POWERING SMALL COMMUNICATION NODES DURING LONG POWER OUTAGES

Development Experience. Implementation and
Key Benefits for Critical Infrastructure

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Problems Faced

- Unpredictable behaviour during power outages
- No real time information
- Unknown remaining battery time
- Unknown SOC, SOH
- No remote power control and monitoring
- Variety of battery types
- Limited space inside the box
- No climate control
- No integration into existing CRM

Why A Custom Solution. Pros And Cons.

Pros:

- All in one solution
- Flexible functionality
- Independence from third-party solutions
- High security level
- Easy integration into existing infrastructure

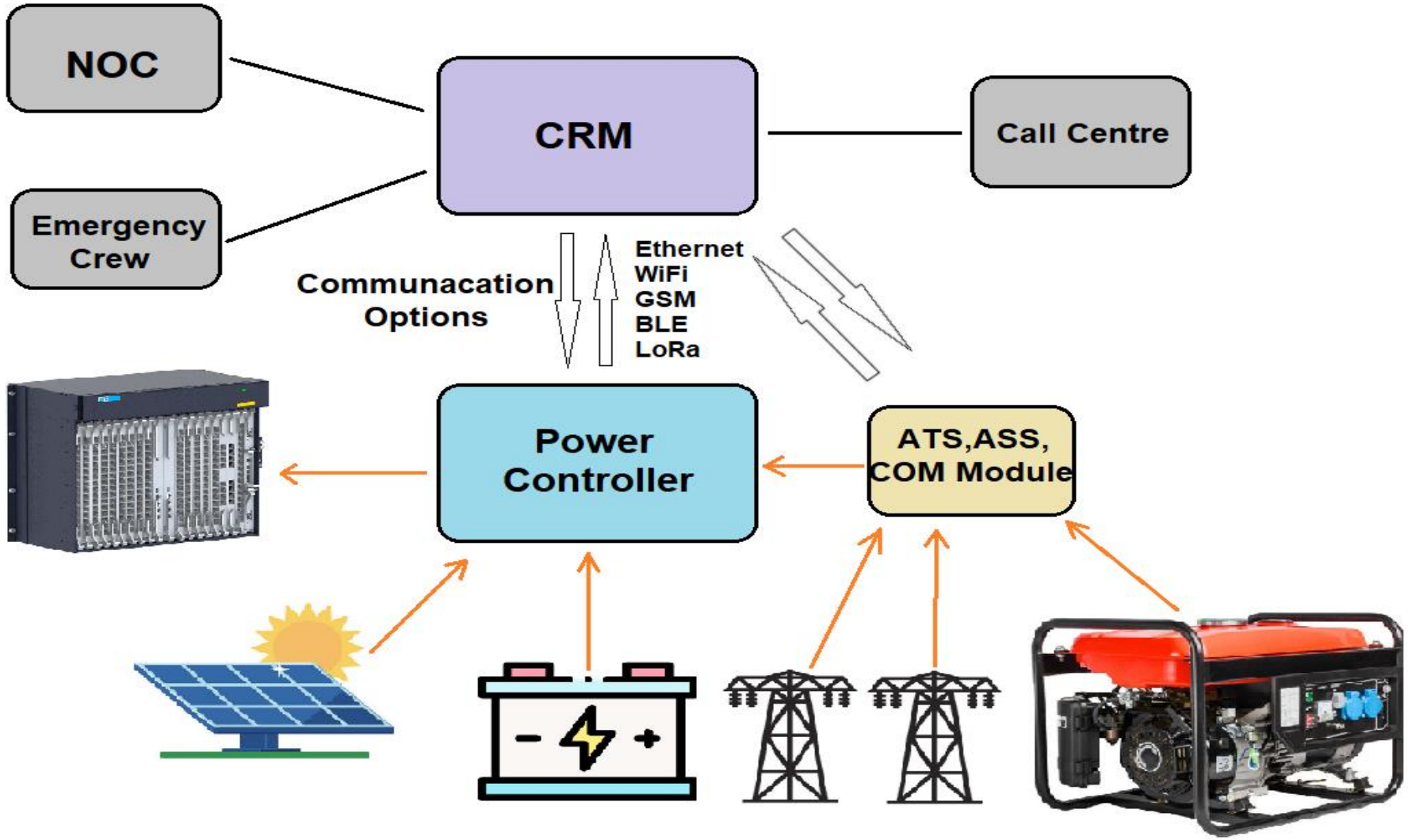
Cons:

- Long-term development process (design, prototype, live tests)
- High initial investment

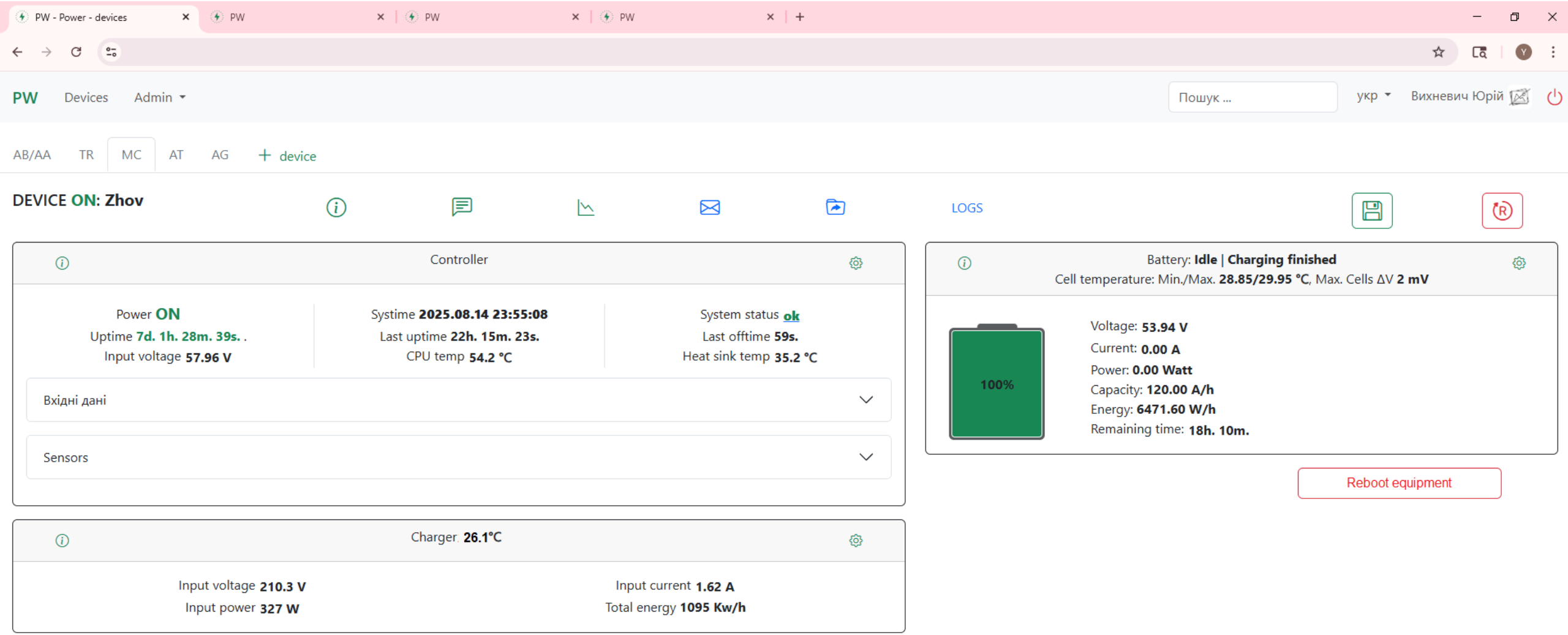
System Design Requirements

- Real-time control and telemetry aligned with NOC
- Universal, software-defined power controller
- Compact size: 136x185x45 mm
- Battery types: Lead-Acid/AGM/GEL/Li-ion/LFP
- Cell quantity: 3-16 Cell
- Stack voltage: 10–80 V
- Charging current: 0.1 - 40 A
- Low cost: $200–250.
- Fast and easy installation
- NMS/CRM/Cloud integration
- Power sources: Grid, Generator, PV, Battery Pack
- ASSC/ATS functionality
- Communication Interfaces: Ethernet, Wi-Fi, LoRa, UART, BLE, CAN, RS-485
- Scalability

System Diagram



Web Interface



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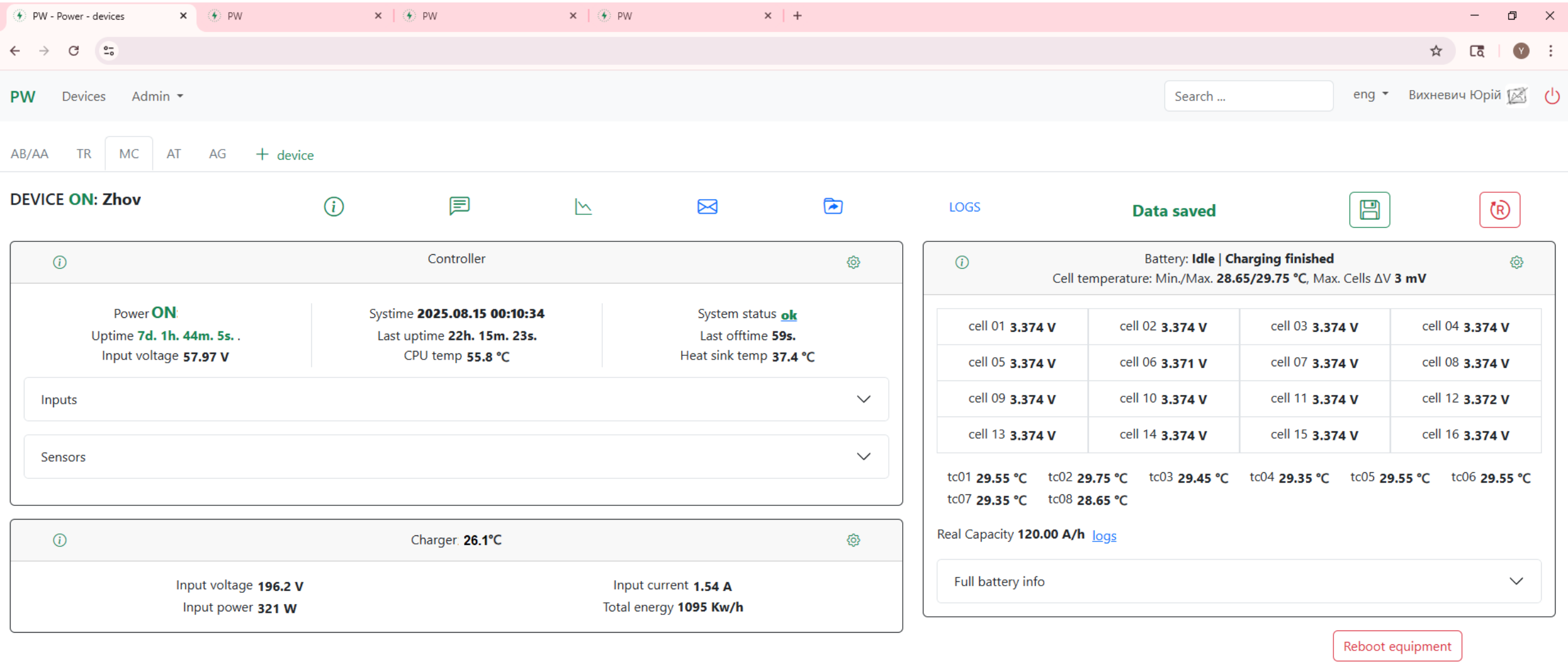

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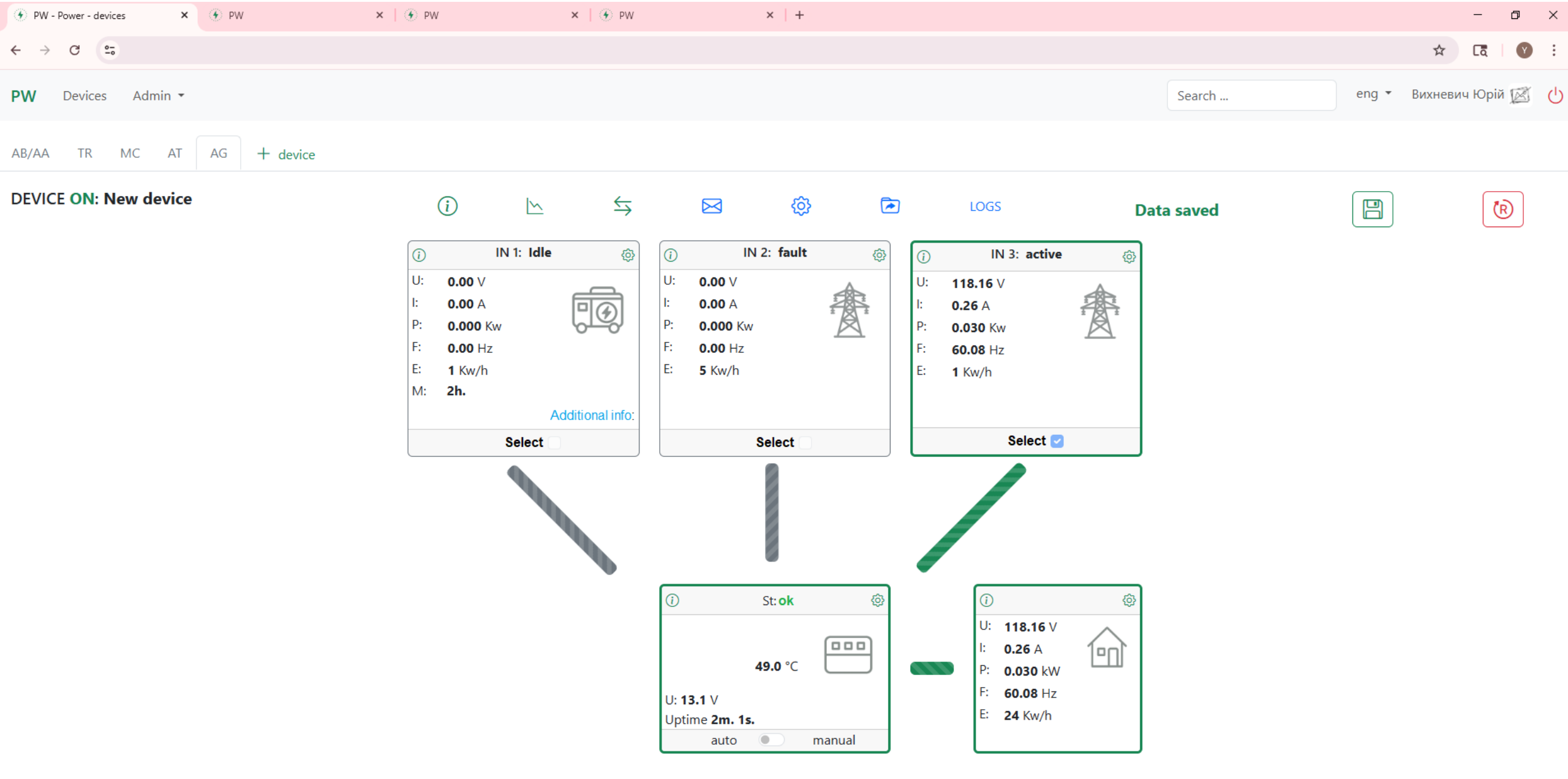

Inside The Box

Results And Benefits Achieved

- Full automatization, monitoring, management and control of node power
- Quick modernization of existing nodes
- Significantly shortened service outages
- Reduced expenses for nodes service
- Extended equipment and batteriy lifespan
- Increased number of new customers

Thank You!

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