

Professional Energy



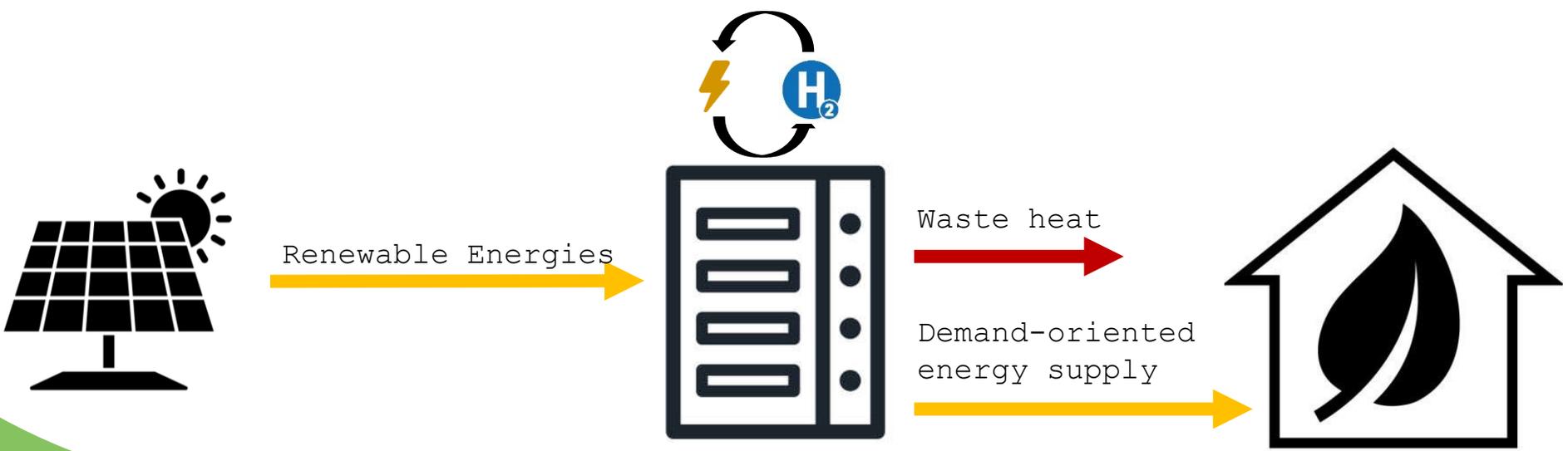
**ENERGY
SOLUTION
NORD**

Energy Solution Nord GmbH

- Founded in October 2022
- Spin-off of AOT-Electrical Engineering GmbH
 - 12 years of experience in the field of electrical engineering and automation
 - 4 years of experience in the field of renewable energies
- **Development of systems and software for the renewable energy sector**
 - Controlled DCDC converter for use in power-to-H2 systems
 - Power-to-H2-to-Power (HydroGEN)
- **Services in the renewable energy (RE) sector for commercial clients:**
 - Independent consulting & concept development
 - Project coordination from Initiation till project close
 - Distribution of selected products in the RE sector
 - Assembly, commissioning, and maintenance

Power-to-H₂-to-Power

- Comprehensive, modular system for short- and long-term storage for decentralized, decarbonized energy generation
 - Battery storage for short-term storage
 - Power-to-H₂ for long-term storage
 - Increased overall efficiency through waste heat utilization
 - Fully automated energy management system
 - Enables self-sufficiency and microgrids / emergency power supply
- Start of production in beginning of 2024



ESN HydroGEN

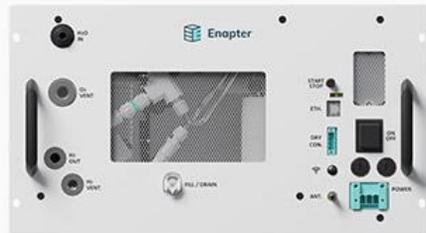
Power-to-H₂-to-Power

19 Inch Rack

Battery buffer storage



Elektrolyzer



Compressor



Control



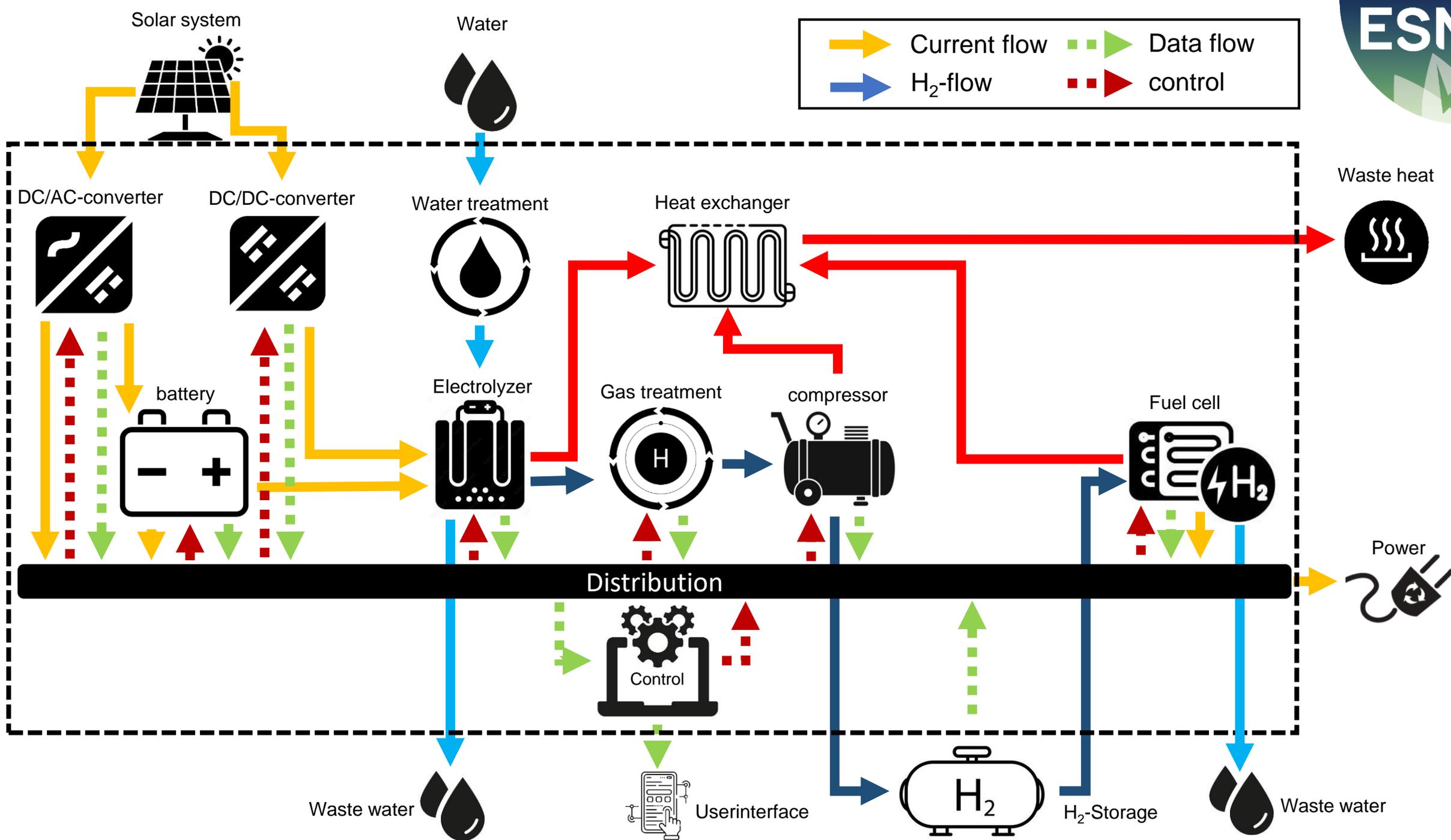
Fuel Cell



Heat exchanger



Hydrogen

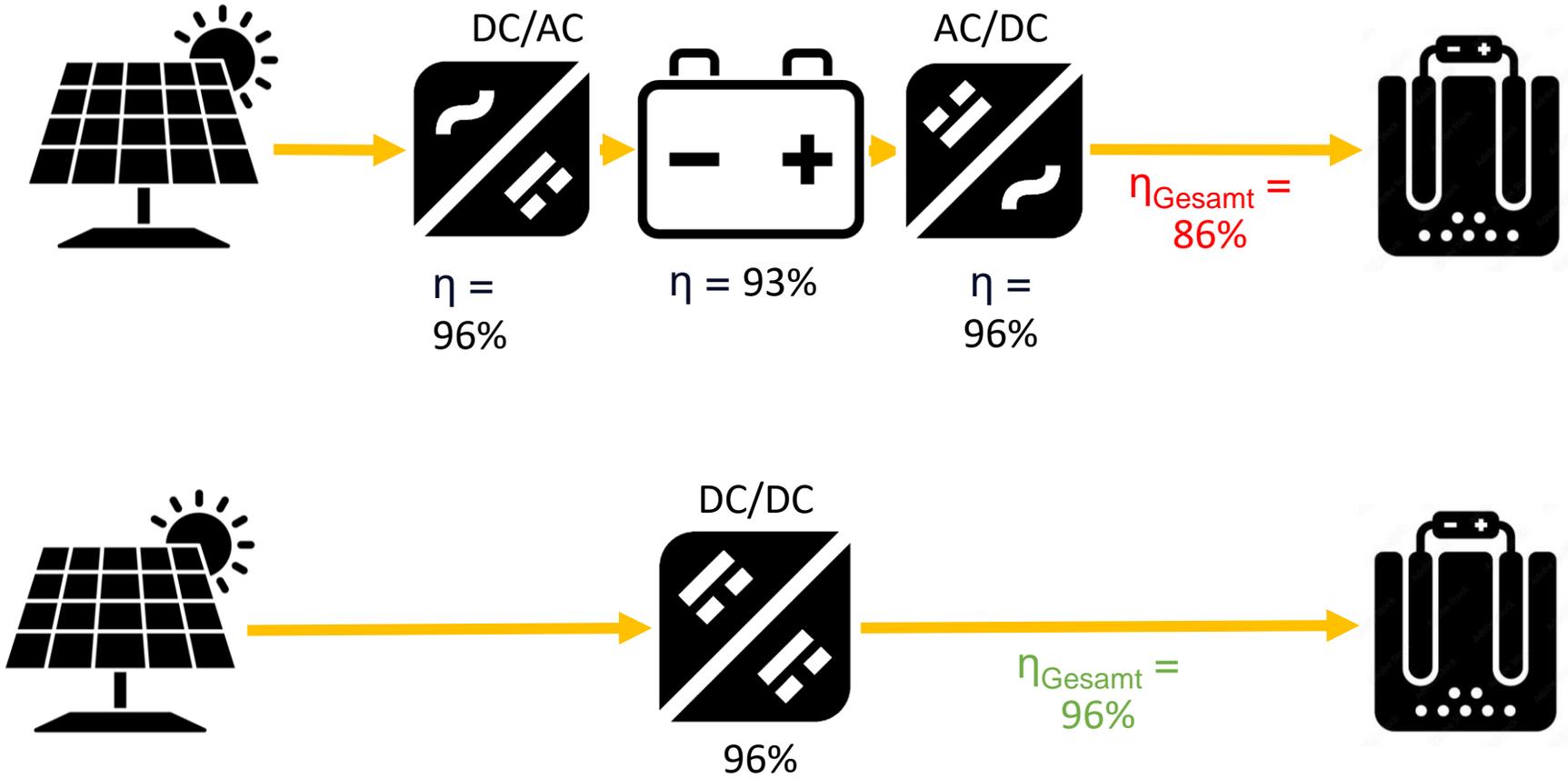


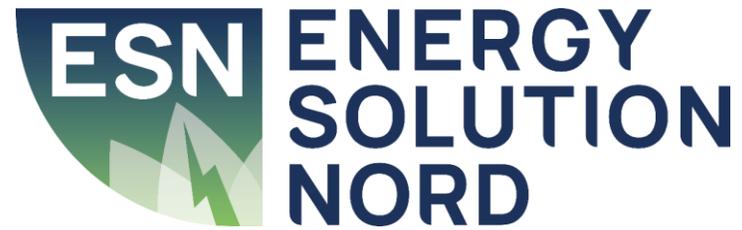
Regulated DC/DC-Converter

Output Power	10000 W (min 600VDC input voltage)
Input	300 VDC - 850 VDC
Output-voltage/-current	70 VDC – 140 VDC / 72 ADC
Isolation test voltage	5,2 kVDC
Monitoring and setting	<ul style="list-style-type: none"> ➤ Analog values for U_{in}, U_{out}, I_{out} ➤ Temperatur (galvanic isolated) ➤ Display with 4 buttons for parameterization ➤ Enable button
Inputvoltage controlled power regulation	Output voltage and current setting via microcontroller
Stackable	Up to 6 units
Housing	19" rack
Convection	Liquid cooler
Efficiency	Up to 92%
Life cycle	10 years

In cooperation with Phoenix Contact, a regulated DCDC converter for use in Power-to-H2 systems was developed to achieve higher overall efficiency.

DC/DC- and AC/DC-Converter in comparison





Thank you for your
attention!

Any questions left?