

Heat Source: Liquid Propane Gas Evaporation Rate: 10 GPH

PxxV4-10



PxxV4-10

ENCON THERMAL EVAPORATOR

- Handles Different Wastewater Streams Simultaneously
- Easy to install and operate
- Dramatically Reduces Disposal Volume and Cost

ENCON Thermal Evaporators and Distillation Systems are engineered to provide you with an effective and economical method of wastewater minimization. All ENCON systems are assembled with the highest quality components, ensuring years of trouble free operation.

Available in a wide range of standard capacities, 8 to 400 gallons per hour, these systems have a compact footprint and can exhaust clean vapor to atmosphere or capture clean condensate with an optional condenser.

The V4 integrated control and monitoring system offers control of every aspect of the evaporation process and features a 7" widescreen touch panel. The mist eliminator captures unwanted contaminants before exhausting, thus enabling you to comply with today's stringent emissions regulations.

Model Number Nomenclature

- P** Heat source, in this case Liquid Propane Gas
- X** Tank material of construction. Standard is 316ss. Higher alloys available.
- X** Heat exchanger material of construction. Standard is 316ss. Higher alloys available.
- V4** System controls, in this case Koyo Click PLC & Automation Direct C-more HMI
-
- 10** System evaporation rate based on tap water, in this case 10 GPH

MADE IN THE USA



PxxV4-10 SPECIFICATIONS

PHYSICAL	EVAPORATION UNIT	CONDENSER UNIT	
System Dimensions (L x W xH):	68" x 28" x 72"	108" x 58" x 92	
System weight (empty):	650 lb	910 lb	
Crated dimensions (L x W x H):	72" x 38" x 80	118" x 62" x 92	
Crated system weight:	1300 lb	1500 lb	
Condenser size:	N/A	4"Ø x 12"L	
Cooling water inlet/outlet diameter:	N/A	1-1/2" FNPT	
Draft inducer outlet diameter:	N/A	8"	
Draft inducer:	N/A	0.33 HP, 1725 RPM	
Exhaust blower outlet diameter:	4"		
Exhaust stack diameter:	4"		
Exhaust blower:	200 CFM, 1/2 HP, 1725 RPM		
Evaporator feed connection:	1" FNPT		
Evaporator residue connection:	4" Flanged Cap with 1-1/2" FNPT coupling		
Heat exchanger:	Elevated with Cylindrical Firing Chamber		
Tank capacity:	40 gallons @ Low Level, 55 gallons @ Auto Level, 65 gallons @ High Level		
Evaporation capacity:	10 Gallons/Hour, 240 Gallons/Day, 1680 Gallons/Week, 87600 Gallons/Year		
UTILITIES	EVAPORATION UNIT	CONDENSER UNIT	
Cooling water:	N/A	13 GPM @ 90 °F (6 RT)	
Burner type:	Direct spark ignition. Units 96gph and larger include FM gas train.		
Total system throughput:	118,750 Btu/hr		
Gas supply pressure required:	7-14" of Liquid Propane Gas		
Gas connection:	3/4" FNPT		
Electrical requirements:	110 VAC, 1 PH, 60 Hz, 15.8 FLA		
FABRICATION	316SS VERSION	6& MOLY VERSION	HASTELLOY VERSION
Tank:	316L Stainless Steel, 14 ga	6% Molybdenum, 14 ga	Hastelloy, 14 ga
Heat exchanger:	316L Stainless Steel, 11 ga	6% Molybdenum, 11 ga	Hastelloy, 11 ga
Mist eliminator pad:	316L Stainless Steel		
Skins and lids:	Polished 304 Stainless Steel, 18 ga		
Insulation:	All 6 sides rated to 450F, R = 4.3		
CONTROLS	ALL UNITS		
Burner controller:	Honeywell with Spark Ignition, loss of airflow shutdown		
Temperature controls:	Type J Thermocouples with 4-20 mA analog input Monitoring of liquid and heater temperature		
Control inputs:	Frequency Shift Level Probes and Exhaust Fan Proving Switch Redundant Low Level Shut-off		
Remote connection:	Ethernet port for direct connection by ENCON Engineers UL Listed, NEMA 4, PLC Control Panel		
Control panel:	7" widescreen touch panel Human Machine Interface (HMI) Main power selector switch and indicator lights for main power, heater(s) and alarms Full data logging, alarm management, and trend screens		
QUALITY	ALL UNITS		
Pressure test:	Pressure leak test performed on every heat exchanger		
Leak test:	Dye penetrant test performed on tank welds		
I/O simulation:	All I/O and controls are fully tested to insure accuracy/functionality		
Combustion Analysis:	Test for excess oxygen and gas exit temperature		
Warranty:	Two years for parts and workmanship issues		

Process Description of Liquid Propane Gas ENCON Evaporator

1. Wastewater is collected in a holding tank, sump or pit upstream of the evaporator.
2. Water is either pumped or gravity fed into the evaporator through a 1" NPT fitting on lid.
3. The evaporator is equipped, as standard, with three level probes:
 - a) The Low Level Probe acts as a safety.
 - b) The Auto Level Probe controls water level in tank and the burner(s) operation (on/off) when in Auto Run Mode.
 - c) The High Level Probe acts as a redundancy to the auto level.
4. Upon initiation of Auto Run Mode, wastewater water will flow into the evaporator tank. The wastewater feed will stop and the burner(s) will light when the Auto Level Probe is covered.
5. Once the fluid comes to a boil and the evaporation process begins, the liquid level in the evaporator will begin to fall. The feed/refill sequence will activate a set amount of time after the Auto Level Probe is uncovered. When the feed cycle is initiated, fresh wastewater will be fed into the evaporator until the fluid reaches the Auto Level Probe.
6. When activated, the burner(s) will fire into the combustion area of the heat exchanger. The hot gases travel around the vertical tubes inside the heat exchanger until they reach the insulated chimney outside the evaporator tank. There are two ways the flue gases and water vapor may be vented:
 - a) If the customer has chosen an Evaporation Unit (vent to atmosphere), the hot gases are pulled back into the Evaporator above the liquid level and drawn across the water's surface by the exhaust blower. The exhaust blower pulls the combined water vapor and flue gases through the mist eliminator and pushes them through the stack to the outside of your building.
 - b) If the customer has chosen the "closed loop" Distillation Unit (condenser package), the hot gases are not pulled back into the Evaporator. Instead, the flue gases are vented separately up their own exhaust stack. The blower pulls only the water vapor through the mist eliminator and pushes it through the connection from the blower exhaust to the inlet side of the condenser, which is horizontally mounted, on the backside of the evaporator tank. The water leaving the condenser is separated from the air stream and directed to an automated condensate sump while the air stream is returned to the evaporator.
7. As long as there is wastewater available to the evaporator, this process will continue until either the fluid temperature reaches the target endpoint temperature or the cycle timer counts down to zero. If the feed tank level probe detects a low level condition, the evaporator will de-energize the heaters and wait for the feed tank level to recover.
8. The concentrated fluid is purged from the evaporator, after which a new evaporation cycle may commence.

THE ENCON ADVANTAGE

High Quality Components and Superior Design



V4 Integrated Control and Monitoring System

The most advanced control and monitoring system for thermal evaporators in the industry. The NEMA 4 PLC control panel with touch panel provides continuous monitoring of flue gas, chimney and liquid temperatures as well as continuous probe diagnostics. Offers datalogging, alarm management, remote access through browser or app and control system integration through Modbus TCP/IP.

7" Widescreen Touch Panel

The large 7" touchscreen combined with a completely redesigned HMI offers control of every aspect of the evaporation process while at the same time being completely intuitive for daily operation.



Evaporator Safety

Critical components are operated by the control circuit through the PLC with appropriate control interlocks. The safety circuit monitors all emergency STOP conditions. The control circuit is interrupted by the safety circuit which includes a safety relay (with force guided contacts) and a redundant contactor setup.



Level Sensing

Tuning fork level probes provide reliable auto-filling and shutdown operations even in conditions of severe foam. The durable level probes are made of stainless steel for excellent corrosion resistance. Hastelloy level probes are available for highly corrosive applications.

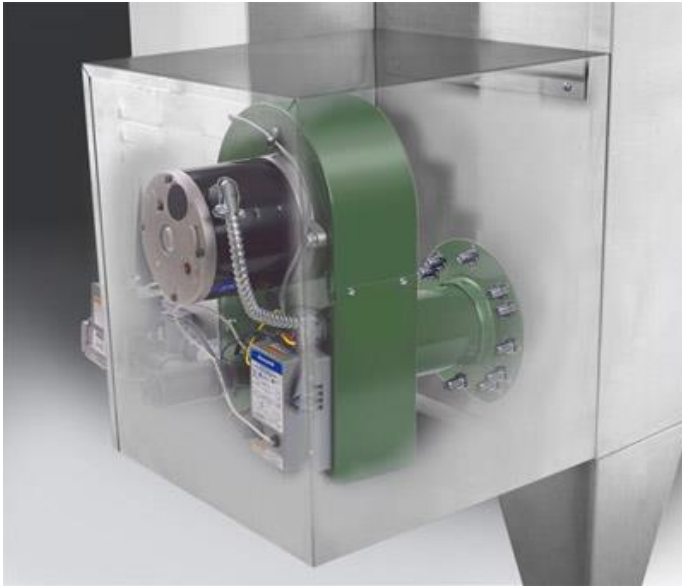
Blower System

Thermal units, 72 gallons per hour and smaller, use a 1725 RPM, TEFC motor with class B insulation rated for high temperatures. The unit's design provides extremely quiet operation with as much as three times the longevity of 3450 RPM motors. Larger units use variable frequency drive motors which maximize motor longevity.



THE ENCON ADVANTAGE

High Quality Components and Superior Design



Forced Draft Blower

Each gas or propane fired system consists of a burner with an integrated blower, that along with the induction from the exhaust blower, supplies make-up air for combustion. It also includes: Honeywell controls, gas pressure gauge, airflow detection and lockout, spark ignition, and a redundant main valve and burner contactors for maximum safety.

FM gas trains and gas flow transmitters are standard on systems 96gph and larger. The stainless steel burner protection shroud is mounted on a track hanger for ease of removal and reattachment. Other combustion heat sources such as oil, diesel and waste oil are available. Non-combustion heat sources such as electricity, steam and waste heat are also offered.

Mist Eliminator System

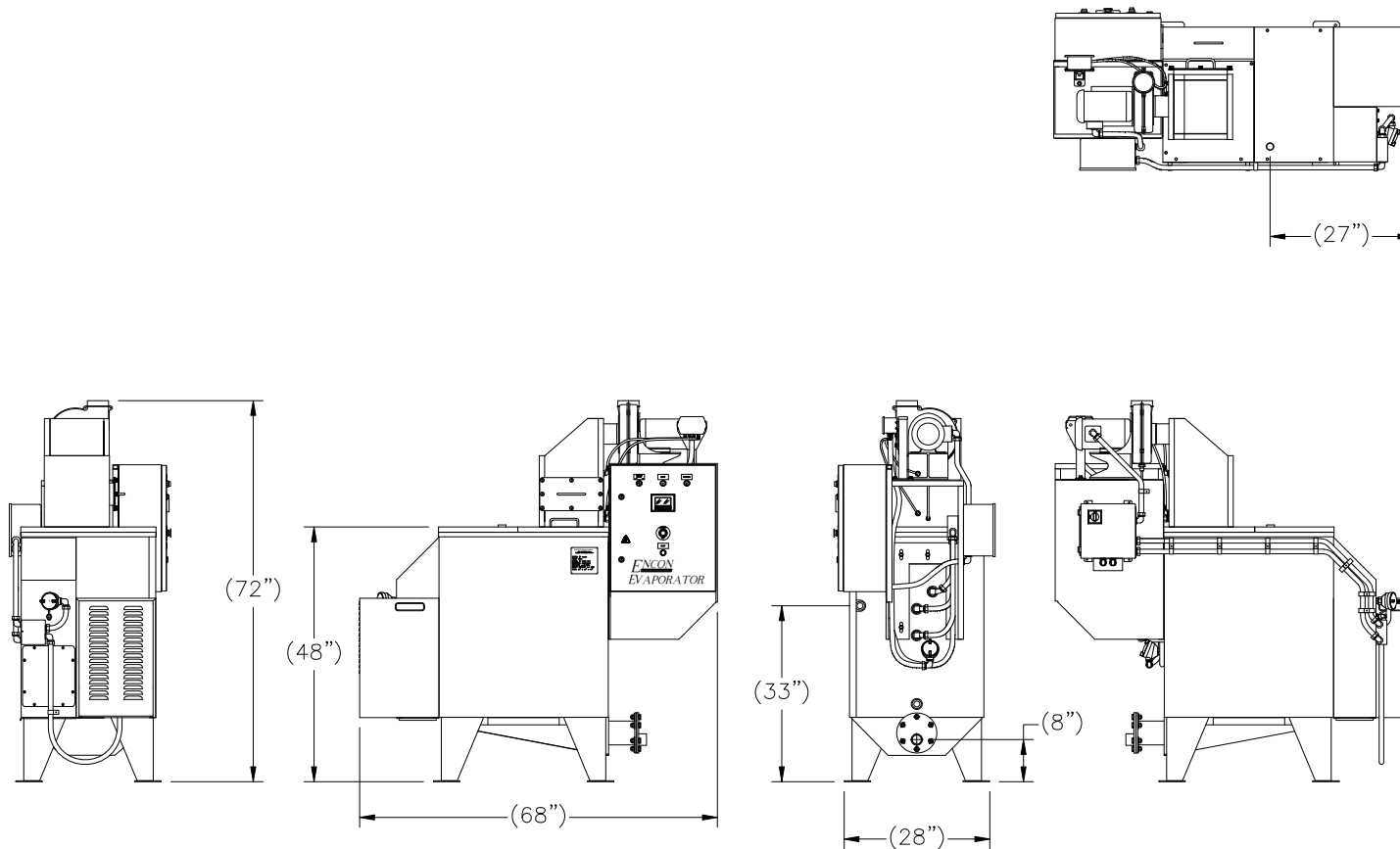
The stainless mesh filter is designed for easy removal from its compression fir housing. The system is monitored for contaminant loading and airflow, which is interfaced to the control panel for maximum operator feedback.



Cleanout Flange

Large six inch cleanout* with flange cover and a 1 ½" NPT fitting for pump connection and ease of residue removal.

* Four inch cleanout on 8 and 10gph models



APPROVED	RET	3/5/14	PART NAME: NPxx-10 & W0xx-12 EVAPORATION UNIT DIMENSIONAL LAYOUT				
ENCON Evaporators 1368 HOOKSETT ROAD, UNIT #9 HOOKSETT, N.H. 03106 CONFIDENTIAL			PART NUMBER:	3005348	REV —	SCALE NTS	SHEET 1 of 1
			UNLESS OTHERWISE SPECIFIED: X.XXXX = ±.0005 X.XXX = ±.005 X.XX = ±.015 X.X = ±.030 DRESS AND DEBURR ALL SHARP CORNERS AND EDGES				MACHINED FINISHES = .250 ∠ = 0° - 30' THREADS = CLASS 2 UNIFIED SERIES
THIS DRAWING IS SENT TO YOU SUBJECT TO RETURN UPON DEMAND, AND WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO OUR INTERESTS. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.			DO NOT SCALE DRAWING				
			FORMAT A				