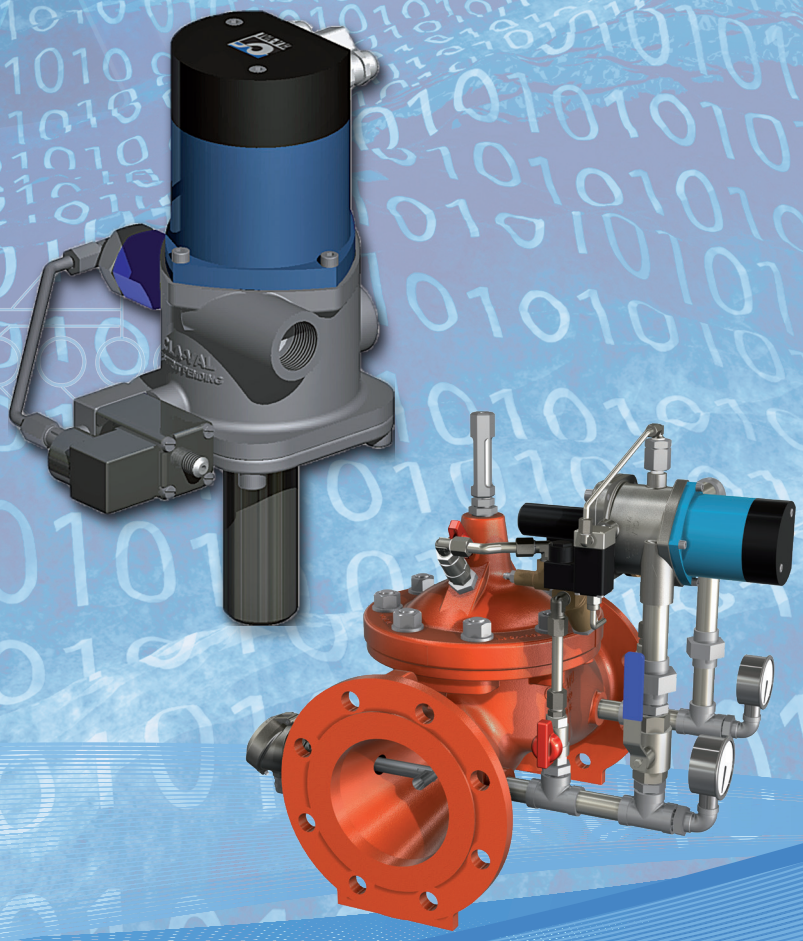
Cla-Val e-Power IP

Electrical power generator

- Autonomous system combined with a rechargeable battery, lead-acid (VRLA) supplying 12 VDC and 24 VDC
- Continuous 14 Watt power supplied by the lead acid battery with a differential pressure of 6.12 mhd and flow of 50 l/min
- The e-Power IP generates 16 Watt to the battery using the pressure drop across the valve



Leading the Innovation

CLA-VAL Europe
AUTOMATIC CONTROL VALVES

CLA-VAL

CLA-VAL e-Power IP

Electrical power generator

DESCRIPTION

The CLA-VAL **e-Power IP** is an electrical generator using available hydraulic energy directly from the water distribution network.

The **e-Power IP** is installed into the bypass of the CLA-VAL valve. The e-Power IP powers various devices located within close proximity of the valve or on the valve itself, e.g. motorised pilots, sensors, telemetry, PLC or HMI interfaces.

At the optimum operating point of the turbine,
(DP = 6.12 mhd and Q = 50 l/min), the rechargeable battery delivers the following output voltage, current and power:

Output volatges	Amps continous (60 min)	Amps peak (1 min)
12 V	1,16 A 14 W	5 A 60 W
24 V (step-up)	0,58A 14 W	2.0 A 48 W

The **e-Power IP** combines an electrical generator, a solenoid bypass shut-off allowing a complete stop of the e-Power IP and a hydraulic differential pressure controller.
The electrical box combines a 12 V rechargeable battery and an electronic charge management system.

DIFFRENTIAL PRESSURE CONTROL

The **e-Power IP** incorporates a mechanical differential pressure limiter. This limiter controls the differential pressure across the e-Power IP which in turn controls the electrical power produced. The management of differential pressure and the production of energy within a single compact product is an innovative and patented design from CLA-VAL.

TYPICAL E-POWER IP ASSEMBLY

The **e-Power IP** can be assembled in different configurations:

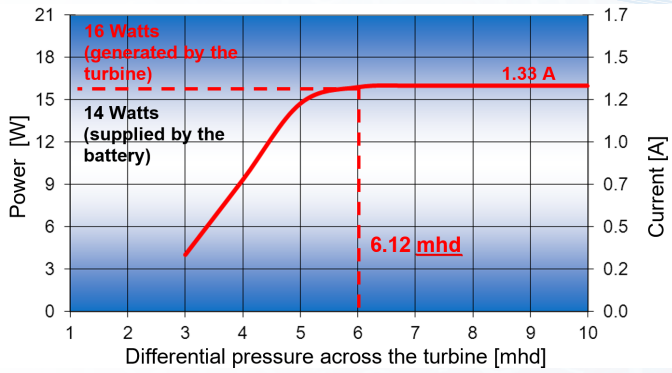
CLA-VAL's quality factory assembly (FM) is constructed using a totally rigid piping.

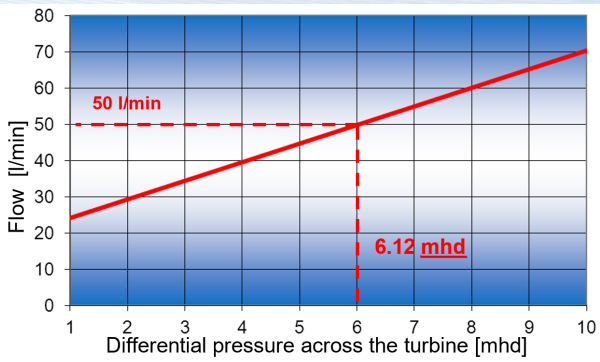
CLA-VAL's quality field retrofit (RM) includes a mounting kit, piping and fittings. CLA-VAL provides standard retrofit kits for all valve sizes. Kits are designed for simple and easy on site assembly.

CLA-VAL's quality wall mounted (WM) bracket allows the e-Power IP to be used on any type of hydraulic valve or fitting, assuming that the minimum hydraulic differential pressure and flow conditions are available. A pressure steel wire armoured hose similar to the field retrofit is used. Typical piping diameter is 3/4» or 1» depending on the valve size Minimum site operation and effort allows a very easy installation for the user.

PERFORMANCE CURVES OF THE TURBINE

The electrical power produced by the e-Power IP recharges the battery. The power (W) to charge the battery is the multiplication of the current (A) and voltage (V). The efficiency between the power supplied by the battery and the generated power by the turbine is 88%.





Note : The power supplied in the graph above is achieved by optimizing the power supplied by the turbine for each differential pressure.

SPECIFICATION

Battery

- Charging voltage: 12 V
- Capacity 7.0 Ah
- Gelled lead acid waterproof battery VRLA, maintenance free
- Battery fully recyclable
- Max. operating temperature 55°C

Power protection

- Reverse polarity and short-circuit
- 80°C stop high temperature

Output voltage

Output 12 VDC

- A continuous 60 min 1.16 A (14 W)
- A peak 1 min 5 A (60 W)

Output 24 VDC (step-up)

- A continuous 60 min 0.58 A (14 W)
- A high peak 1 min 2.0 A (48 W)

Battery alarm output

- Dry contact switch

Operating display

- Charging: LED flashing red
- Discharging: LED flashing green

Electrical connection

- Moulded 10 meters cable

Temperature range

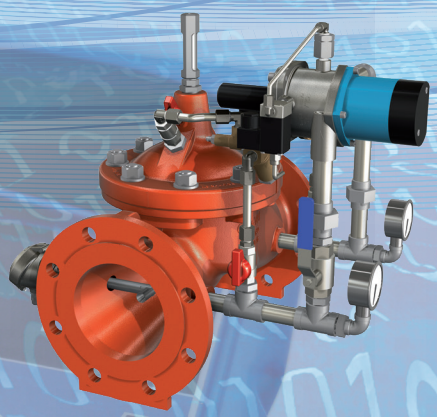
- - 10°C to + 80°C (PCB only)

POWER MANAGEMENT

The electrical power output changes depending on system conditions (see performance curves of the turbine). 3 mhd differential pressure generates 4 W power, and 6.12 mhd differential generates 16 W. The maximum differential pressure across the turbine is factory-set at 6.12 mhd.
A sophisticated algorithm, called «Maximum Power Point Tracker (MPPT)», adjusts voltage and current to continuously generate maximum power charge. As voltage generated by the turbine, varies greatly with daily differential pressure conditions, the MPPT algorithm 'tracks' and optimises delivered output power.

BATTERY CHARACTERISTICS

The lead acid waterproof battery VRLA (Valve Regulated Lead Acid) is build according to IEC 60896-2 standard for trouble-free transportation including 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 approximately 2% per month for a period of 24 months (20°C) allowing prolonged storage prior use. Battery is completely recyclable.



Operating pressure

- PFA 10 bar

Valve size and model (mm)

(Piping 3/4" : P- 3/4") (Piping 1" : P-1")

- **NGE DN 100 bosses tapped Rp ½" - P ¾"**
- **NGE DN 125-200 bosses tapped Rp ¾" - P ¾"**
- **NGE DN 250-600 bosses tapped Rp 1" - P-1"**
- **GE/AE DN 65-80 bosses tapped Rp ½" - P ¾"**
- **GE/AE DN 100-150 bosses tapped Rp ¾" - P ¾"**
- **GE/AE DN 200-400 bosses tapped Rp 1" - P-1"**

Strainer

- For solenoid, Screen 0.2 mm

Protection

- IP 68 (excluding solenoid)

Software Interface

- Plug & play / Windows 10 / -11

SWITZERLAND
Europe, Middle East & Africa
Chemin des Mésanges 1
CH-1032 Romanel-sur-Lausanne
✆ + 41 21 643 15 55

UAE - DUBAI
Office 2004 , JBC5 - Cluster W - JLT
P.O. Box 336812 Dubaï, UAE
✆ +971 4 5667665

USA
Global Headquarters
1701 Placentia Avenue, Costa Mesa
CA 92627-4475
✆ + 949 722 4800

UNITED KINGDOM
Dainton House, Goods Station Road
CGB - Tunbridge Wells
Kent TN1 2 DH England
✆ + 44 1892 514 400

FRANCE
ZAC du Champ du Périer
1, Porte du Grand Lyon
FR - 01700 Neyron
✆ + 33 4 72 25 92 93

CANADA
4687 Christie Drive
Beamsville, Ontario
Canada L0R 1B4
✆ + 905 563-4963

NEW ZEALAND
45 Kennaway Road
1Woolston, Christchurch, 8023
✆ + 64 396 44860

MEXICO
Tubrivalco, S.A. de C.V.
Circunvalacion Jorge Alvarez
del Castillo No 1206-3
Col. Chapultepec Country
CP 44620 - Guadalajara, Jalisco
✆ + (33) 11309329

WATERWORKS

From the reservoir to the customer tap, the CLA-VAL Company has developed more than 4,000 Automatic Control Valve models.

Accurately controlling pressure, tank level and flows within water networks is the result of more than 90 years of unparalleled expertise.

CLA-VAL

WWW.CLA-VAL.CH

© Cla-Val Europe. Specifications subject to change without notice. No contractuel illustrations. LIN036ME F 08/26