Evaporator at Work

Harnessing the natural process of evaporation is the future of wastewater disposal. The EcoMister Evaporator series from Slimline Manufacturing uses our patented Turbine technology to loft wastewater into the air, creating optimal 'hang time', and allowing nature to evaporate the water, while the solids are returned to the pond.



The EcoMister Evaporator generates 160 km/hour (100 MPH) air velocity through the wind tunnel, the nozzles propel the liquid exposing the maximum volume of water particles to the air creating optimal hang time, outperforming the competitors.

Key Differentiators

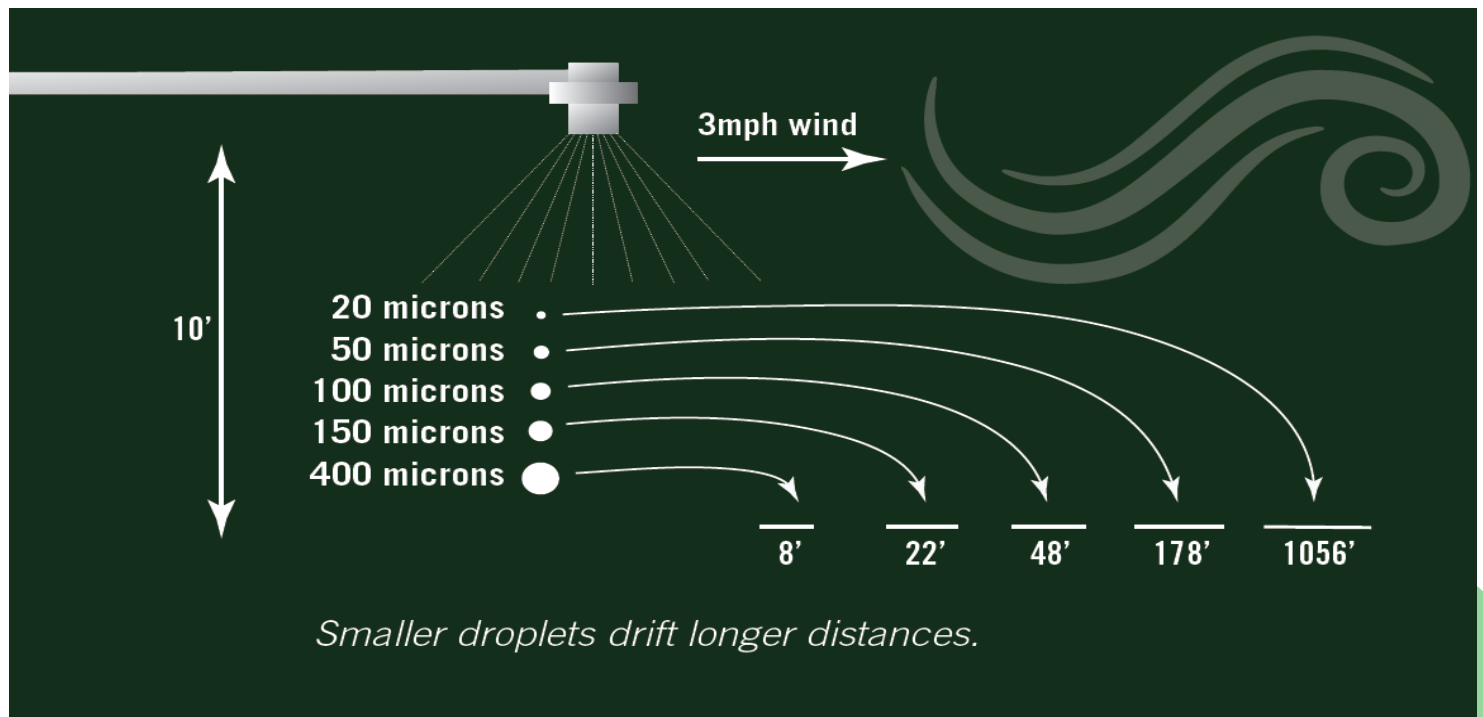
- Longevity in the Harshesht Environments
- Best in Class Evaporation
- Low Operating Costs
- Flexibility

PRECISION ENGINEERING. PREDICTABLE RESULTS.

The EcoMister Evaporator at Work

Research has shown that there is a rapid decrease in the drift potential of water droplets greater than 150-200 Microns. Droplet size where drift potential becomes insignificant depends on wind speeds, but lies in the range of 150 - 200 Microns for wind speeds of 1-9 MPH (Bode, 1984).

Based upon findings by Virginia Tech, a water droplet size of 150 microns will fall at 1.7 ft/sec, and take 16 seconds to evaporate, requiring the droplets to fall 27.2 feet to ensure evaporation. A water droplet of 100 microns will fall 0.91 ft/sec, and take 7 seconds to evaporate, which is a drop of only 6.37 feet- opening the door for drift.



OIL AND GAS CASE STUDY

Project Profile Slimline Manufacturing Ltd.

APPLIED CREATIVITY

An Energy and Wastewater Management
Success Story



Meet Joe Covello, Plant Manager at Applied LNG in Topock, Arizona. Applied LNG for over 20 years has produced, marketed and sold LNG to transportation, municipal and industrial markets across the US and Mexico. In a volatile energy sector, impacted by US and international supply & demand, economic fluctuations and environmental legislation, creativity and cost management are critical to success. For Joe and his team, avoiding the prohibitive cost of a second pond was a priority. That's when he discovered the EcoMister Evaporator system being utilized at another energy plant just up the road.

As state governmental bodies continue to work toward cleaner air regulations, Applied LNG has supported their efforts by producing LNG with renewable natural gas to lower the carbon footprint of their customers. "Fleet operators, from transit buses to garbage trucks, are all able to lower their carbon outputs, which taken as a whole is making a significant impact."



OIL AND GAS CASE STUDY

Project Profile Slimline Manufacturing Ltd.

We offer a renewable, economical and experienced alternative to carbon heavy fuels” adds Joe.

The original plant in Topock, AZ was constructed in 1997, and through proactive and consistent maintenance and upgrades, continues to perform at maximum capacity. “We built this plant twenty two years ago. Unit 1 was commissioned in 1997, and Train number two was commissioned in 2014, in response to increased demand for LNG.” This was also when Joe and team decided to invest in an EcoMister Evaporator (formerly Turbo-Mister). “We blowdown about 20,000 gallons of cooling water a day, and thanks to the efficiency of the EcoMister Evaporator, we evaporate just about that same amount every day as well” Joe says with a chuckle.

The decision to invest in the EcoMister Evaporator was economical more than anything, but regulatory compliance is never far from anyone’s focus at Applied LNG. With a 680,000 gallon pond of cooling tower water, the choice came down to building a second pond to meet the growing demand for LNG, (and the growing revenue opportunity to supply it), or find a way to avoid that enormous capital expenditure and still meet the new demand. Enter the EcoMister Evaporator. Joe explains it simply as be-

“We offer a renewable, economical and experienced alternative to carbon heavy fuels”

ing resourceful and creative: “With the limited size of our property, it was both cost and space prohibitive to build that second pond, so we experimented with the EcoMister Evaporator and it quickly proved to be the perfect solution to our challenge. Costing us only pennies a day to operate, we use the EcoMister Evaporator all winter long when natural evaporation is slower, so we know that we’re never at risk of pond overflow, and in summer we actually use it less, and still bring the water levels way down. Pond permit regulations are completely satisfied, and our costs are just so low with this process.”

The Performance of the evaporator has been, to use Joe’s word: excellent. It simply never breaks. “I definitely recommend the EcoMister Evaporator to anyone who’s looking to have a cost-effective way of removing water. We’re very pleased.”

With a third unit now in the works, and a bullish outlook for LNG over the next 20 years, Joe can count on the EcoMister Evaporator to keep water levels and operating costs down and his prospects for growth up.



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SAVE YOUR MONEY
PROTECT THE ENVIRONMENT
HARNESS THE COMBINED POWER
OF TECHNOLOGY & NATURE



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