PowerUP®
ENERGY TECHNOLOGIES

From science to business

KUSH CHADHA, PHD, CSO
KUSH@POWERUP-TECH.COM

The PowerUP story

PowerUP was founded in 2016 in the United States. Headquartered in Estonia, with offices in US, Finland, Poland and Netherlands.

OUR PRODUCT

HYBRID HYDROGEN ELECTRIC GENERATOR

THE ONLY GENERATOR DESIGNED TO BE USED BOTH OUTDOORS AND INDOORS.

HYDROGEN FUEL CELLS + LI-ION BATTERIES + INTELLIGENT ENERGY MANAGEMENT SYSTEM

BUILT FOR RESILIENCY. READY FOR DEFENSE.

LOW HEAT MAP
Designed to minimize detectability in sensitive environments.

SILENT
Ultra-low noise operation for discreet performance.

INDOOR USE
100% safe for enclosed spaces. No carbon monoxide, smoke, or toxic exhaust.

SAFE
Advanced protection systems for people, equipment and spaces.

RELIABLE
Engineered for mission-critical power you can depend on.

MODULAR
Add power as your needs grow. Easy to configure and integrate.

MISSION READY POWER – ANYWHERE.

Power UP ENERGY TECHNOLOGIES

How does our technology work?

Proton Exchange Membrane (PEM) Fuel Cell Technology

PowerUP's generators and battery capacity extenders are based on proton exchange membrane (PEM) fuel cells, which makes power generation efficient and environmentally friendly.

UP1K system operates 5 hours from Linde Genie hydrogen bottle

300bar Genie bottle contains 0.4 kg of hydrogen.
1 kg hydrogen = 16 kwh fuel cell energy.
The UP1K System is 1300W gross power consumption.

A valued partner for the European Space Agency

PowerUP is developing fuel cell stacks and systems for ESA, to be used in **upcoming Moon and Mars missions**.

GRANTED PROJECTS

1 kW fuel cell for a lunar rover

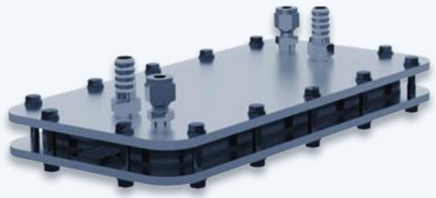
Developed to survive five lunar nights.

Specialist stack components

Testing of components designed for the lunar fuel cell stack.

Oxygen recirculation system

Developed for a lunar regenerative fuel cell system.



European Innovation Council

PowerUP recognised among the best European Deep Tech in Clean Fuels and Hydrogen and part of the Scaling Programme

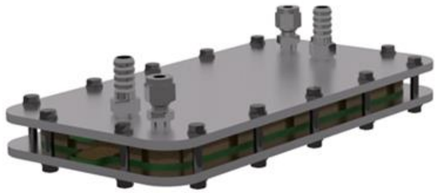
PowerUP ENERGY TECHNOLOGIES

CONFIDENTIAL

Liquid Cooled Fuel Cell Stack Developments

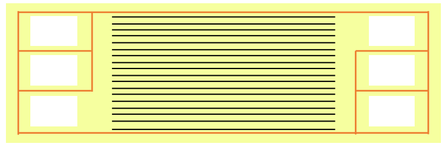
Developing Liquid cooled closed cathode hydrogen fuel cell stack – initially for **European Space Agency** (Lunar & Mars missions)

FC Stack



Can be optimized for use in terrestrial & space applications

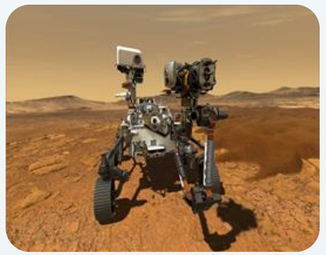
Bipolar Plate



- Improved flow field design
- Better water management
- Ultra thin bipolar plate

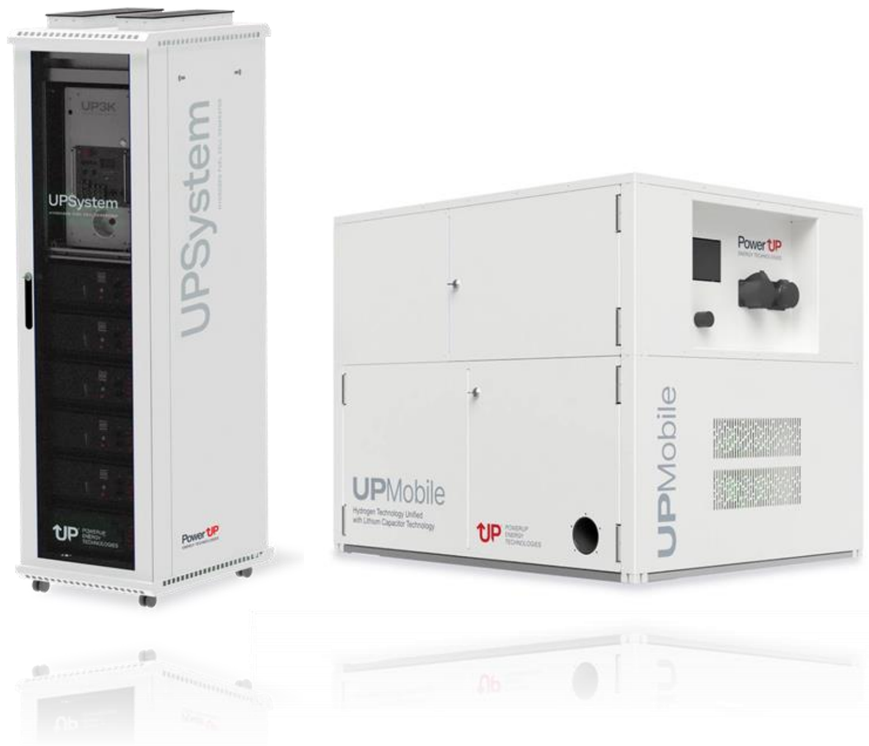
MEA

- Thin membrane with mechanical + chemical durability
- Durable catalyst layer
- Better water management GDL



INNOVATION

Our Hardware Design



Operation in sub-zero conditions

Pre-heating of air on system start-up & a closed-loop air recirculation system intelligently manages incoming airflow temperatures – improving performance in low-temperature environments.

Operation in hot conditions

Careful material choices and directed airflow inside the casing keeps critical electronic components from overheating

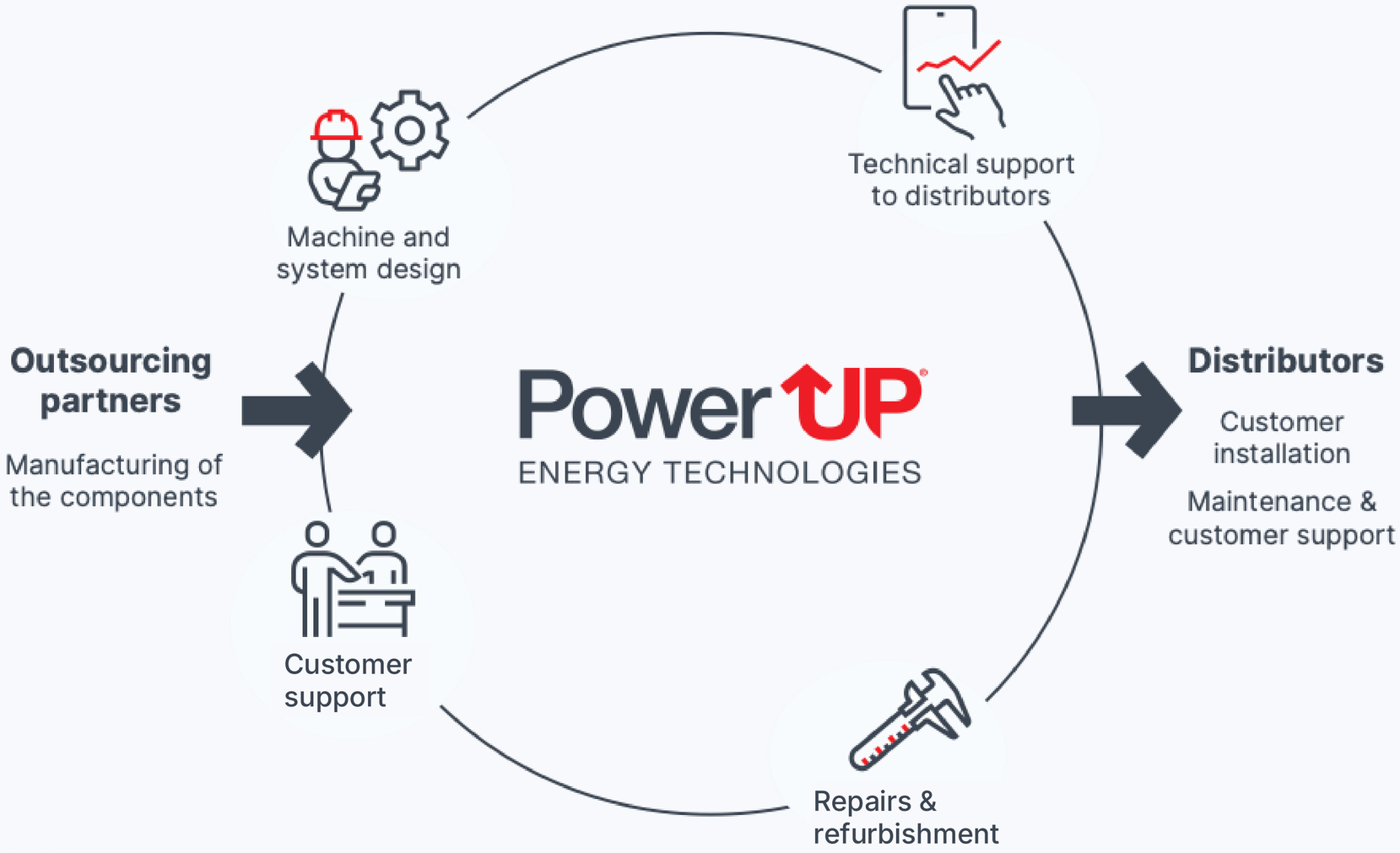
Advanced power electronics

Minimal heat generation ensures efficient voltage regulation and power outputs over a wide range of operating conditions.

Efficient form factor

Designed to integrate into standard server or industrial racks, allowing seamless scalability and adaptability in various environments while optimizing space.

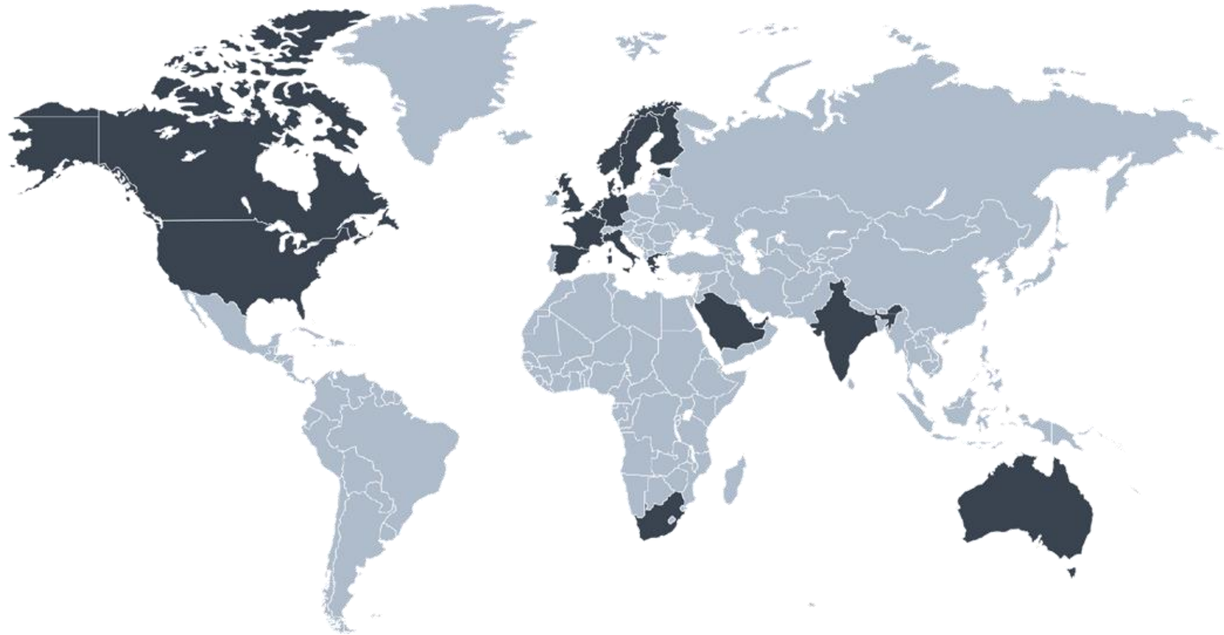
Lean business model



B2B sales through value-adding resellers

To turn innovations into business success we have built a solid sales channel – through partners and direct.

- 20+ value-adding resellers and system integrators globally



Serving customers in:

Construction

Driven by **EU regulations** for carbon reductions

Telecommunication

Driven by need for **long-term backup power** for reliable communications

Security & defence

Driven by **stealth-mode** and **long-term autonomy**

Pharmacies & clinics

Driven by need to power up **critical infrastructure indoors**

Why we win

Direct quotes from frontline personnel using tactical hydrogen generators in the field.

SUPERIOR TO DIESEL

"The hydrogen generator beats a diesel generator every time when it comes to its simplicity, quiet operation, and lack of exhaust emissions."

TACTICAL CONCEALMENT

"The device operates silently and without significant thermal signature, making it ideal for small units attempting to conceal their location."

ENCLOSED OPERATION

"The generator can be placed in the same room as the people... [Units] used the device in a truck bed where they could also sleep."

Thermal capture

Field comparison

Cold: indistinguishable from terrain

Hot: detectable and targetable

UP1K

Portable hydrogen generator

Business through grants

SOLARES

Soldier Operational Autonomous Resilient Energy System

SELECTED PROJECTS EUROPEAN DEFENCE FUND (EDF) 2025

CALL TITLE:	Disruptive EDF research actions
TOPIC TITLE:	Non-thematic research actions targeting disruptive technologies for defence
DURATION OF THE PROJECT:	36 Months
TYPE(S) OF ACTIVITIES:	Generating knowledge, Integrating knowledge, Studies, Design
ESTIMATED TOTAL COST:	€ 3,999,987.52
MAXIMUM EU CONTRIBUTION :	€ 3,999,987.52

SHORT DESCRIPTION OF THE PROJECT:

The project aims to develop a fully autonomous, water-propelled hydrogen ecosystem to provide energy and power for on-field operations.

DEEP-TECH

Disruptive Underwater Technology Capability Enabler for EU Next-Generation Deep-Sea Operations and Autonomous Subsea Technologies

SELECTED PROJECTS EUROPEAN DEFENCE FUND (EDF) 2025

CALL TITLE:	Disruptive EDF research actions
TOPIC TITLE:	Great-depth enabling technologies
DURATION OF THE PROJECT:	36 Months
TYPE(S) OF ACTIVITIES:	Generating knowledge, Integrating knowledge, Studies, Design
ESTIMATED TOTAL COST:	€ 11,596,530.55
MAXIMUM EU CONTRIBUTION :	€ 11,596,530.55

SHORT DESCRIPTION OF THE PROJECT:

DEEP-TECH facilitates the creation of breakthrough capabilities for relocatable and robotic seabed landers nodes, and autonomous underwater infrastructures and base stations.

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