

ASTRA

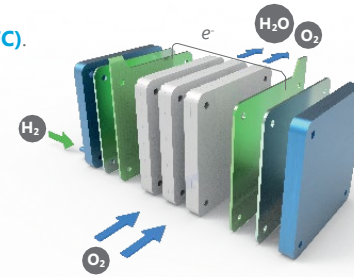
EFFICIENT, RELIABLE AND ENVIRONMENTALLY FRIENDLY POWER SOURCES



Astra is a product line of electrochemical generators based on **fuel cells with proton-exchange membranes (PEMFC)**. A team of highly skilled engineers develop standard modules as well as provide R&D service for hydrogen powered devices.

Energy of hydrogen converts into electricity in a single stage, without moving parts, unlike traditional technologies that go through multiple stages.

Energy conversion **efficiency** of PEMFC reaches **60%** and pure water is the only byproduct produced by the technology.



ASTRA PRODUCTS

ASTRA-S

Free-flow cooled PEMFC fuel cell with power from 5 W to 2500W. Applicable for industrial drones or individual transport (scooters or electro bikes).



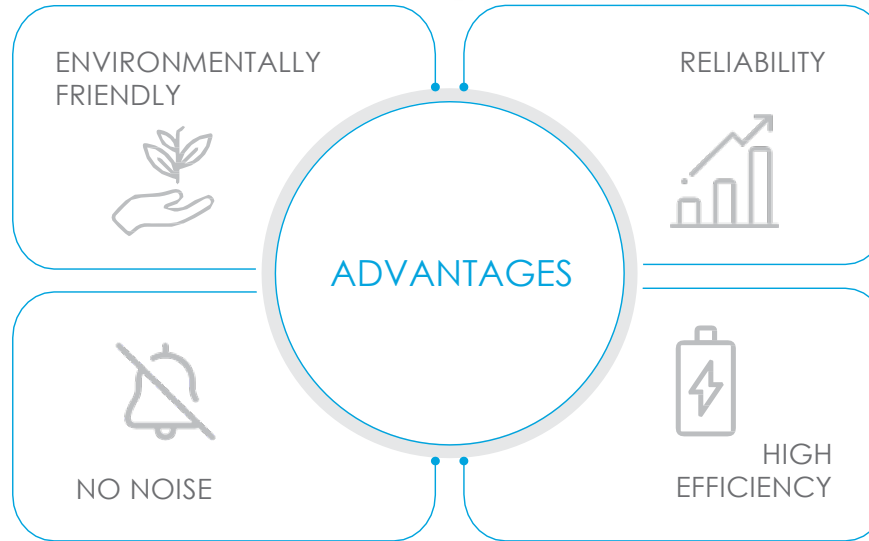
ASTRA-L

Modular liquid cooled PEMFC fuel cell. 5 kW module for stationary CHP systems and environmentally-friendly power for warehouse loaders.



40 kW module for commercial transport (buses, trains and ships), clean and silent back-up power sources instead of diesels and distributed electricity generators with heat cogeneration.

Integrated customer samples are expected 2021.



USE CASES

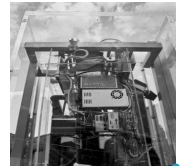
Environmentally-friendly and silent power source for **UAVs** to stay in the air for 4 hours carrying payload of up to three kilos with no thermal or noise trail.



Hydrogen car equipped with Astra-L can go 400 km on a single charge (2x times vs. Li-ion based cars) and refueling in 5 minutes



An **airplane** equipped with Astra-L as an auxiliary power source will cause less noise and environmental footprint on the ground



Back-up power source for base station of a cellular operator



EXPERTISE IN ELECTROCHEMISTRY



InEnergy Group core competence lies in electrochemical solutions.

We employ more than 60 researchers, including 15 with PhD degrees.

