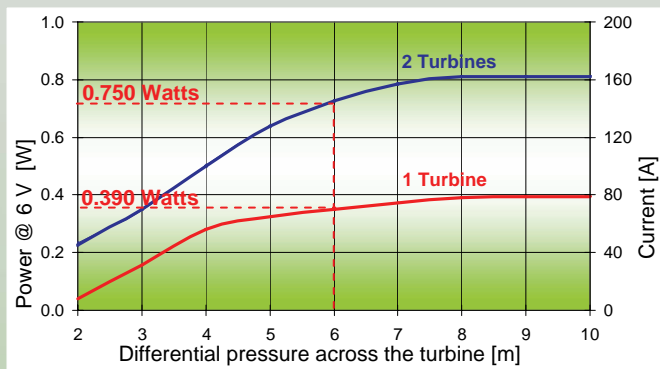
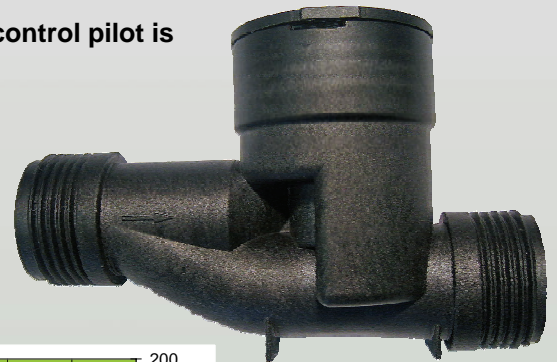


CLA-VAL e-Power MP

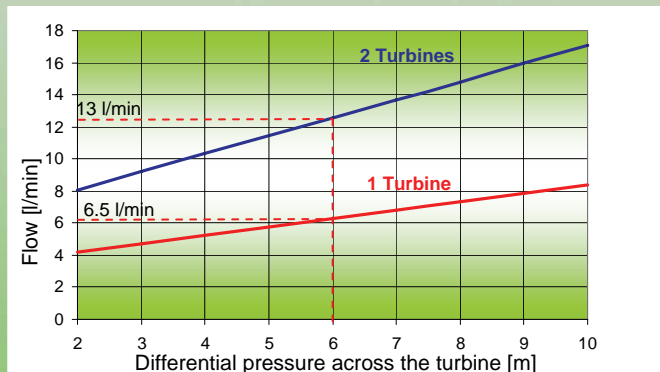
CLA-VAL Turbine

e-Power MP turbine 390 mW @ 6 V or 750 mW @ 6 V

- The e-Power MP is fitted in by-pass around a valve using the hydraulic energy of the system to generate power
- Available in 2 versions:
 - 1x e-Power MP: 390 mW at $\Delta P=6$ mhd at 6.5 l/min
 - 2x e-Power MP: 750 mW at $\Delta P=6$ m at 13.0 l/min
- Autonomous low voltage system is combined with a battery:
 - Lead battery 6 V (Standard)
 - Super capacitor 5 V
- CDHS-26 differential pressure control pilot is combined with the e-Power MP



**PATENT
PENDING**



Power from flowing water

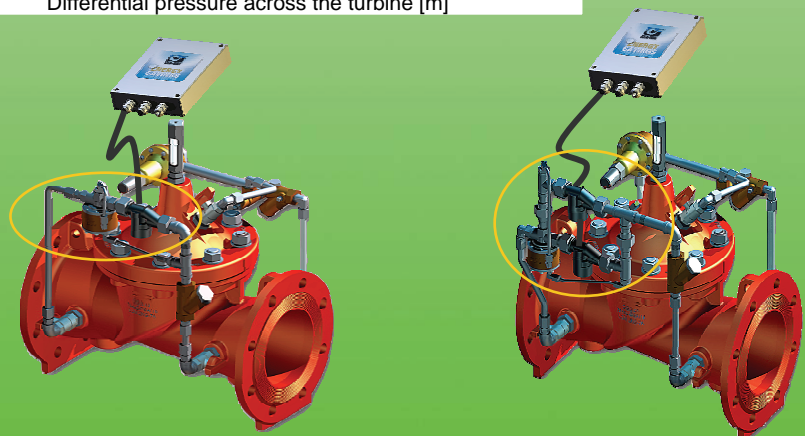
Systems powered by the e-Power MP include:

- CLA-VAL e-Smart/L11
- CLA-VAL e-Control
- GSM devices
- Sensors
- Dataloggers

*Innovation
since 1936*

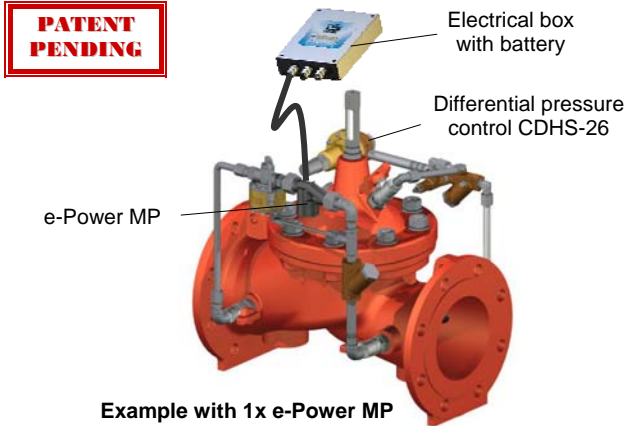


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► Power from Flowing Water



Example with 1x e-Power MP

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 5 V or 6 V power supply.

The battery or the super capacitor included in the electrical box has the following voltages:

Battery	Voltage
Lead acid 1.2 Ah (standard)	6 V
Super capacitor 150 F (option)	5 V

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

► Description

- The e-Power IP uses the pressure drop across the valve to produce the power
- e-Power MP is available in 2 versions:
1x e-Power MP or
2x e-Power MP's (in parallel)
- Autonomous low voltage system combined with a battery

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.

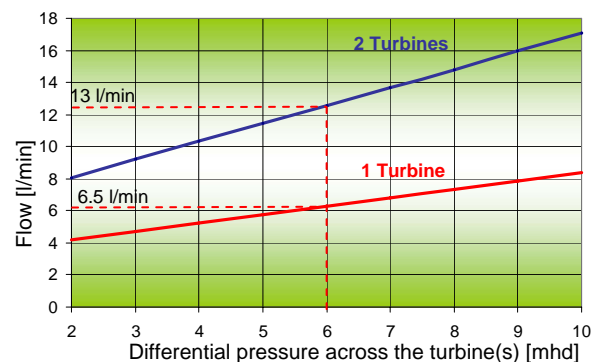
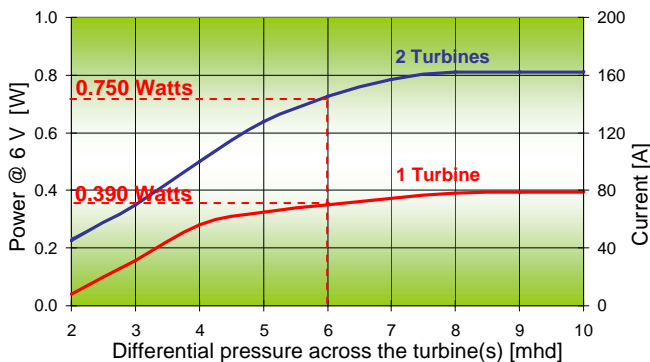
The e-Power MP powers various devices located within close proximity of the valve, like GSM-GPRS communication systems, sensors, valve controllers such as CLA-VAL e-Smart/L11 or e-Timer.

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

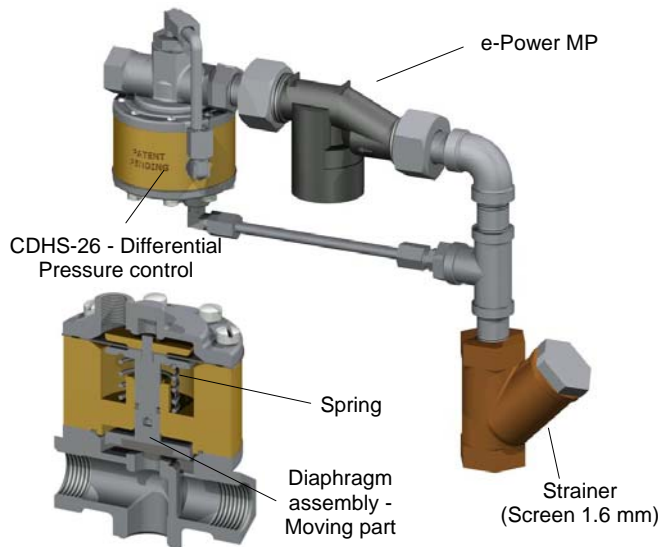
Output voltage	Amps continuous (60 min/h)	Amps low peak (10 min/h)	Amps high peak (1 min/h)
1x e-Power MP	60 mA 360 mW	180 mA 1080 mW	1.5 A 9 W
2x e-Power MP	120 mA 720 mW	360 mA 2160 mW	1.5 A 9 W

► Performance Curves of the Turbine

The electrical power produced by the turbine(s) can recharge a 6 V battery or 5 V super capacitor. The power (W) to charge the battery is the multiplication of the current (A) and voltage (V).



▶ 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 (1x e-Power MP), and 390 mW (2x e-Power MP).

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 or the super capacitor are both 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.

The latest technology from a super capacitor allows over 500'000 charging cycles and 10 years life time at 20°C.

▶ Technical Data:



Output voltage for 1x e-Power MP:

Electrical Specifications

- Amps continuous 60 mA (360 mW)
- Amp Min. peak 180 mA (1080 mW)
- Amp Max. peak 1.5 A (9 W)

Output voltage for 2x e-Power MP:

- Amp continuous 120 mA (720 mW)
- Amp Min. peak 360 mA (2160 mW)
- Amp Max. peak 1.5 A (9 W)

Battery 6 V:



- 6 V / 1.2 Ah (Standard)
- Charging voltage 6.8 Volt
- Gelled lead acid waterproof VRLA
- Max. operating temperature 55°C

Super capacitor 5 V:

- 5 V / 150 F
- Charging voltage 5.4 Volt

Electrical connection:

- Moulded 3 meters cable

Temperature range:

- - 10 °C to + 80 °C (PCB only)



Operating pressure:

- PN 16 bar standard

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

- GE/AE DN32-50 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



CLA-VAL e-Power MP

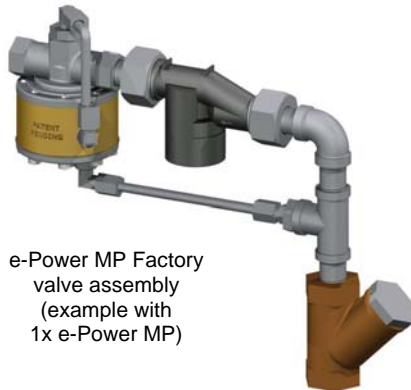
Turbine e-Power MP: 390 mW / 6 V

Turbine e-Power MP: 750 mW / 6 V

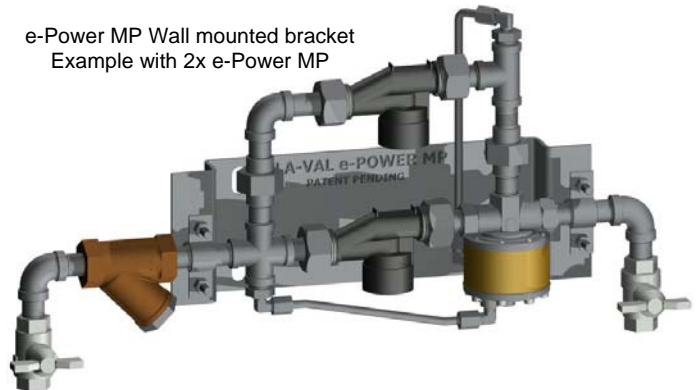
► Typical e-Power MP Assembly

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 for the CLA-VAL e-Power MP

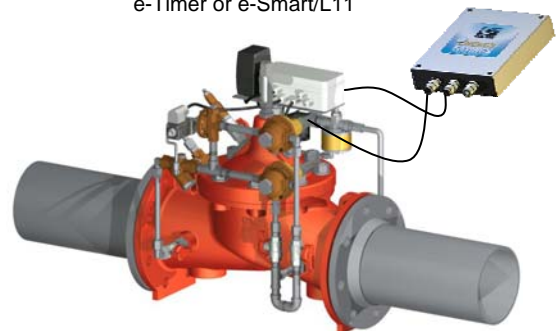
Powering the CLA-VAL SERIES ECO

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



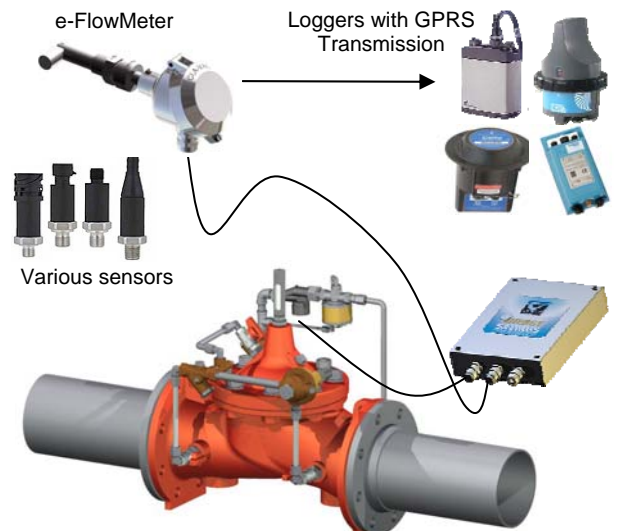
Powering data loggers, sensors and GSM-GPRS transmission

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 between 5 V and 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.



e-FlowMeter

Loggers with GPRS Transmission

Various sensors



CLA-VAL e-Power MP

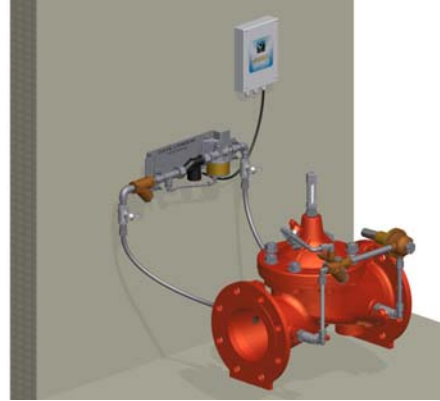
Turbine e-Power MP: 390 mW / 6 V

Turbine e-Power MP: 750 mW / 6 V

► How to Order an e-Power MP?



FM2 Version



WM1 Version

300048	Main family product						Number		
	FM1	Factory mounted (1x turbine + electronic box + 3 meters cable)					Mounting version		
	FM2	Factory mounted (2x turbines + electronic box + 3 meters cable)							
	WM1	Wall mounted (same as FM1 + bracket + screws)							
	WM2	Wall mounted (same as FM2 + bracket + screws)							
	V6	6 V / 1,2 Ah Lead acid rechargeable battery					Battery		
	V5	5 V / 150 F Super capacitor							
		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						
			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)					
			For WM code	T02	2x 2 meters pressure steel wire armored hose size 3/4" (1 turbine) or 1" depending on DN		Pressure steel wire armored hose (for WM version)		
				TXX	For longer supply line contact CLA-VAL				
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), 6 V / 1.2 Ah lead acid rechargeable battery, 3 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									



CLA-VAL e-Power MP

Turbine e-Power MP: 390 mW / 6 V

Turbine e-Power MP: 750 mW / 6 V

► How to Order an e-Power IP?

No. CLA-VAL	CLA-VAL Model		
*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
MEXE-10	5V / 150 F		Super capacitor
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
Contact 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