

AFC **HYDRAULIC** POWER GENERATOR



AFC Valves UK Limited

HYDRAULIC POWER GENERATOR

The Hydraulic Power Generator provides a Green Solution in power generation, harnessing the pipeline pressure to generate power to be utilised for valve control or lower power consumption devices.

VALVE FEATURES

- **Material:**
Ductile Iron Body and top to AS 1831
- **Coating:**
Fusion bonded epoxy (FBE) WRAS approved or equivalent
- **Bolts, Nuts and Washers:**
304 Stainless Steel
(Anti galling coating)
316 Stainless Steel is available

POWER GENERATOR FEATURES

- **Material:**
 - 304/316SS Body and Rotor shaft.
 - 304/316SS Control Pilot.
 - Ceramic Bearings

APPLICATION

The Hydraulic Power Generator (HPG) provides a **Green solution** for generating power to control devices from existing mains pressure, and pressure differential (delta P) created from the control valve.



IHPC



MPGX

TECHNICAL INFORMATION

Valve Size Range	DN50 – DN1000
Power generator bypass	DN25 (MPGX) and DN100 (IHPC)
Flange	EN1092-2 PN10/16/25
Pressure Rating	PN10, PN16, PN25
Test Pressure	Body 1.5 MPa, 2.4 MPa, 3.75 MPa Seat 1.1 MPa, 1.76 MPa, 2.75 MPa
Temperature	-10°C - 80°C

PMV – CLOUD SERVICE



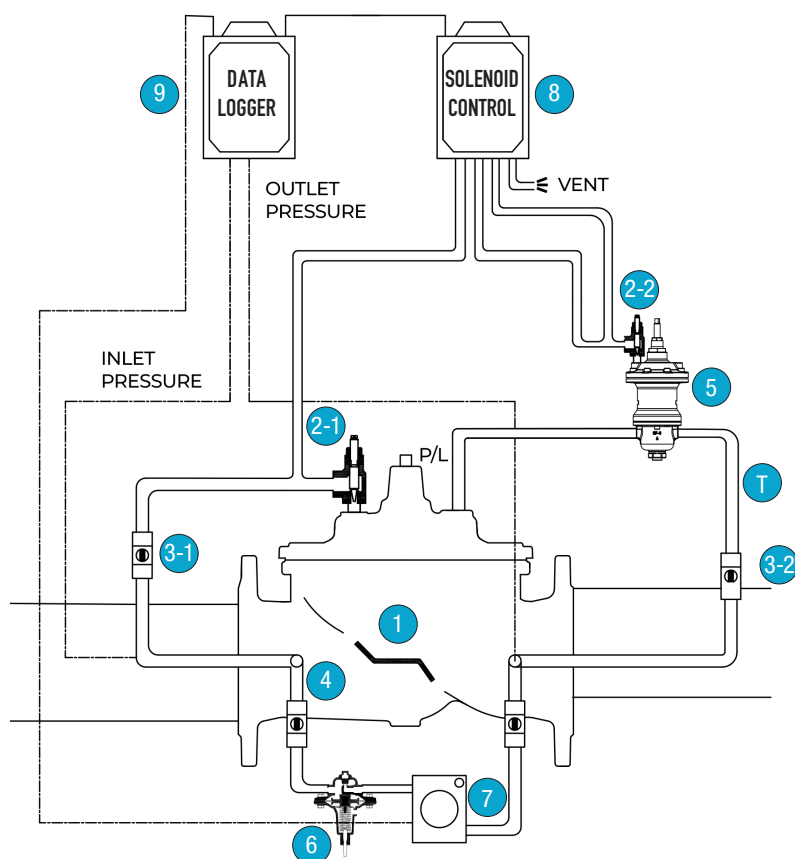
PMV – ONE VALVE WITH MULTIPLE FUNCTIONS

PRESSURE CONTROL MODE (STD & PRO)	FLOW CONTROL MODE (PRO)	ON /OFF (STD &PRO)	WATER TANK LEVEL CONTROL (PRO)	PRESSURE SUSTAINING (STD & PRO)
Singe P	Single Flow	Fully open	Can combine with Pressure or flow control mode	Can combine with Pressure or flow control mode
P VS Time	Flow VS Time	Fully close		
P VS Flow				

1. Built-in pressure transmitter
2. Free Mobile APP (IOS / Android)
3. Cloud Storage for remote control and history data review
4. 4G/3G communication
5. Remote Software Upgrade
6. 5 minutes Upload of data
7. 3 hrs charging will generate sufficient power to power the valve controller for a day.
8. Surplus power can be used for additional low power devices.
9. A minimum of 0.5 bar pressure differential across the valve is required to generate power



P26G - PRESSURE MANAGEMENT VALVE WITH HYDRAULIC POWER GENERATOR



Part List

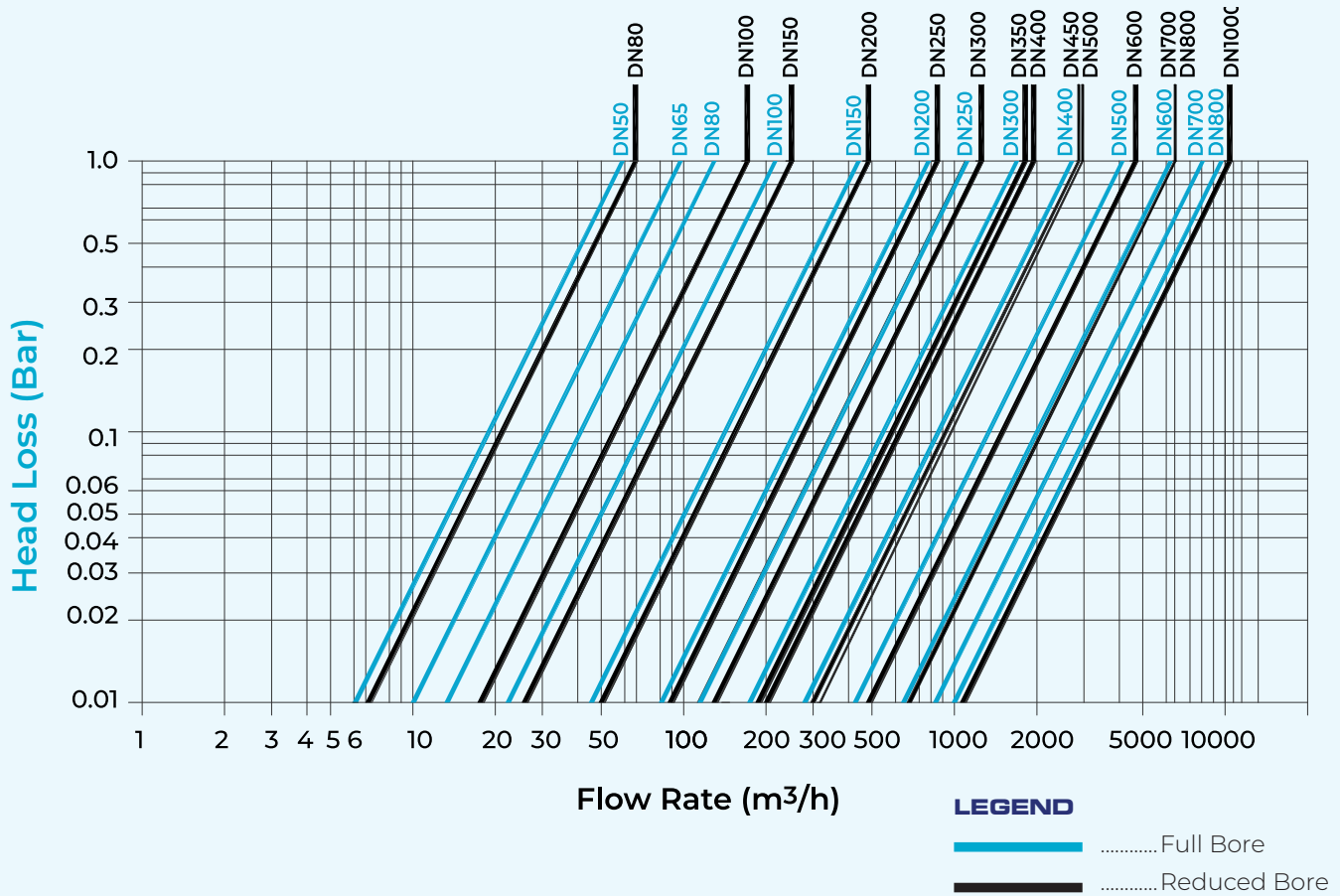
No	Parts Name	Material
1	Main Valve	GJS 500-7
2	Needle Valve	SUS304/316
3	Ball Valve	SUS304/316
4	Strainer	SUS304/316
5	Hydraulic Control Pilot	SUS304/316
6	Pressure differential guide valve	SUS304/316
7	Electric generator	Commercial
8	Data Logger	Commercial
9	Battery Pack	Commercial
T	Tube	SUS304/316

HYDRAULIC POWER GENERATOR - TECHNICAL DATA

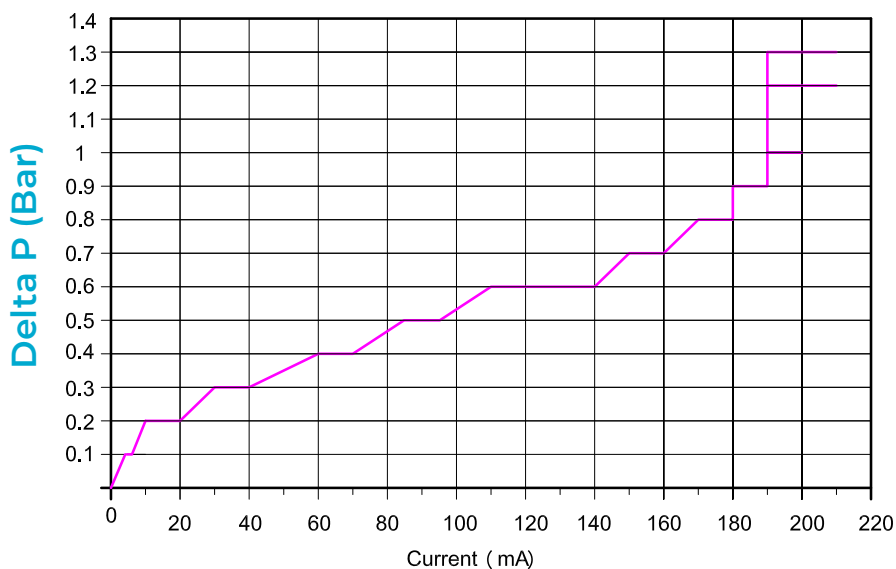
Size Range	DN 25 mm Suitable for installations requiring a nominal diameter of 25 mm.
Pressure Rating	PN10: Suitable for applications with a maximum working pressure of 10 bar (145 psi). PN16: Suitable for applications with a maximum working pressure of 16 bar (232 psi). PN25: Suitable for applications with a maximum working pressure of 25 bar (363 psi). The hydraulic power generator is designed to withstand the specified pressure ratings without compromising performance or safety.
Maximum Temperature Range:	-10°C to 80°C The Hydraulic Power Generator is designed to operate within a temperature range of -10°C to 80°C (-14°F to 176°F). It is important to ensure that the hydraulic fluid temperature remains within this range for optimal performance and to prevent any potential damage to the generator. Please refer to the product manual and guidelines for detailed installation instructions, maintenance procedures, and safety precautions specific to the Hydraulic Power Generator model you are considering.

Disclaimer: The technical data and specifications provided are subject to change without prior notice as part of our continuous product improvement process. It is recommended to verify the latest information from our official documentation or contact our customer support for the most up-to-date details.

P26G – PRESSURE MANAGEMENT VALVE WITH HYDRAULIC POWER GENERATOR



PRESSURE DIFFERENTIAL VS CURRENT



POWER TABLE

OUTPUT 12 VOLT	
Delta P (Bar)	Current (mA)
0.1	4~6
0.2	10~12
0.3	30~40
0.4	60~70
0.5	85~95
0.6	110~140
0.7	150~160
0.8	170~180
0.9	180~190
1	190~200
1.2	190~210
1.3	190~210

NOTE: The power table indicates the expected current output (in mA) for various differential pressures (delta P) when operating the Hydraulic Power Generator.

Actual performance may vary depending on specific operating conditions.



GENERAL APPLICATIONS:

The **Hydraulic Power Generator** is designed for the following applications:

Power Supply for Low Power Consumption Devices:

- Ideal for providing power to low-power consumption devices, such as sensors, monitoring systems, and small-scale electronics.
- Offers a reliable and sustainable source of energy, particularly in situations where access to traditional power sources is limited.

On-Site Charging of Batteries (12V to 24V DC):

Enables convenient and efficient on-site charging of batteries with voltages ranging from 12V to 24V DC.

Particularly suitable for off-grid locations or remote areas where a stable power supply is not readily available.

Eliminates system failures on Pressure Management Systems due to flat batteries.

FEATURES

POWER GENERATION:

1. The Hydraulic Power Generator utilizes the flow rate and differential pressure (ΔP) of the hydraulic fluid to generate power.
2. The movement of the fluid, such as water, pushes a series of blades mounted on a rotor shaft.
3. The force of the fluid on the blades rotates the rotor shaft of the generator, converting the mechanical (kinetic) energy into electrical energy.
4. This electrical energy can be utilized to power various devices and systems.

CERAMIC BEARINGS:

1. Equipped with ceramic bearings that provide exceptional durability and a long operational life span.
2. Ceramic bearings offer high strength, low friction, and superior resistance to wear and corrosion.
3. The inclusion of ceramic bearings ensures trouble-free performance and reduces the need for frequent maintenance or replacements.

TURBINE SPEED CONTROL:

1. The turbine speed is controlled using a differential control pilot.
2. The differential control pilot adjusts the flow rate and pressure differentials within the hydraulic system, regulating the turbine speed effectively.
3. This control mechanism enables precise control over the power generation process, optimizing efficiency and performance.

WATER AND ELECTRICAL SAFETY:

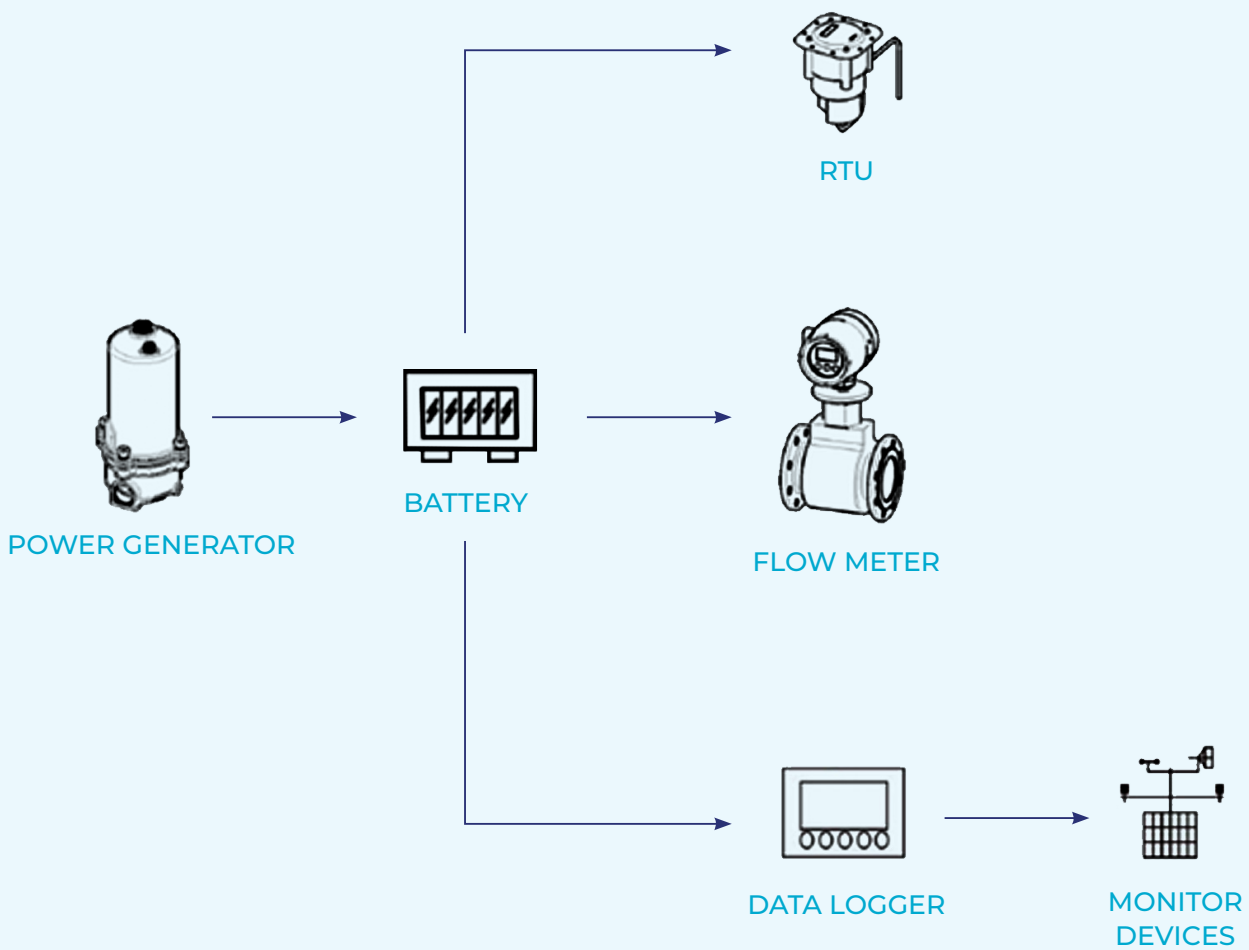
The Hydraulic Power Generator does not have moving seals in the turbine, eliminating the risk of water coming into contact with electrical parts. This design feature ensures the safety of both the equipment and the operator. It also minimizes the potential for water-related hazards and enhances the overall reliability and safety of the system.

UNDERSTANDING THE IMPORTANCE OF HYDRAULIC POWER GENERATION: TOWARDS NET-ZERO SOLUTIONS

Generating electricity through harnessing differential pressures in various applications offers a pathway to achieving net-zero goals.

WITH AS LITTLE AS A 0.5BAR DELTA P, THE AFC HPG CAN SUPPLY ELECTRICITY FOR VARIOUS PURPOSE

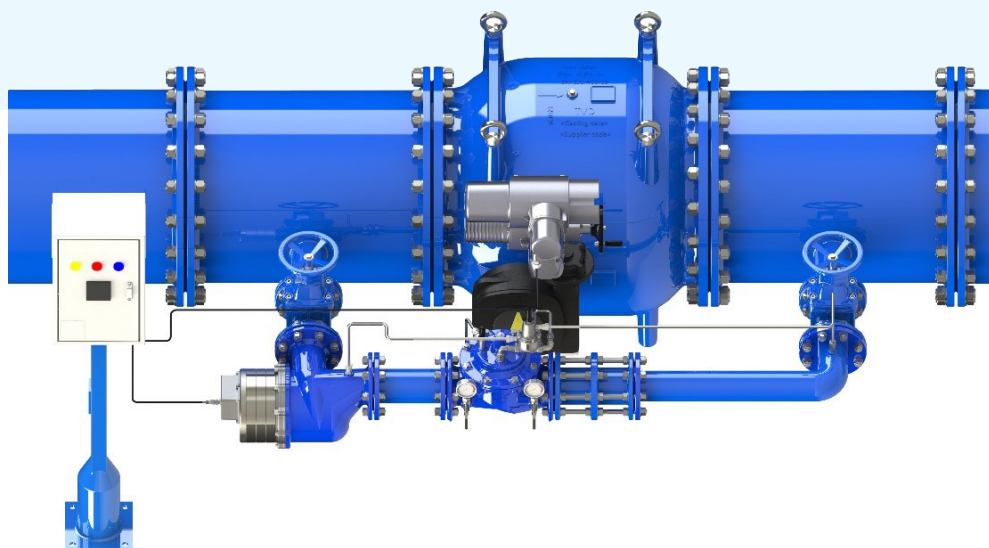
- Powering devices through stored battery electricity
- Real-time monitoring of water distribution systems
- Significant reduction in carbon footprint and costs
- A solution that initially requires investment but yields long-term savings





SIZE FROM DN100

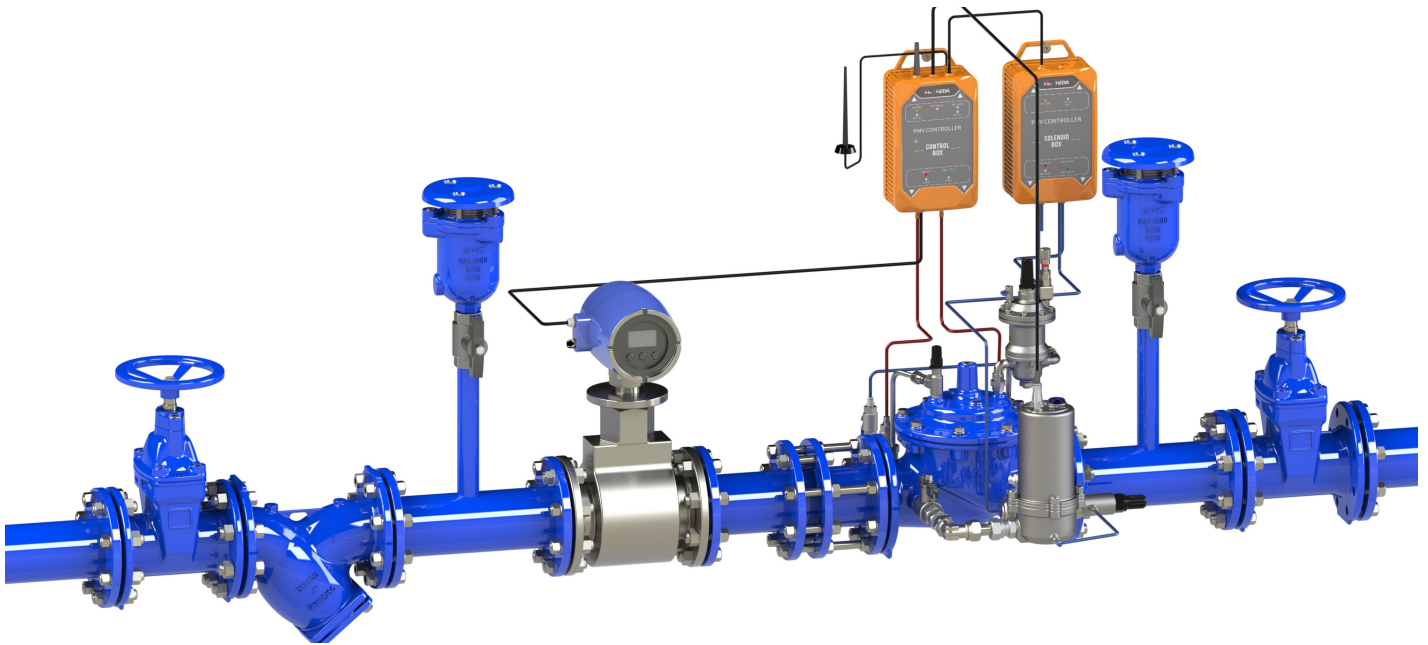
1. Adjustable DC voltage output from 24V.
2. Power generated utilising as little as 0.5bar delta P.
3. Battery stored electricity to operate required mains products.
4. Multiple turbines encased to generate 24 Watts under 1bar, 15 Watts under 0.5bar.
5. Constructed from 316SS Stainless Steel and IP68 compliant.



APPLICATION

1. Installed on a mains by-pass, operating a large sized butterfly valve. Utilizing 0.5bar delta P of battery stored power to operate the actuator.
2. Fully operating the valve without the need of external power.
3. Can be used to operate all electrically operated distribution equipment.





AFC Valves UK Limited

Tel : +44 (0) 7763 488809

E-mail : john@afcvalves.co.uk

Web : <http://www.afcvalves.co.uk>