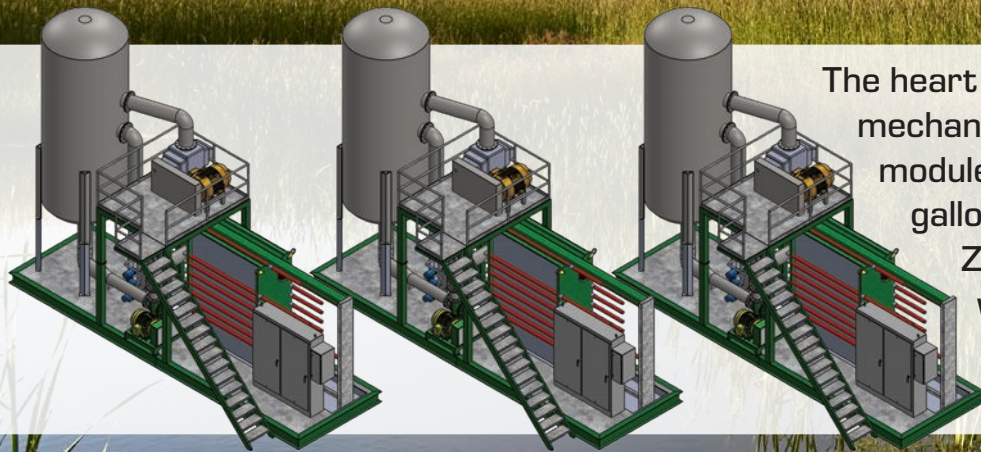


ZND™

ZERO NUTRIENT DISCHARGE

Following years of development, knowing that evaporation is *key* in nutrient management, Daritech introduces the ZND™ system. Utilizing evaporation technology, you can now remove water from manure with 100% pathogen kill utilizing no chemicals, filters, or membranes.



The heart of this modular system is Daritech's mechanical evaporation unit, with each module producing approximately 20,000 gallons of distillate per day. With the ZND™ system, you can now evaporate water from your manure at a fraction of the cost of a standard evaporation system.

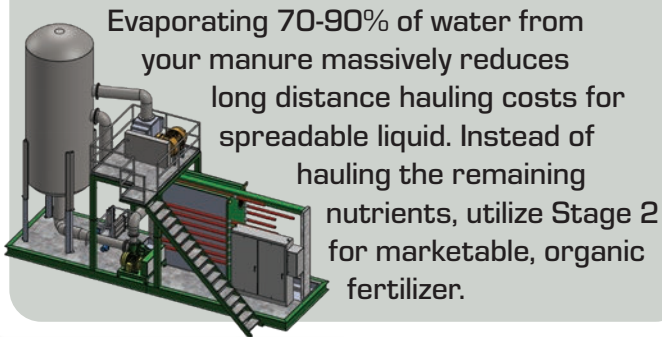
 **DARITECH** LLC

US Patents:
10,919,815
10,793,483
10,683,239

Evaporation Operation Overview

Daritech's MVR (Mechanical Vapor Recompression) System for dairy manure is designed to efficiently evaporate the water from the manure, resulting in two streams, 1) concentrated nutrients and 2) clear water distillate with a trace of ammonia. With the device operating continuously, the distillate and concentrate are removed, while a steady feed supply of concentrate from a centrifuge is added.

STAGE 1: EVAPORATOR

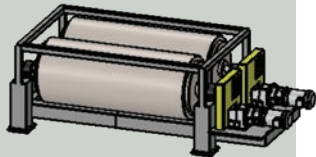


The feed material is preheated and added to a recirculation loop. This material is approximately 200°F as it enters a heat exchanger. In the heat exchanger, vapor gives up its heat

to the recirculating material. The manure concentrate then enters a flash vessel tank which is kept under vacuum, reducing the boiling point, creating evaporation. With moisture leaving, the remaining material is now more concentrated due to the water loss. The evaporated vapor is pulled through a blower which is maintaining the vacuum. The blower discharge conveys toward the condensing side of the heat exchanger.

STAGE 2: DRYER

Drying of high nutrient sludge converts all of a cow's manure into SuperO™ organic fertilizer with an N-P-K of approximately 5-3-7, depending on dairy operation.



Here the vapor condenses and transfers its heat to the recirculating fluid on the opposite side of the exchanger plates. The vapor has now become distillate,

and on its way out of the system it is passed through a smaller heat exchanger, pre-heating the feed for maximum efficiency.

Products Produced

On most dairies, approximately 80-90% of the manure fed to the system will become distillate. The distillate is overwhelmingly water but also contains some ammonia of the TKN present in the manure. This can give it a slightly cloudy appearance and odor. The ammonia can optionally be removed by the use of aeration or a stripping tower. If recovery is desirable, a scrubbing tower can be added to produce ammonium sulfate.

The remaining sludge nutrients are at a concentration of 10-20% of the initial starting volume. This can be more cost effectively transported over greater distances than would have been required by the original non-concentrated manure.



SuperO™ organic fertilizer crystals

With the optional 2nd Stage, the evaporator sludge can be sent to a drier to produce SuperO™ organic fertilizer crystals.

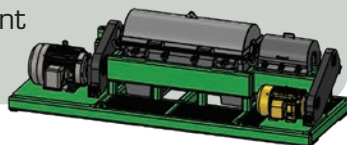
Energy Cost

The electrical consumption of the MVR is approximately 0.15 kWh per gallon of water evaporated. At \$0.10/kWh this is 1.5 cents per gallon of volume reduction.



Centrifuge Separation

Daritech's Centrifuge is a critical preparatory process to provide high nutrient flow for evaporation. In addition, it removes sand and fiber to decrease wear and tear and allow for less system maintenance. Decanter centrifuges are self-contained machines that use high rotational speed (centrifugal force) to separate solids and liquids, making it an invaluable component of any manure management system.



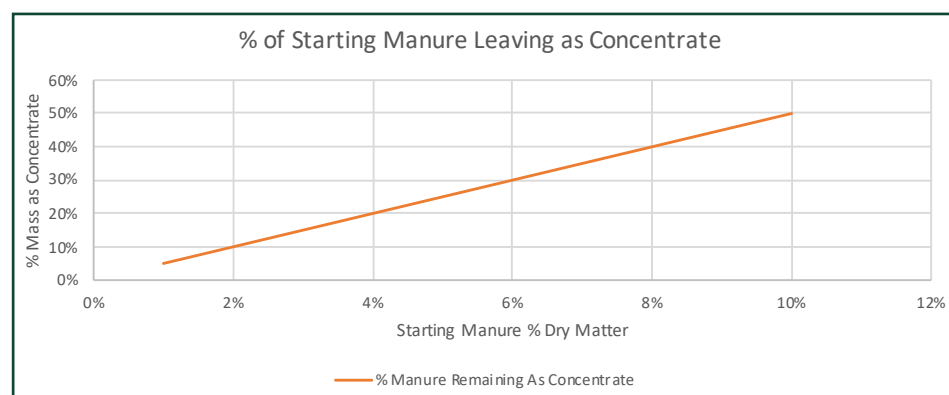
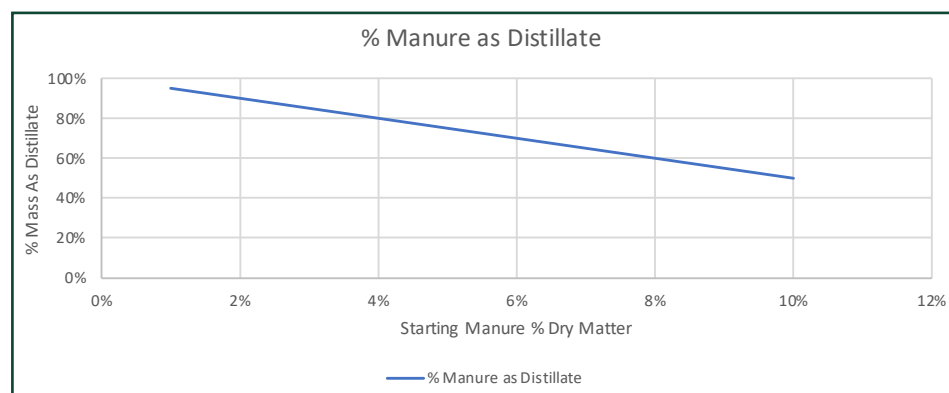
Post Centrifuge Inputs:

Starting Concentration %	Input Capacity	% Manure as Distillate	% Manure Remaining As Concentrate
3%	23,529	85%	15%
4%	25,000	80%	20%
5%	26,667	75%	25%
6%	28,571	70%	30%
7%	30,769	65%	35%

System Weights & Measures:

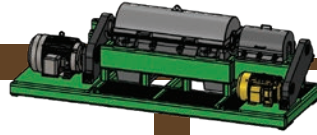
ZND Components	Length (in)	Width (in)	Height (in)	Weight (lbs)
Blower Unit	61.5	72	41	4,836
Plate Heat Exchanger	204	45	126	22,700
Plate Heat Exchanger	18	8	26	180
Plate Heat Exchanger	29	13	432	265
Flash Vessel	84	84	312	4,408
MVR Skid Base	396	114	16	3,680
Recirculation Pump & 60 HP Motor	48	36	40	2,365
Controls Cabinet With Sensory	48	18	72	1,960
Stainless Steel Piping, Valves, Supports & Fittings	-	-	-	8,420
Total Size (without stairs)	396	96	312	48,814

Shared Boiler & CIP Skid: 8' x 12', 1980lbs (1mm Btu boiler, CIP tank, recirculation pump and controls)



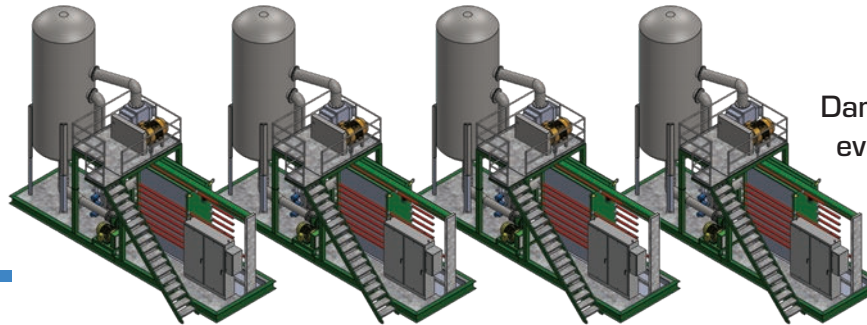
Liquid manure enters system from primary separation or process

CENTRIFUGE SEPARATION



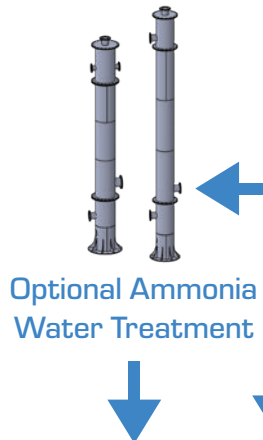
Solids for Export or Spread

MVR EVAPORATION



Daritech's modular evaporator units

Low Level Ammonia Water



Optional Ammonia Water Treatment

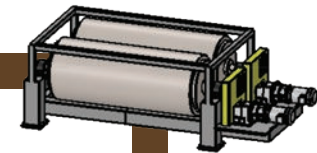
Lagoon

MANURE REDUCTION



Up to 85% Reduction in Liquid Manure Hauling Expenses

Optional Solids Dryer



SUPERO
ORGANIC FERTILIZER



Reduce liquid manure sludge into marketable organic fertilizer

Autonomous Daily Operation

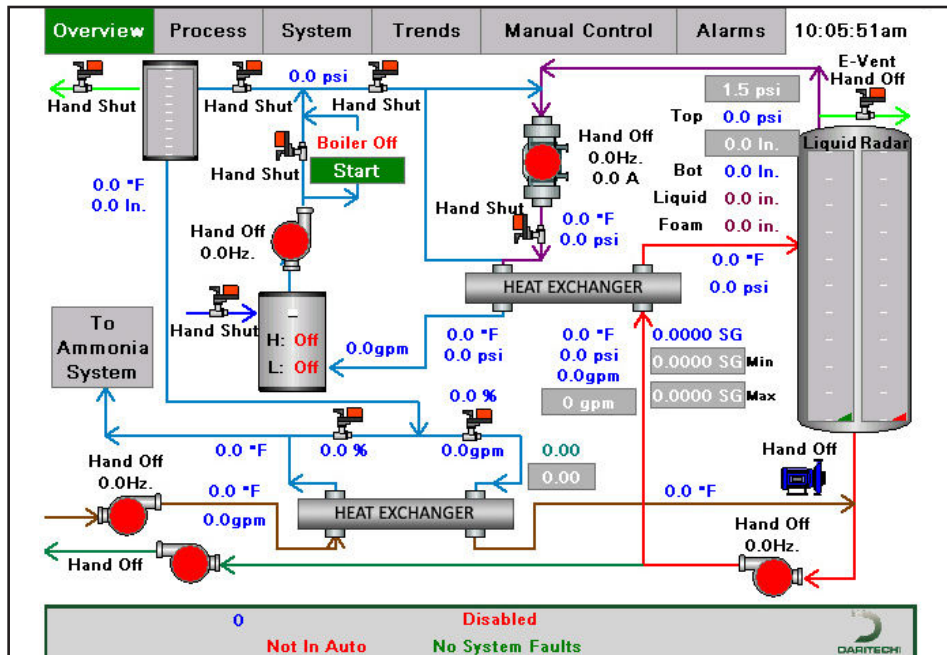
The Daritech MVR system operations and maintenance is designed for simplicity, ease, efficiency, and autonomous operation. The automation provides remote signaling of system status, alarms, and service requirements ensuring maximum uptime. All operation is controlled via a PLC from which an operator may adjust setpoints as desired to meet the needs of the dairy.

DT Automation

Built in our own ETL Listed panel shop, our industrial PLC touch screen interface provides high end control of all our automated equipment. Our systems feature mobile device monitoring and control, text message alerts, and remote technical support.

Construction:

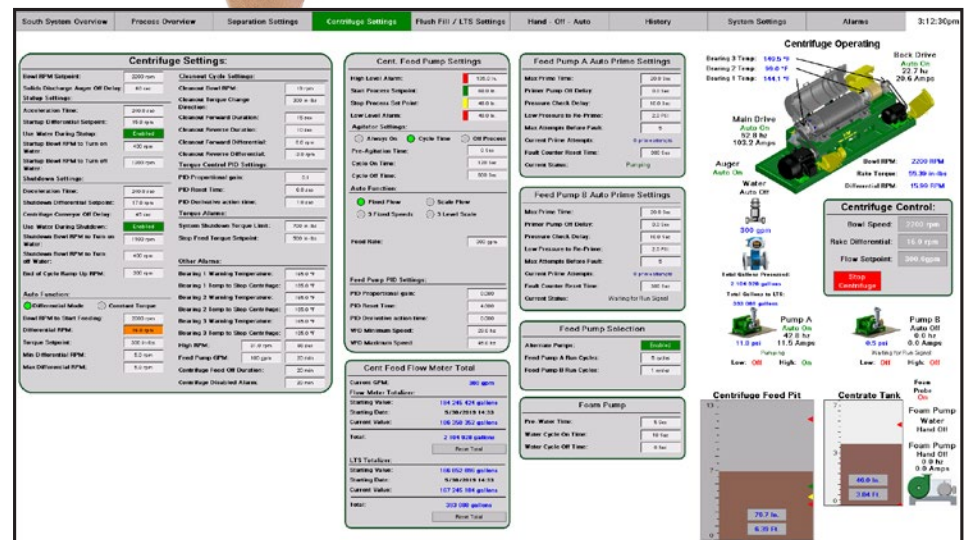
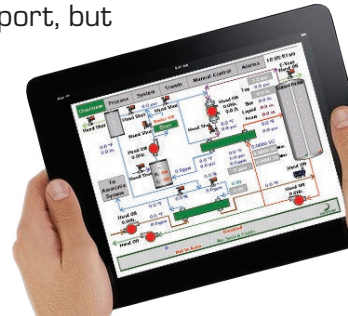
- cETL certified to UL508a and CSA 22.2 No 14
- Conformally coated components prevent corrosive gases from damaging circuit boards



- Tinned copper wire throughout prevents oxidation
- Ferruled control wires at every connection

Programming & Software:

- Extensive libraries have been developed to provide a feature rich, simple to use control system. Standardized software allows for rapid development along with greater support for multiple users.
- Using a proven relationship with Verizon wireless creates a secure, dedicated network that not only allows better support, but gives an operator control of every aspect via mobile device.





Why Daritech?

For over 30 years, Daritech has been the most complete manure management manufacturer in the industry. From separation, pumping or barn cleaning with flush or scrape, we understand process flow and the manure management challenges of today's modern dairies.



DT360 Rotary Separator



DTX Externally Fed Separator



BeddingMaster In-Vessel Composter



GreenLine Pumps



DT Roller Press



Daritech Centrifuge



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