

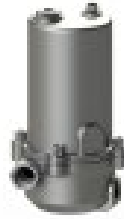
Hydraulic Power Generator

Type III

Features:

1. Material of Construction:

- Body: Stainless Steel (S/S) 304
- Rotor Shaft: Stainless Steel (S/S) 304



2. Power Generation:

- **The Hydraulic Power Generator** utilizes the flow rate and differential pressure (**delta P**) of the hydraulic fluid to generate power.
- The movement of the fluid, such as water, pushes a series of blades mounted on a rotor shaft.
- The force of the fluid on the blades rotates the rotor shaft of the generator, converting the mechanical (kinetic) energy into electrical energy.
- This electrical energy can be utilized to power various devices and systems.
- Adjustable output **voltage 0.5v ~ 30v**

3. Ceramic Bearings:

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

4. Turbine Speed Control:

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

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.

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. **IP67 rated.**

General Applications:

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

1. Power Supply for Low Power Consumption Devices:

- On Site Charging of Lithium Batteries (12V to 24V DC)
- 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.
- **Energy Independence:** By generating power within isolated areas, the Hydraulic Power Generator Type III fosters energy independence. These regions can reduce their reliance on external power.
- **Water Pipeline Synergy:** Integrating the generator within water pipeline chambers leverages existing infrastructure, optimizing resource utilization. This synergy ensures that water, which is already flowing through the pipelines, can simultaneously generate electricity without any additional environmental impact.
- **Enhancing Infrastructure Monitoring:** Powering sensors and monitoring systems in isolated areas through the Hydraulic Power Generator Type III enables better infrastructure monitoring. Remote monitoring of water pipelines, environmental conditions etc becomes more feasible, facilitating early detection of issues and proactive maintenance.
- **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 Lithium batteries

Technical Data:

1. Size Range: DN 25 mm

- The Power Generator inlet connection has a nominal diameter of 25 mm.

2. 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).
- The hydraulic power generator is designed to withstand the specified pressure ratings without compromising performance or safety.

3. Maximum Temperature Range: -06°C to 80°C

- The Hydraulic Power Generator is designed to operate within a temperature range of 06°C to 80°C (42°F to 176°F).
- It is important to ensure that the upper hydraulic fluid temperature remains within this range for optimal performance and to prevent any potential damage to the generator.



Control Valve Configuration

Alpine A200 Full Bore, Pressure Reducing Valve c/w "V port" for low flow stability, DI body and bonnet, 304SS stem/ body seat, EPDM diaphragm + nylon reinforcement , 304SS pilot, c/w Stainless Steel piping & fittings, ball valves, strainer and Needle valve, and fitted with **304SS Power Generator**, PN10/16 Flanges, drilled to EN1092-2. Trim 304ss **WRAS Approved**.

Lithium Battery Specifications

LiFePO4 Battery (Eco Tree)

<https://ecotreelithium.co.uk/product/12v-7-2ah/>

TECHNICAL SPECIFICATION

Voltage:

- **Nominal Voltage:** 12.8 V (Used for power calculations)
- **Charge Voltage:** 14.2 V—14.7 V (GEL, AGM/SLA and Lithium Chargers work in this voltage range)
- **Low Voltage Cut-Off:** 10.5 V (The battery will activate over-discharge protection at 10.5 V)
- **High Voltage Protection:** 15.0 V (The battery will activate over-charge protection at 15.0 V)



Current

Maximum Discharge

- Current 7 Amps
- Power 90 Watts (12.8 V x 7 Amps)
- Pulse 20 Amps (<3 Seconds) (essential to allow some devices to start up)

Maximum Charge

- Current 3.5 Amps
- Power 45 Watts (12.8 V x 3.5 Amps)

Temperature

ALL Eco Tree batteries have temperature protection which will restrict charge and discharge when the cells are outside the optimal operating temperature. The further out of temperature range the battery goes the more aggressive the protection is.

For best performance, keep the battery within the ranges below.

- Charge Temperature 0°C-45°C (The temperature protection starts restricting charge at 3°C and 40°C)
- Built – In Heater-NO (for regular use in cold conditions, our 100AH heated battery)



- Discharge Temperature -20°C—60°C (The temperature protection starts restricting discharge at 3°C low and 40°C high)
- Storage Temperature 0°C—45°C (storing too cold will cause faster self-discharge and storing too hot over long periods will cause cell degradation)

Physical Characteristics

- Weight 0.97KG
- Dimensions Length 151mm Width 65mm Height 100mm
- Cells LFR 26650 - 3600mAh @ 3.2 v
- Pack Format 4 banks in Series, each bank contains 2 cells in Parallel.
- Cell Type Cylindrical, Stainless Steel, individually fused, Explosion Proof, Completely Sealed

- Outer Case Impact resistant ABS plastic, UL94-Vo Flame Resistant
- Terminal F2 (Spade Connector)
- Water / Dust Resistance **IP67** (protection against dust particles and Immersion up to 1 metre for 30 minutes)

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.*

