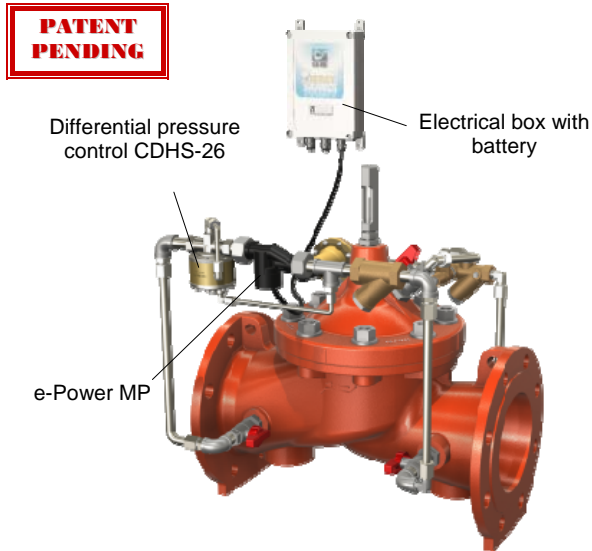


▶ Power from Flowing Water



The e-Power MP combines an electrical generator and a CDHS-26 differential pressure control pilot limiting differential pressure across the e-Power MP.

The electrical box combines a rechargeable battery and an electronic battery charge management system with a 6 V power supply.

The management of the differential pressure and the production of energy within a single compact product is a CLA-VAL innovative patented idea.

▶ Description

- **Autonomous system combined with a lead acid battery supplying 6 VDC**
- **Continuous 360 mW power supplied by the lead acid battery with a differential pressure of 6 mhd and flow 6.5 l/min**
- **The e-Power MP generates 390 mW to the battery using the pressure drop across the valve**

The CLA-VAL e-Power MP is an electrical generator utilising available hydraulic energy directly from the water distribution network. The e-Power MP is installed into the by-pass of the CLA-VAL valve.

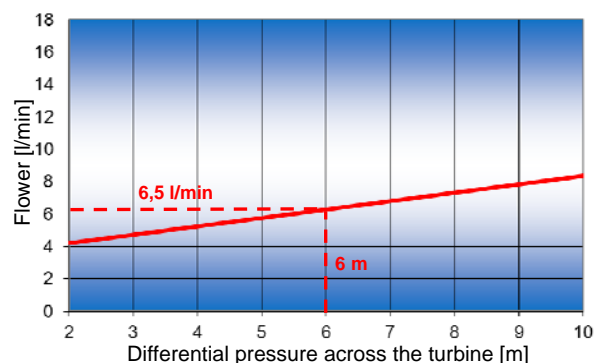
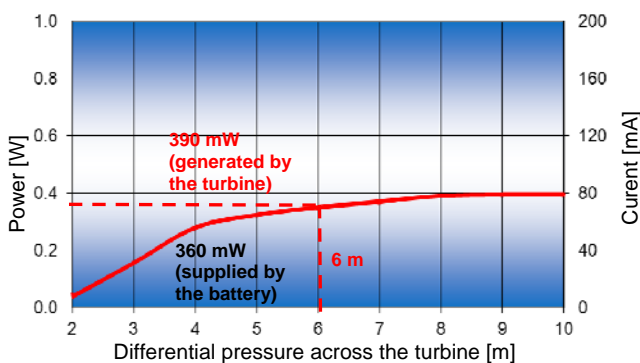
The e-Power MP powers various devices located within close proximity of the valve. For example GSM-GPRS communication systems, sensors or valve controllers such as CLA-VAL e-Smart/L11 or e-Timer.

At the optimum operating point of the turbine, ($dP = 6$ mhd), the rechargeable battery delivers the following voltage, output voltage, current and power:

| Output voltage | Amps Continuous (60 min/h) | Amps peak (1 min/h) |
|----------------|-------------------------------|------------------------|
| 6 V | 60 mA 360 mW | 4.0 A 24 W |

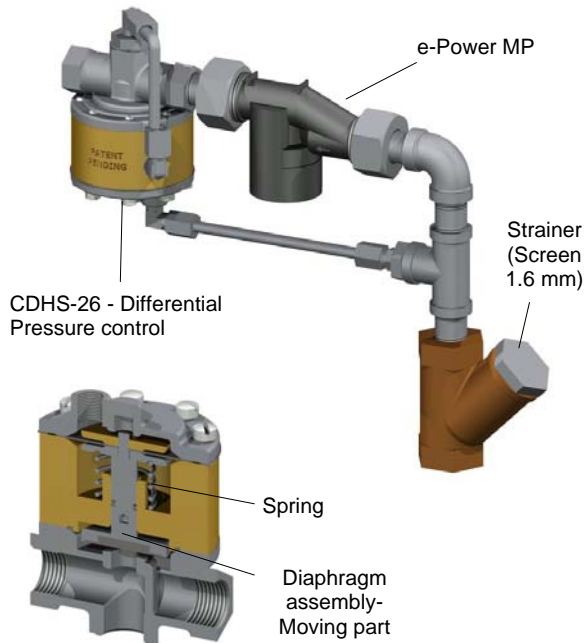
▶ Performance Curves of the Turbine

The electrical power produced by the e-Power MP recharges the battery. The power (mW) to charge the battery is the multiplication of the current (mA) and the voltage (V). The efficiency between the power supplied by the battery and the generated power by the turbine is 92 %.



Note: The power supplied in the graph above is achieved by optimizing the power supplied by the turbine for each differential pressure. **The connection to the valve is recommended with size 3/8" to minimize the head loss.**

▶ e-Power MP Operation



Differential pressure control: The e-Power MP is combined with a differential pressure control CDHS-26. This pilot controls differential pressure across the e-Power MP, hence controls the electrical power generated by the e-Power MP.

Diaphragm assembly: The differential pressure control spring load is factory set at 0.6 bar (6 mhd).

The diaphragm assembly, which is the moving part, regulates the e-Power MP by maintaining a constant differential pressure across the turbine. The hydraulic system is completely balanced.

Printed Circuit Board (PCB): Designed with the latest technology and manufactured from high quality electronic components the PCB is fully tropical coated to ensure maximum humidity protection.

▶ Electrical Management

Power Management: The electrical power of the e-Power MP varies depending on system conditions (see performance curves of the turbine). 3 mhd differential pressure generates 180 mW power

A sophisticated algorithm called "Maximum Power Point Tracker (MPPT)" adjusts voltage and current to generate maximum power at all times. As voltage generated by the turbine, varies with differential pressure conditions, the MPPT algorithm 'Tracks' and optimises delivered charging power.

Charging mode: The battery is charged by the e-Power MP using the PCB for energy optimisation. The "Floating" charging mode permanently adjusts charging voltage. It significantly extends battery life cycle.

Battery characteristics: The lead acid waterproof battery VRLA (Valve Regulated Lead Acid), according to IEC 60896-2 standard, is trouble-free transportation for rail, road, sea and air transportation in accordance with IATA, DGR clause A67.

Lifetime (20°C) is between 5 and 7 years according to the type of use (after 2000 cycles remaining capacity is 80%). Shipped factory charged, the discharge rate is around 2% per month for a period of 24 months (20°C) allowing prolonged storage prior to use. Battery is completely recyclable.

▶ Technical Data



Output voltage 6 V:

Electrical Specifications

- A continuous 60 mA (360 mW)
- A peak 1 min/h 4.0 A (24 W)

Battery 6 V:



- 6 V / 1.2 Ah (standard)
- Charging voltage 6.7 Volt
- Gelled lead acid waterproof battery VRLA, maintenance free
- Maximum operating temperature 55°C

Raccordement électrique au coffret:

Moulded 3 meters cable

Température de fonctionnement:

- 10°C à + 80°C (PCB only)



Operating pressure:

Other Specifications

PFA 16 bar

Valve size and model (mm):
(Piping 3/8")

- GE/AE DN 32-50 bosses tapped Rp 3/8"
- NGE DN 50-80 bosses tapped Rp 3/8"
- NGE DN 100 bosses tapped Rp 1/2"
- NGE DN 125-200 bosses tapped Rp 3/4"
- NGE DN 250-600 bosses tapped Rp 1"
- GE/AE DN 65-80 bosses tapped Rp 1/2"
- GE/AE DN 100-150 bosses tapped Rp 3/4"
- GE/AE DN 200-400 bosses tapped Rp 1"

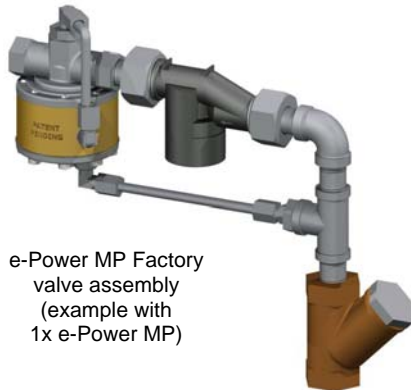
Protection:

IP68

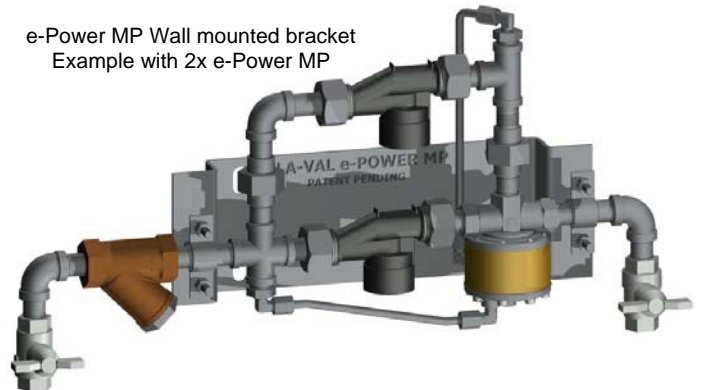
▶ Typical e-Power MP Assembly

The e-Power MP can be assembled in different configurations: directly factory build on the valve or wall mounted bracket. CLA-VAL's quality assembly is constructed from totally rigid piping of diameter 3/8".

CLA-VAL's quality field retrofit includes an assembly kit, piping and fittings. CLA-VAL provides standard retrofit kits for all valve sizes. Kits are designed for simple and easy retrofit assembly.



e-Power MP Factory valve assembly (example with 1x e-Power MP)



e-Power MP Wall mounted bracket Example with 2x e-Power MP

▶ Typical Applications

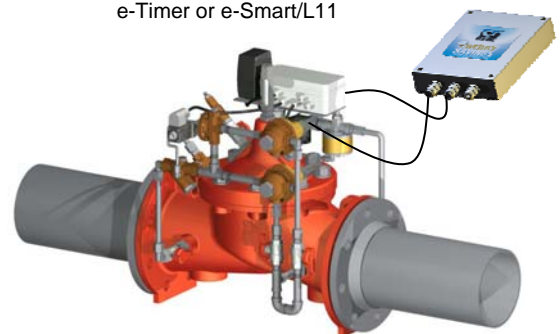
Powering the CLA-VAL SERIES ECO

The e-Power MP powers all CLA-VAL ECO series products. For example a CLA-VAL valve controlled by a CLA-VAL e-Timer or e-Smart/L11 electronic controller.

The CLA-VAL e-Timer is a time based controller which is easy to use and IP68 rated.

It can be operated in manual mode with a magnet. This is the perfect product for chambers with high flooding risks.

e-Timer or e-Smart/L11



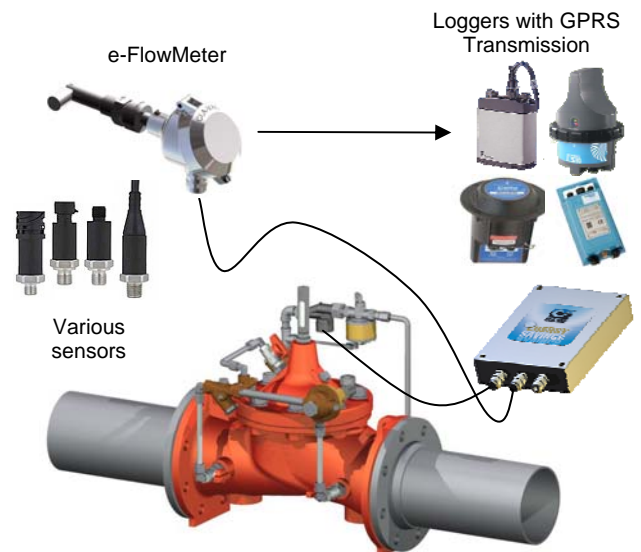
Powering data loggers, sensors and GSM-GPRS transmission

The e-Power MP allows data loggers with GSM-GPRS transmission to become fully autonomous.

Powering various sensors such as pressure, reservoir level or flow when combined with a GPRS system the e-Power MP allows multiple daily transmission and/or dial in possibilities. This offers tremendous added value for system monitoring.

The e-Power MP provides autonomous power to all measurement systems requiring power 6 V, hence avoiding battery issues and related environmental impact.

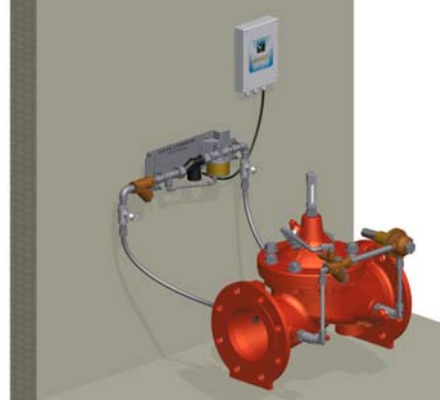
The CLA-VAL e-FlowMeter is a Vortex flow meter connected to a pulse reading data logger for very simple flow monitoring. This system is autonomous and retrieves flow information if the logger has a GSM-GPRS communication feature.



► How to Order an e-Power MP?



Version FM1



Version WM1




| | | | | | | | | |
|---------------|---------------------|--|--------------------|---|---|---|--|---|
| 300048 | Main family product | | | | | | Number | |
| | FM1 | Factory mounted (1x turbine + electronic box + 3 meters cable) | | | | | Mounting version | |
| | WM1 | Wall mounted (same as FM1 + bracket + screws) | | | | | | |
| | | V6 | Output voltage 6 V | | | | Output voltage | |
| | | | L03 | 3 meters cable (turbine to junction box) | | | Electrical cable | |
| | | | L10 | 10 meters cable (turbine to junction box) | | | | |
| | | | | N | Valve NGE | | Valve model | |
| | | | | G | Valve GE | | | |
| | | | | A | Valve AE | | | |
| | | | | XXX | Indicate valve size (mm) 032 / 040 / 050 / 065 / 080 / 100 125 / 150 / 200 / 250 300 / 350 / 400 / 450 / 500 / 600 | | Valve fittings / adapter | |
| | | | | | XXX | Without downstream pressure control (AQUA 80-451) | | Options |
| | | | | | DPC | With downstream pressure control (AQUA 80-451) | | |
| | | | | | Code version | WM | 2x 2 meters pressure steel wire armored hose size 3/4" (1 turbine) or 1" depending on DN For longer supply line contact CLA-VAL | Pressure steel wire armored hose (for WM version) |
| | | | | | | T02 TXX | | |

| | | | | | | | | | |
|---------------|------------|-----------|------------|----------|------------|------------|------------|--|-------------|
| 300048 | WM1 | V6 | L10 | N | 100 | XXX | TXX | 300048-WM1-V6-L10-N-100-XXX-TXX | Example No. |
|---------------|------------|-----------|------------|----------|------------|------------|------------|--|-------------|

Example customer choice: e-Power MP, wall mounted with (1 turbine + electronic box + 3 meters cable + bracket + screws), output voltage 6 V, 10 meters cable (turbine to junction box), valve NGE, valve size 100 mm, without downstream pressure control (AQUA 80-451): **300048-WM1-V6-L10-N-100-XXX-TXX**

⚠ Spare parts or mounting tools are not included.

► How to Order an Additional Component?

| No. CLA-VAL | Modèle CLA-VAL | | |
|--|--|--|----------------------------------|
| *CKCDHS26-STD-01 | Including diaphragm, disc assembly and o-rings |  | Repair kit for CDHS-26 control |
| 970692 | 6 V / 1.2 Ah |  | Lead acid rechargeable battery |
| MEXMPCARTE-6V-12V | Output 6 V and 12 V |  | PCB |
| MEXSILIC-04 | 5 g |  | Silica gel crystal sachet |
| MEXPOW02-03 MEXPOW02-10 | With 3 meters electric cable With 10 meters electric cable |  | e-Power MP turbine |
|  CLA-VAL | 2 meters 3/8", with connections + 1 meter additional hose 3/8" 2 meters 1/2", with connections + 1 meter additional hose 1/2" |  | Pressure steel wire armored hose |

«CLA-VAL Sales Conditions and Warranty» (document 000001DE) applies until otherwise agreed.