Vapac®

Delivering Humidification Advantage

ELECTRODE BOILER RANGE

Electrode Boiler Range Features and Benefits

The New VapaNet electrode boiler steam generator offers superior quality with reliable trouble free operation

- **Seven capacities**
  5 – 90 Kg/hr steam generation
- **Close control and comfort control versions**

On / Off control		(LE)
Water Level control	20 – 100%	(LE)
Pulsed Energy control	8 – 100%	(LEP)

- **Electrical supply options**
  200 - 440 volt, Phase + Neutral or 2 Phase, 3 Phase
- **User display**
  At a glance, the front mounted LED indicator display clearly shows the state of operation the humidifier. Easy to read symbols make interpretation clear and precise. Initial set up on site is also simple – plug in jumpers select water type and input control signal, and all other operations are pre-set at the factory. Commissioning could not be easier.
- **Cable entry provision**
  All Vapac cabinets are equipped with a removable gland-plate in the base of the electrical compartment.
- **Control network**
  VapaNet systems have the ability to communicate with any Building Management System incorporating the LON open system protocol as well as other Vapac products to create a seamless network of control.
- **Run and Alarm interface**
  Remote indications as volt-free contacts are available to show Run and / or Alarm.
- **Master / Slave option**
  VapaNet allows for a maximum of 10 cylinders to communicate within a Master / Slave system with an interconnecting two-core cable.

  Maximum duty 450kg/hr. The Master would be a fully proportional humidifier (LEP) and the slaves would be On / Off devices (LE).
- **Foam protection**
  The VapaNet control system will prevent the onset of foaming by introducing corrective pumped drain to maintain steam production with very little interruption.
- **Front access for all components**
  Ventilated front opening steel cabinet with hinged doors provides total access for cylinder change and service. Internally separated electrical section maintains the demarcation between electrical and mechanical sections.
- **Stainless steel drain tray**
  The mechanical section incorporates a stainless steel drain tray that is designed to last the full life expectancy of the humidifier.
- **Drain pump**
  All Vapac humidifiers have the unique feature of a drain pump capable of a maximum discharge rate of 16 l/min. This is an integrated feature to control foaming within the cylinder.
- **Control features**
  The humidifier can be controlled directly from either a duct or room mounted sensor, supplied by Vapac or any other leading brand or an external signal.

  All models can be operated from a Potentiometric signal, a LON network signal or from any of six standard proprietary DC analogue signals.

  There are safety interlocks for fan operation, airflow switch, high limit Hygrostat, or any safety device so the Humidifier can be configured to operate as one with the dynamics of the air conditioning system.
- **Water quality operating range**
  The VapaNet humidifier is capable of operating with raw mains water.

  Hardness 50 – 500ppm
  Conductivity 80 - 1000µs
  pH 7.3 –8, Pressure 1-8 bar.

Optional Accessories

- **Alpha-Numeric Display**
  The Alpha-Numeric Display can be factory fitted to the cabinet as a permanent installation or supplied as a de-mountable accessory which can be mounted remotely from the plant or as a plug in device to aid service interrogation.
- **Communication cable**
  A three metre cable complete with compatible plugs is available for master / slave control connection. Maximum length 100 metres.
- **General**
  A full range of compatible accessories enables interaction with: mains electrical power, mains supply and drain water connection, control components, steam distribution via single or multipipe arrangements and mounting frames for indoor and outdoor location. Contact your local Vapac representative for full details.

Operating Limits

Ambient Air Temperature	5°C to 35°C
Water Temperature	1°C to 30°C
Duct Pressure	+2000Pa to -600Pa

Water Supply

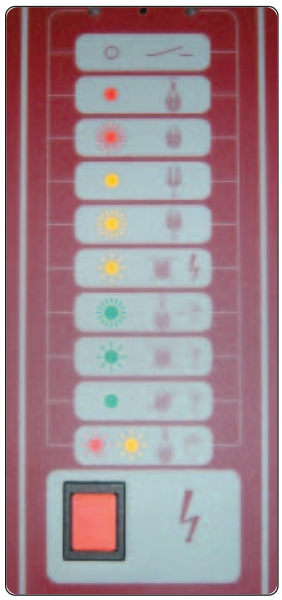
Conductivity	80 - 1000µs
Ph	7.3 to 8.0
Silica	0
Supply Pressure	1 to 8 bar
Hardness	50 to 500ppm

Water and Drain Connections

Supply Water	¾ BSP
Drain Outlet	35mm OD

LE(P) Electrode Boiler Humidifiers

The VapaNet control system is designed with user interaction in mind. The LED display on the door front incorporates simple and clear signals. The indicators will show: Unit off, On-line, Standby, Drain fault, Feed fault, Over current, Service interval, Service routines operational or completed. It is easy for the user or engineer to gain instant information about the performance of the Humidifier.



This is a LON Mark device and will interact with any compatible open architecture Building Management System.

Commissioning could not be easier. The Humidifier is factory set to perform at optimum levels. After all the normal checks, the commissioning engineer can use jumpers to set the input control signal and the supply water quality.

LEP Close Control Model

Solid state relays adjust the supply of energy to the cylinder and thereby maintain a rapid response to steam output. The unique Pulsed Energy control provides infinitely variable steam output from 8% up to 100% of full capacity by electronically switching power to the electrodes. The LEP model can be used as the master in a larger Master / Slave system to give maximum performance and flexibility.

Typically, the VapaNet Pulsed Energy (LEP) can be used in close tolerance applications where the need to accurately follow the system dynamics and load profile is a requirement.

LE Comfort Control Model

Ideally suited where there is a need to maintain humidification within given tolerances, but where a brief delay in response, as the system adjusts to changing humidification demands, is acceptable. The VapaNet Water Level range is designed to meet these requirements, incorporating an intelligent combination of Feeding, Boiling and Draining to minimise wastage of water and energy. Water Level control technology gives a performance turndown of between 20% and 100% of designated unit performance. The LE model can be configured as an On / Off device and used as a slave in a larger system, or as a proportional control device in stand-alone applications.

Steam Output and Electrical Requirements

Model		On / Off and Water Level Control (20-100%)								
		LE05	LE9	LE18	LE30	LE45LV	LE45	LE60	LE60	LE90
Steam output Min/Max	Kg/hr	1 / 5	1.8 / 9	3.6 / 18	6 / 30	9 / 45	9 / 45	12 / 60	12 / 60	18 / 90
Number of cylinders		1	1	1	1	2	1	2	2	2
Number of steam outlets	dia mm	1 / 35	1 / 35	1 / 35	1 / 54	2 / 54	1 / 54	2 / 54	2 / 54	2 / 54
Voltage	V	200 / 440		200 / 440		200 / 230	380 / 440	200 / 230	380 / 440	380 / 440
Electrical supply		Phase + N or 2 Phase		3 Phase						
Maximum Power rating	Kw	3.8	6.8	13.5	22.5	33.7	33.9	44.8	45	67.8
Full load current range (per phase)	Amps	19.5 / 9	35.5 / 16	40.5 / 18.5	68 / 31	102 / 88	54 / 46	136 / 118	71 / 62	108 / 92
Maximum fuse rating range (per phase)	Amps	32 / 16	63 / 25	50 / 32	80 / 50	2 x 63	63	2 x 80	2 x 50	2 x 63

Model		Pulsed Energy Control (8 - 100%)								
		LE05P	LE9P	LE18P	LE30P	LE45PLV	LE45P	LE60P	LE60P	LE90P
Steam output Min/Max	Kg/hr	.4 / 5	.72 / 9	1.5 / 18	2.4 / 30	3.6 / 45	3.6 / 45	4.8 / 60	4.8 / 60	7.2 / 90
Number of cylinders		1	1	1	1	2	1	2	2	2
Number of steam outlets	dia mm	1 / 35	1 / 35	1 / 35	1 / 54	2 / 54	1 / 54	2 / 54	2 / 54	2 / 54
Voltage	V	200 / 440		200 / 440		200 / 230	380 / 440	200 / 230	380 / 440	380 / 440
Electrical supply		Phase + N or 2 Phase		3 Phase						
Maximum Power rating	Kw	3.8	6.8	13.6	22.5	34	34	45	45	67.8
Full load current range (per phase)	Amps	23 / 11	41 / 19	47 / 22	78 / 36	118 / 102	62 / 53	156 / 136	82 / 72	124 / 106
Maximum fuse rating range (per phase)	Amps	32 / 16	63 / 25	50 / 32	100 / 50	2 x 80 / 2 x 63	80	2 x 100 / 2 x 80	2 x 50	2 x 80

See Installation & Operation Manual for full electrical specification

Electrode Boiler Guide Specification

1. Supply a Vapac VapaNet self-contained, electronically controlled, self-generating wall mounted electrode boiler type steam generator.

Nominate **a)** VapaNet LE– On / Off Control
b) VapaNet LE– Water Level Control
c) VapaNet LE–P Pulsed Energy Control

Each humidifier uses electrode boiler technology and is capable of producing --- kg/hr of steam at atmospheric pressure.

2. The internal control circuit within the humidifier shall be 24V a.c. The internal control PCB is 9Va.c. The drain pumps are 230Va.c. powered from the internal primary transformer.

3. The steam shall be produced at atmospheric pressure in a polypropylene cylinder, the material of which shall be bio degradable and able to be recycled. The steam connection from each cylinder shall be 35mm or 55mm dependant on the nominated model.

a) The cylinder is a disposable, all-welded manufacture incorporating specially constructed electrodes housed within.

b) The cylinder is a splittable, clamped construction incorporating specially constructed electrodes housed within.

4. The humidifier includes a 240Va.c. drain pump that shall be used to drain the cylinder for anti-foam protection and normal drainage cycles. The pump is housed underneath the base drain pan of the mechanical compartment, and discharges at a maximum rate of 16.8 l/min at 50Hz power supply (17.2 l/min at 60Hz) per cyclinder.

5. The humidifier is configured to accept various power supplies all of which would enable the humidifier to deliver the nominated capacity.

Voltage: 200, 230, 380, 415, 440.

Supply: Single phase plus neutral, Two phase, Three phase.

6. The Humidifier is a LON Mark control device and can communicate with any proprietary open architecture Building Management System that is compatible with LON protocols.

The humidifier can accept an externally generated control signal direct from a sensor or a BMS. The control signal shall be: Potentiometric, 0-5V, 0-10V, 0-20V, 2-10V, 1-18V, 4-20mA, Network.

The controller incorporates volt-free contacts to indicate Unit Run and Unit Alarm when connected to a suitable interface.

7. The humidifier shall have the capability to introduce safety interlocks from the air conditioning system such as Fan Interlock, Air Flow Switch, and High Limit Hygrostat via a dedicated security circuit.

8. The Humidifier has a separated electrical and mechanical section suitably sealed to prevent spillage leaking. The drain pan is constructed from 316-grade stainless steel. The body of the cabinet is constructed from galvanised mild steel finished in a polyester paint to BS00A05. The cabinet is ventilated to ensure heat generated inside is suitably dissipated from vents in the back of the top panel. The doors to the cabinet shall include two positive close locks requiring a key to open. A key is provided with each unit.

9. The Humidifier incorporates an LED indicator panel to the front (left-hand) door, showing the user or engineer the operational state of the system. The LED's indicate: Unit Off, Unit on line and operational, Unit on standby, Drain fault, Unit stopped, Feed fault, Unit stopped, Over current, Unit stopped, Service interval expired, Service routine operational, Service routine completed, Constant output active.

10. To avoid earth leakage, the power supply will be disconnected from the electrodes when the system is in drain mode.

11. All Humidifiers comply to local and national water and plumbing codes, and incorporate a fill cup with a 25mm air gap on the water feed line to prevent back feed and contamination of the water supply line. The drain circuit discharges through a drain trap vented to the steam cylinder compartment.

12. The water feed to the Humidifier incorporates a strainer and flow restrictor to suit connection to water supplies with pressures in the range 1 to 8 bar.

Options

13a. An Alpha-Numeric Display is incorporated into the (left hand) front door as a factory fitted item to allow password access to three levels of administration.

User level,
Service engineer level,
Systems engineer level.

13b. An Alpha-Numeric Display is incorporated into a separate box complete with a two metre lead and plug to allow remote mounting of the display. This display can be permanently mounted or used as a service tool and disconnected from the apparatus after completion of work.

14. A three metre communication cable is available for master / slave operation. The cable has factory fitted plugs to each end for ease of connection.

15. A Room Distribution Unit mounted directly onto the Humidifier cabinet is available for all single cylinder models, 05, 09, 18, 30,45. The same Room Distribution Unit can be mounted remotely from cabinet and steam lines, and power cabling can be run between.

Dimensions and Weights

Cabinet Model		LE05 LE05P	LE9 LE9P	LE18 LE18P	LE30 LE30P	LE45LV LE45PLV	LE45 LE45P	LE60 LE60P	LE90 LE90P
Number of Cylinders		1	1	1	1	2	1	2	2
Height	**mm**	676	676	676	810	810	810	810	810
Width	**mm**	430	430	430	520	990	520	990	990
Depth	**mm**	320	320	320	415	415	415	415	415
Dry Weight	**Kg**	34	36	39	40	73	40	74	75
Wet Weight	**Kg**	48	50	66	67	126	67	127	128
Room Distribution Unit (Fitted)									
Height	**mm**	205	205	205	205	-	360	-	-
Width	**mm**	430	430	430	602	-	842	-	-
Depth	**mm**	265	265	265	360	-	360	-	-
Dry Weight	**Kg**	6	10	12	14	-	16	-	-

Vapac® is an internationally registered trademark
Vapac equipment is covered by international patents

The manufacturer reserves the right to change the design or specification of the equipment described in this brochure without prior notice.

0411052/Feb 03

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