enjoyelec

enjoyelec AI-driven HEMS Solution

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Feb 2026

enjoyelec B.V.

enjoyelec at a glance

Cleantech Innovation

Tariff optimization

HEMS **C&I EMS**

Controller **V2G**

Awards

ENERGY TECH CHALLENGERS · FREE ELECTRONS · advancing low carbon · EDF · 2020 APAC 25 COMPANY · KPMG · BEYOND

Locations

3 EU Office - Amsterdam
RD – Suzhou and Shanghai

4 Lab for Energy AI. Co-Labs for V2G, EMS and Battery

Energy AI · Battery AI

AI-Driven Demand-side flexibility

Our dynamic AI-powered energy solutions empower **homeowners** and **commercial & industrial** (C&I) clients with affordable energy. By leveraging real-time electricity data, we enable cross-category energy device **coordination and optimization**.

Our systems provide additional flexibility and contribute to the energy transition through Vehicle-to-Grid (**V2G**) and Energy Management Systems (**EMS**) facilitated by Virtual Power Plant (**VPP**).

Combined with enjoyelec's innovative technology, we ensure a **resilient, secure, and sustainable** energy future.

R&D strength

50+ Employees

90+ Tech Patents

Strategic investors

bp · VOLVO · RENAULT NISSAN MITSUBISHI · PORSCHE VENTURES

Industry record

12+	Countries
97+	Brands - Compatible devices
30%	Cost Saving(Avg.)
85%	Prediction Accuracy

enjoyelec Controllers for Diverse Scenarios

Controller Lite

Controller Air2

Controller Pro

iEMS Controller

Residential

Small C&I / Building

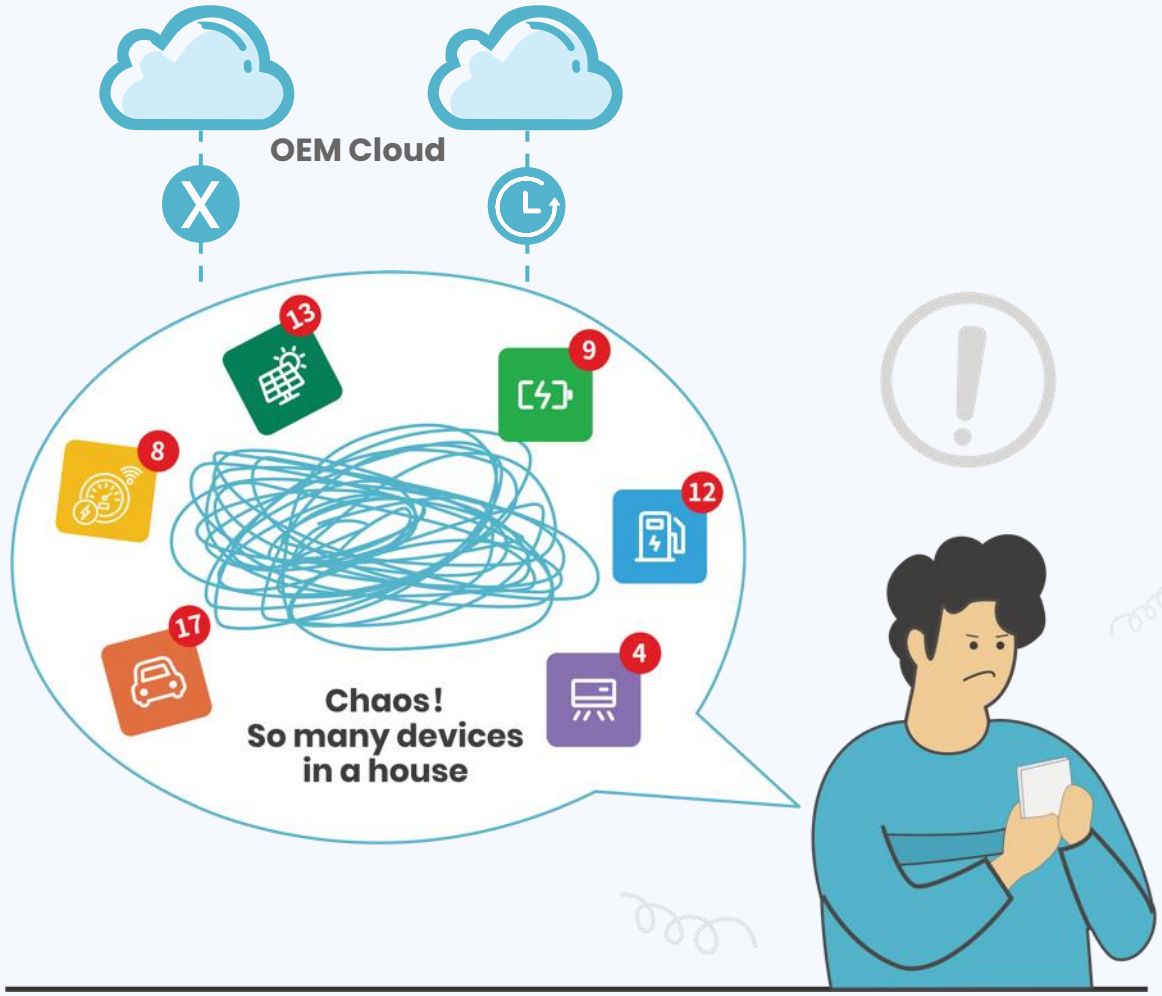
Large C&I

Public Charging Station

ement.

HEMS Products

Key Challenges in Home Energy Management



Isolated monitoring

Scheduling chaos

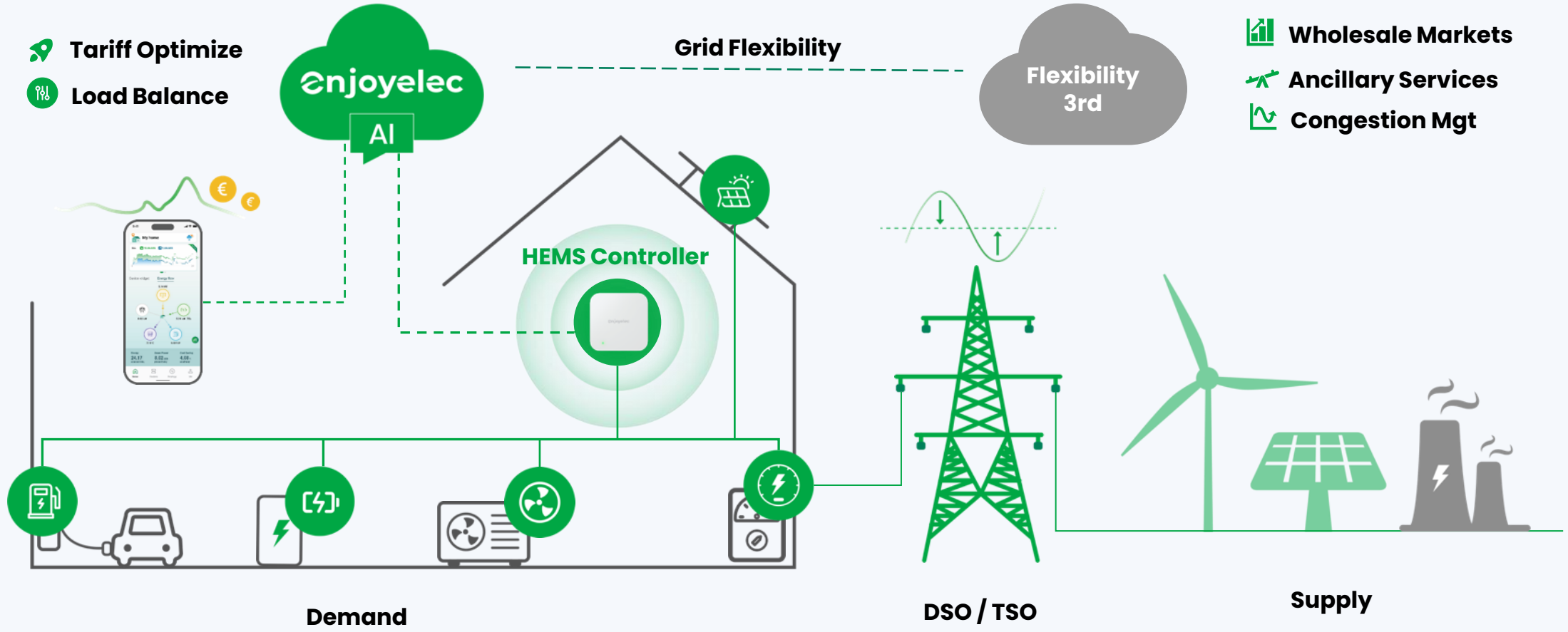
Fragmented Control

Interoperability

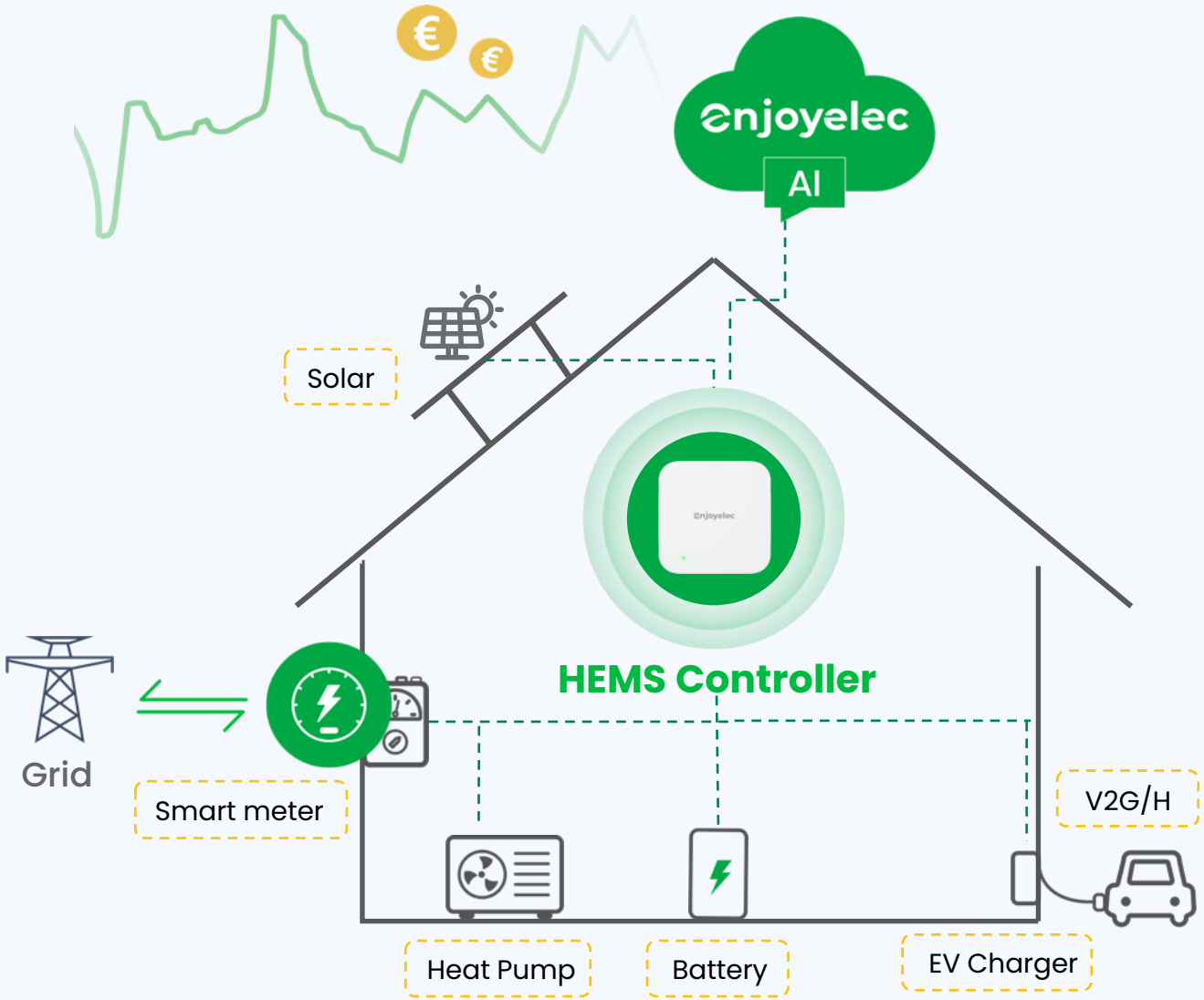
Latency of monitor and control

Lack of offline Capability

HEMS Grid Interaction Architecture



Connect More. Control Smarter. Coordinate Across the Cloud and Edge.



Support Multi-protocols

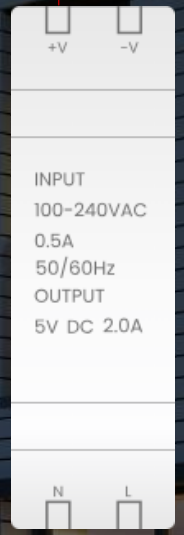
EEBUS · Modbus · zigbee · OCPP · SG Ready · eMUCs – P1 · Linky · openADR ALLIANCE

Support Multi-brands

22 Inverter& Battery	**9** Smart Home	**21** HVAC
18 Charger	**27** EV	**97** Total

DIN-Rail Controller Lite

*Power supply



Digital in

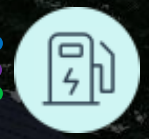
RS485

Digital out

FNN Steuerbox

Inverter

Home Battery



EV Charger

Heat Pump

Meter

Smart Plugs

*AC/DC DIN-Rail Power Supply is not included

Controller Air 2

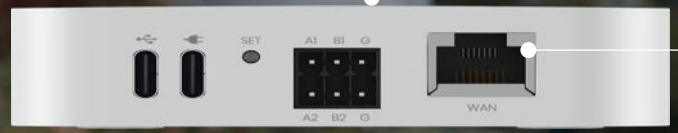
Usage Scenario
Residential-oriented

Installation
- Easy plug-and-play with free setup
- Place it anywhere

Wired

USB-C(Expansion）
✓ P1* ✓Linky* ✓IO* ✓S0*

RS485(1): Baud rate 9600
RS485(2): Baud rate 9600
Baud rate can be configured via software

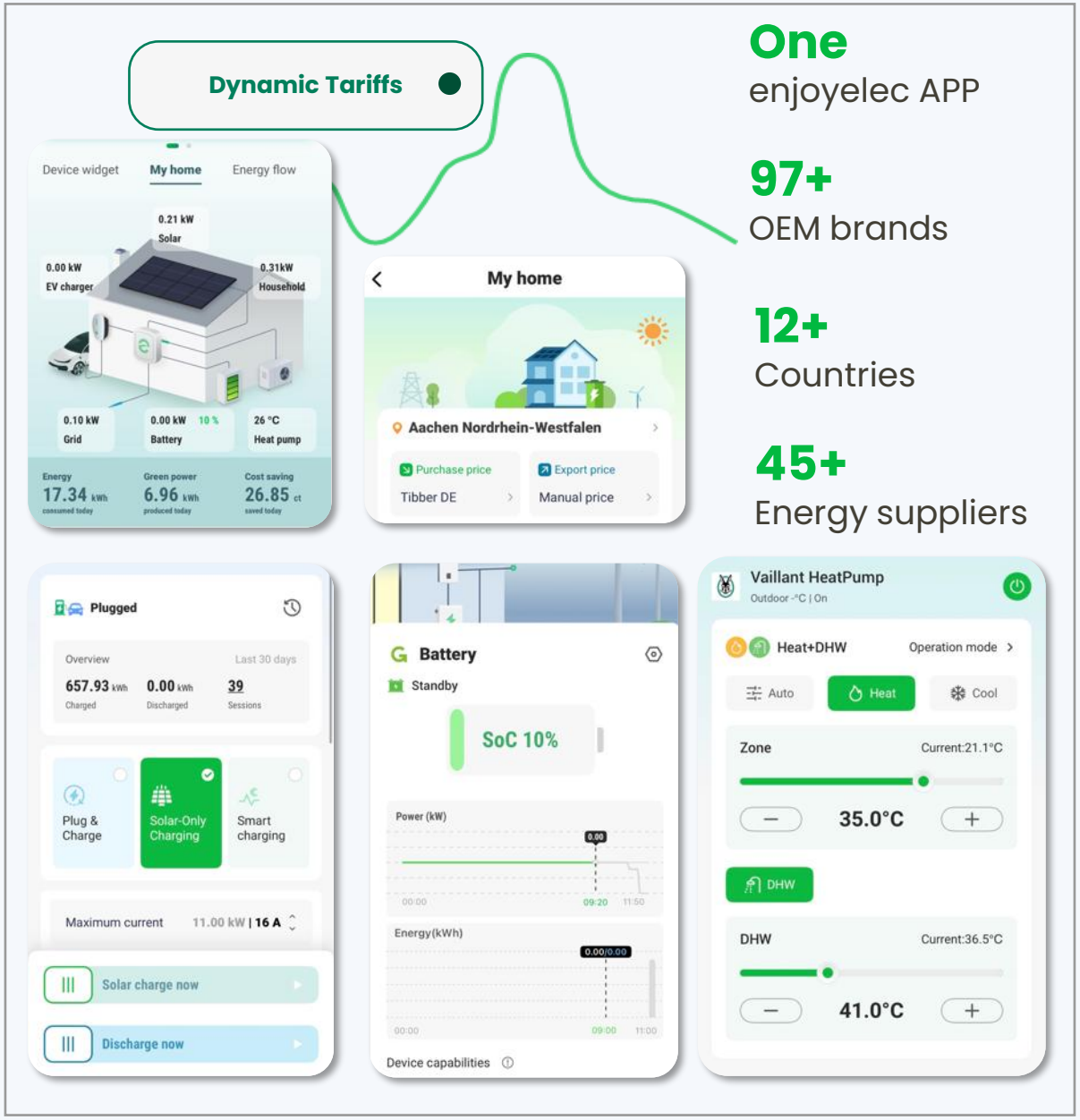


RJ45
10/00Mbps

Wireless

- WI-FI, Bluetooth, Zigbee
- Protocols: Modbus. Zigbee, OCPP, EEBUS, eMUCs-P1, Linky, OpenADR

HEMS APP: Automatically control energy resources based on tariff optimization



One
enjoyelec APP

97+
OEM brands

12+
Countries

45+
Energy suppliers

All-in-One Control

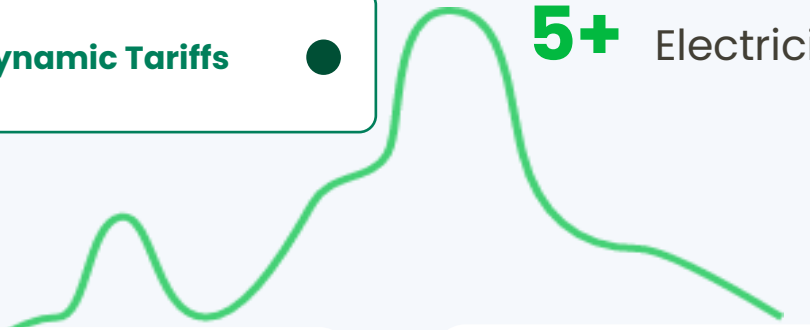
Seamless Switching Between Retailers

Personalized Energy Insights

AI-powered Energy Strategies

Connecting to 5+ energy trading markets and 45+ energy retailers

Dynamic Tariffs



5+ Electricity Markets

NORD POOL
A EURONEXT COMPANY

Nordic electricity market

epexspot

EU Market

omie

Liberian Electricity Market
(Spain, Portugal)

AEMO

Australian Electricity
Market

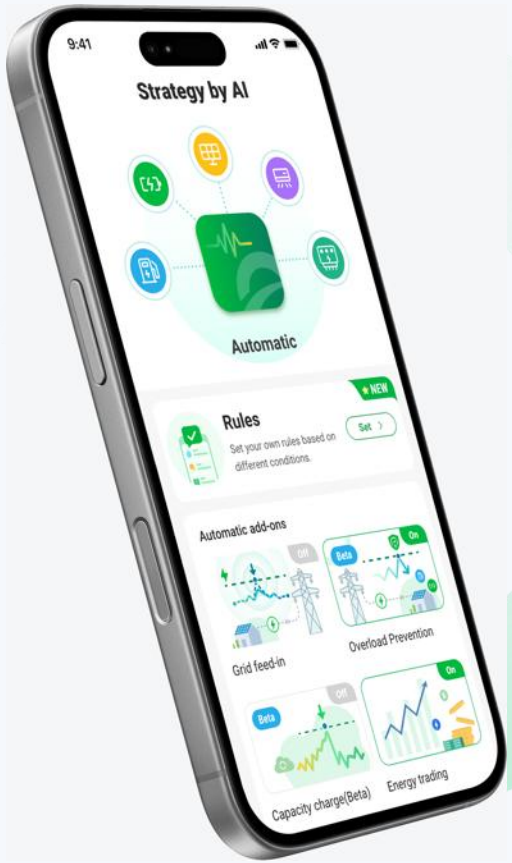
opcom

Romanian Electricity Market

45+ Energy Retailers

e·on
tibber
octopus energy
VATTENFALL
ESWE Versorgung
EDF
SW//M
rabot.charge
ostrom
evd energieversorgung dormagen
EnBW
aWATTar a tado° company
ALBSTADTWERKE STROM · ERDGAS · WASSER · WÄRME · BÄDER
enovos
ENGIE
Eneco
luminus
OCTA+
easyenergy
NIEUWE STROOM
LUQX energy
oomi
fortum
anwb
PKS
KERAVAN energia
VAASAN SÄHKÖ
LOCAL VOLTS
amber
LUMOENERGIA
Fronius
...

Streamlining energy cost optimization: AI-driven dynamic tariffs at your fingertips

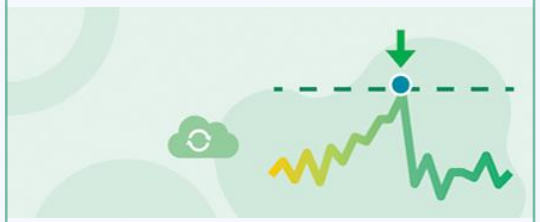


Energy trading

Buy low, sell high, profit from the grid.

Capacity charge

Control power, cap your costs.



Grid Feed-in

Customized your feed-in limit.

Overload Prevention

Smart limits, safeguard your home.

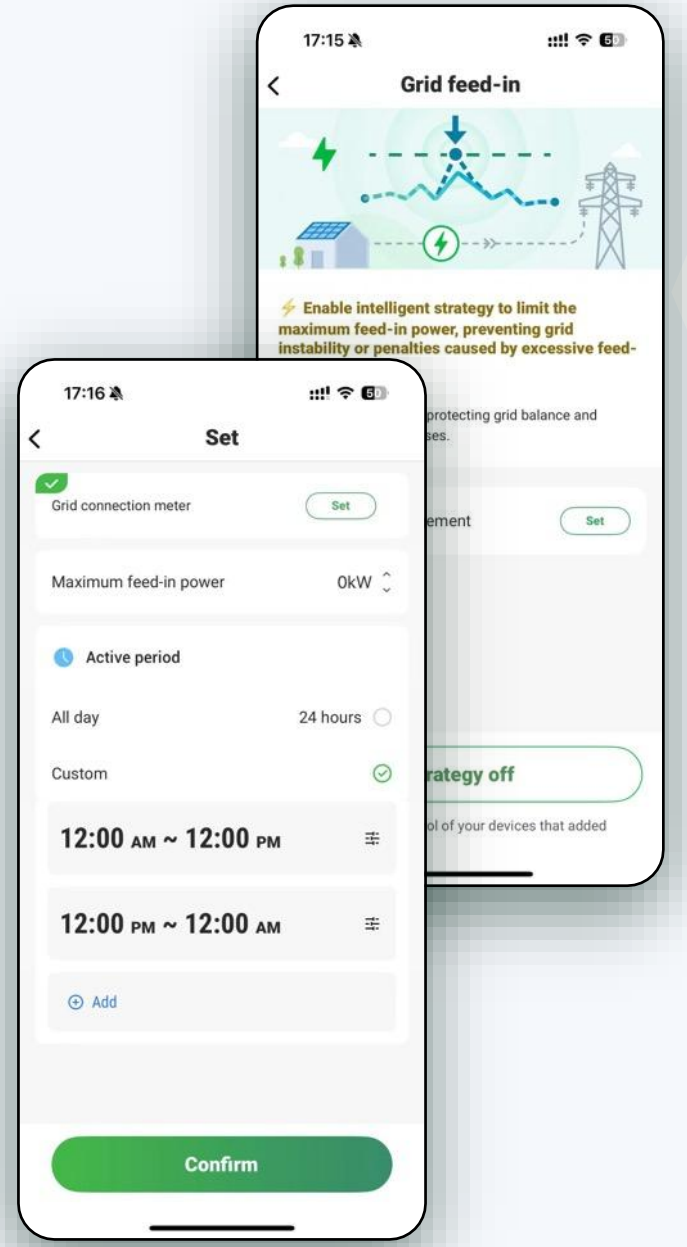
Battery standby

Prep your power for next outage.

Battery for EV

Boost Battery for EV charging faster.

HEMS Application Enhanced Functions

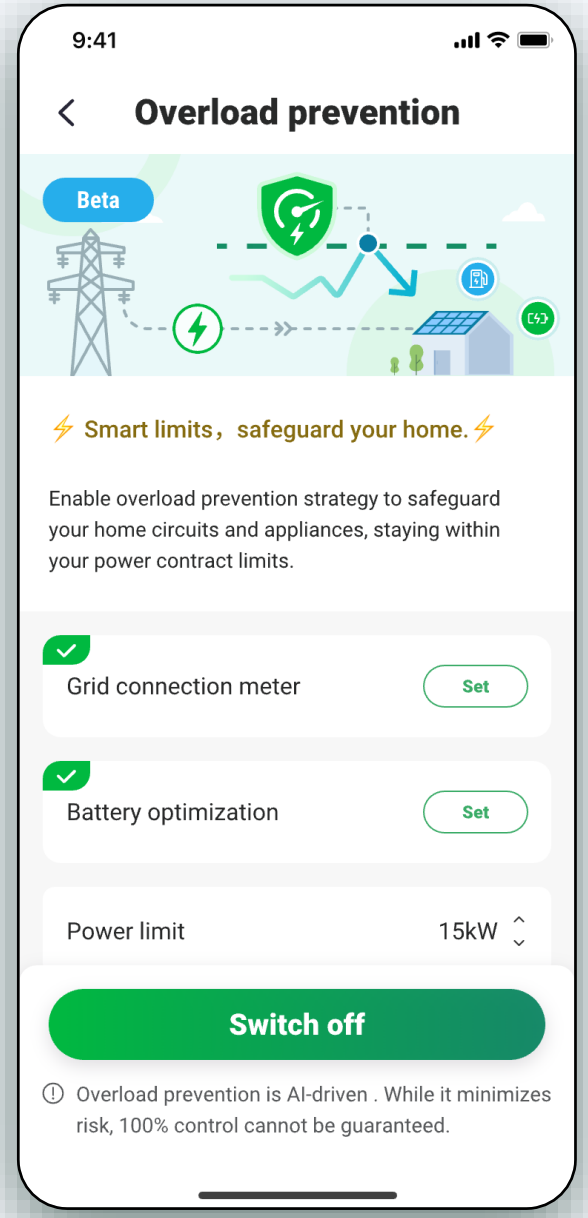


Grid feed-in Protection

Enable intelligent strategy to limit the maximum feed-in power, preventing grid instability or penalties cased by excessive feed-in

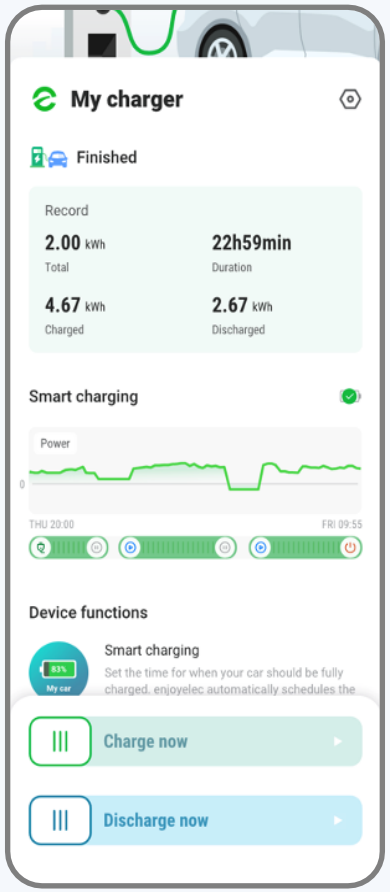
Overload Prevention

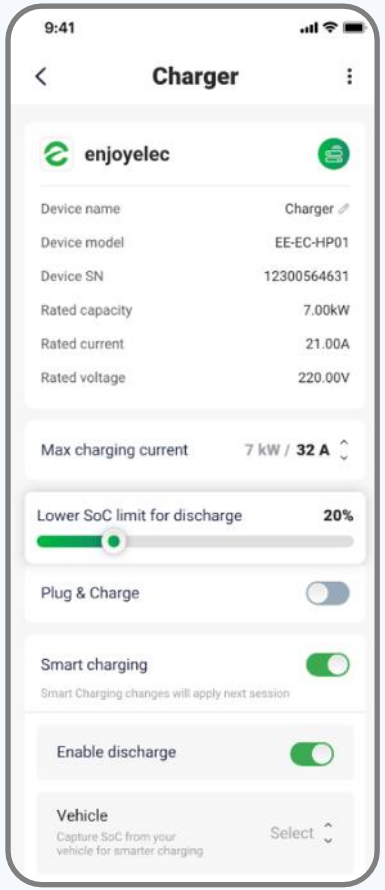
Enable overload prevention strategy to safeguard your home circuits and appliances, staying within your power contract limits

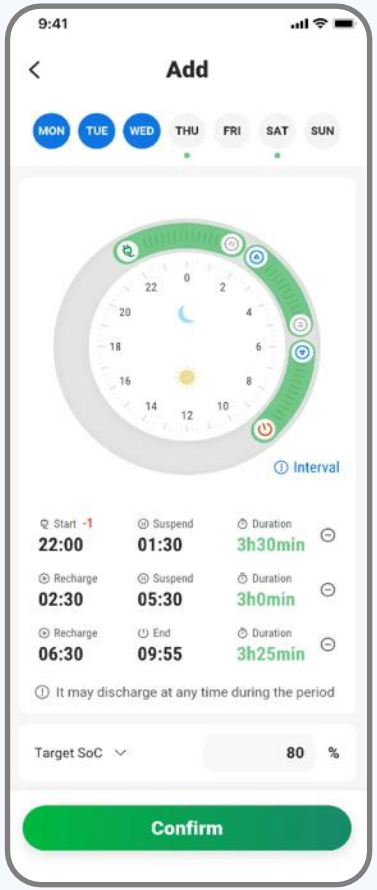


Smart Charging / Discharging in HEMS APP

Customized smart charging / discharging profile interacting with vehicles







Smart Charging & Discharging

- Charging / Discharging based on energy prices
- Smart discharging strategy with departure time, departure target SoC, etc.

Limit Guarantee for Discharging

- Discharging power limit setting
- Minimal discharging SoC setting
- Instant manual discharging based on home consumption

Flexible EV Charger Schedule

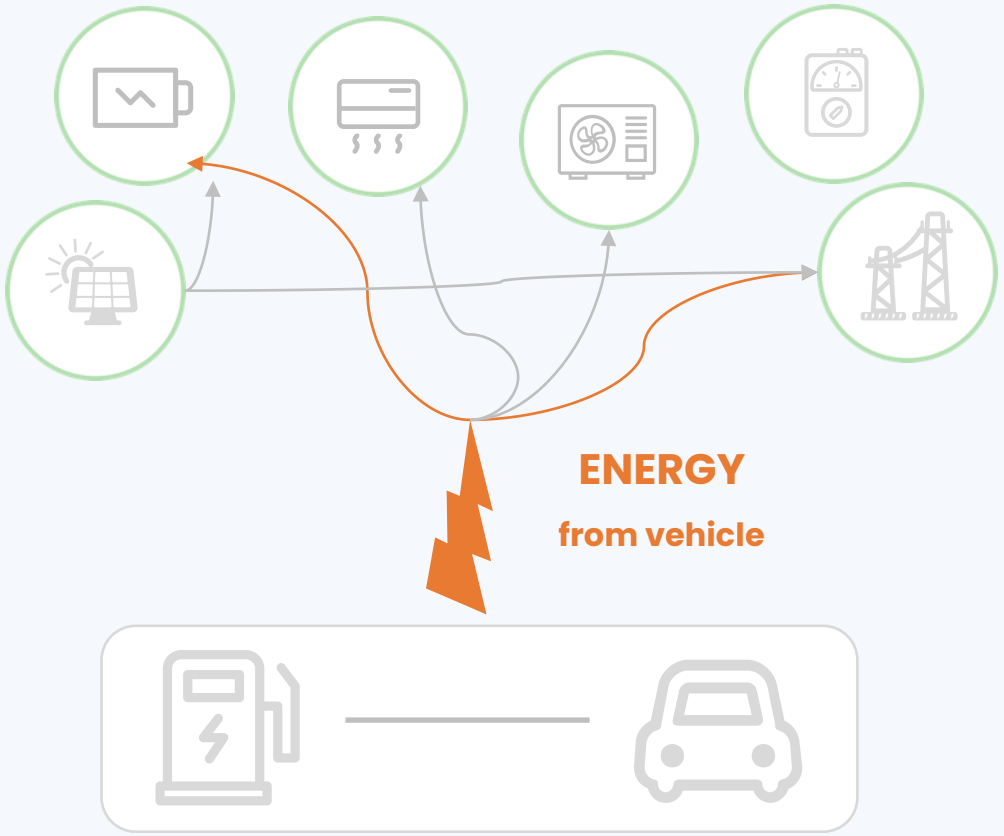
- Daily and weekly periodic settings
- Peak / off-peak customization

Vehicle to Grid (V2G) in HEMS

enjoyelec HEMS, as the **energy management center** in the home, coordinates V2G capabilities in home scenarios

Without enjoyelec HEMS,

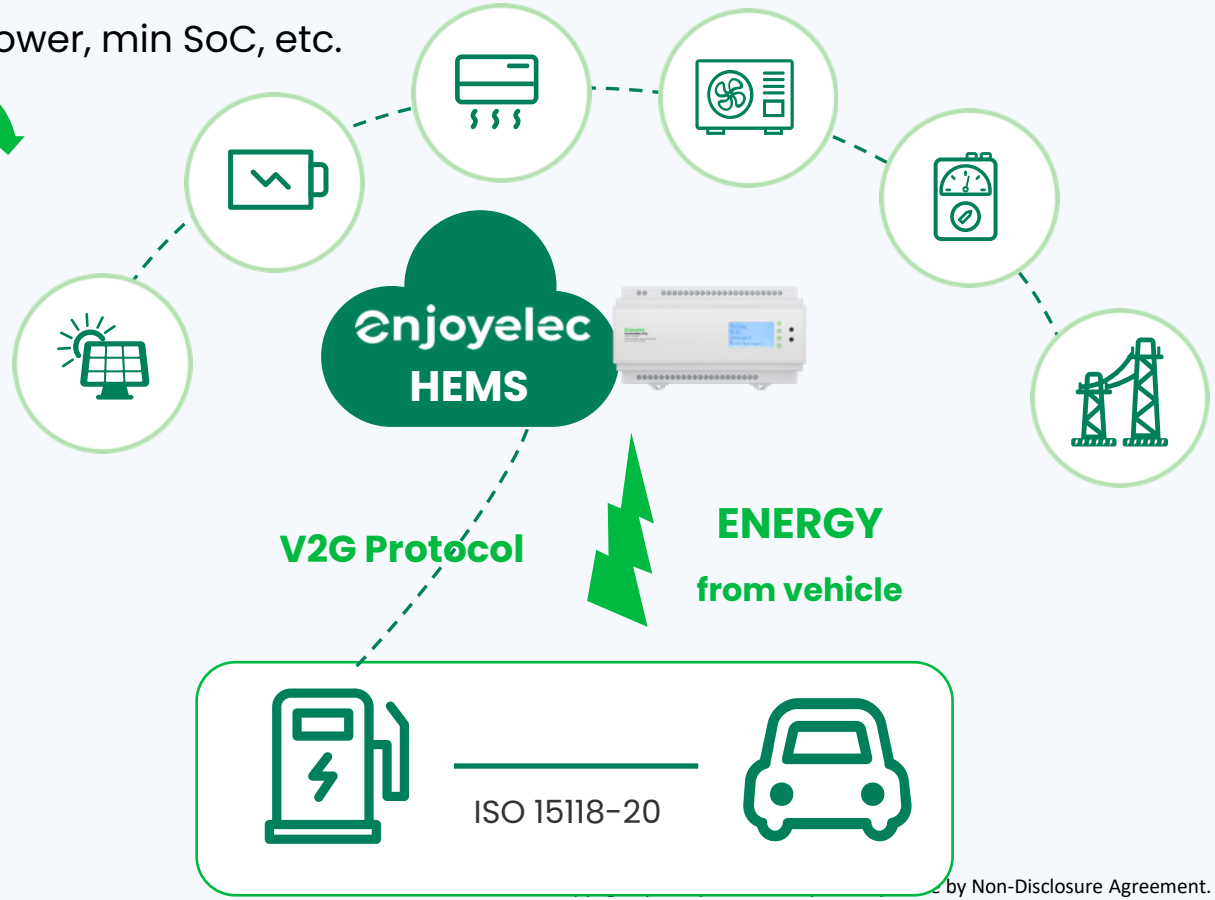
Vehicle energy use will be a mess, which may output to battery, or export to grid in the off-peak time or waste the energy when the export is totally forbidden



With enjoyelec HEMS,

Intelligent vehicle discharging control to suite home usage and optimize EV energy based on dynamic tariffs

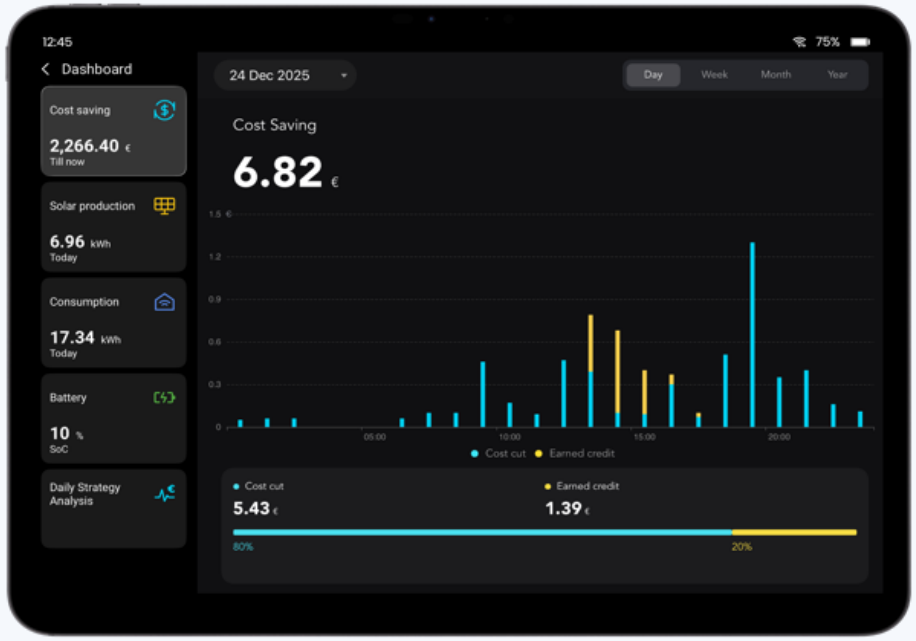
Real-time adjustment of the EV power including discharging power, min SoC, etc.



HEMS Pad Version

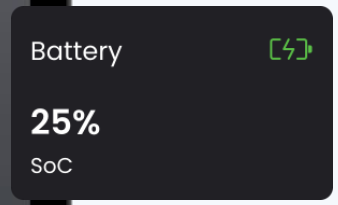
A real-time, big-screen energy flow visualization

Live Energy Flow



Executive Data Dashboard

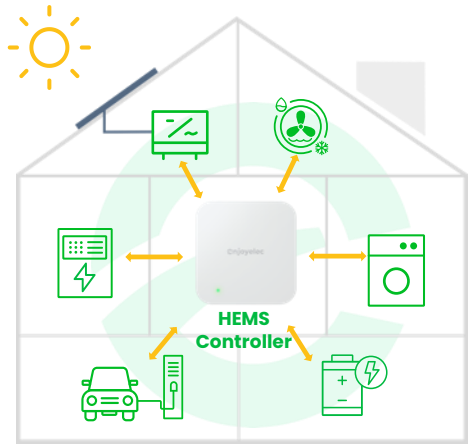
Strategy Performance Monitor



AI-Driven Optimization for Smarter, Cheaper Energy

- Market Price
- Dynamic Tariff
- Weather, Fuel
- Price, EV SoC
- Regulatory
- requirements

External Data



Realtime Data

enjoyelec AI ENGINE

Forecasting

- Spot Price
- Solar Generation
- Demand & Load
- DSF Event

Optimization

- Dynamic tariff
- Power Reduction Limits
- V2G & EV Charging
- Heat Pump
- Battery

HEMS Dispatch

Interoperability with EEBUS

Standard-based connectivity with EEBUS in Germany

enjoyelec is one of the members and leading companies supporting EEBUS

EEBUS Initiave e.V.

Creating a **communication standard that ensures interoperability** of all **energy-relevant devices** and **systems** across domains.

Standard-based Connectivity

Driving the energy transition and regulatory requirements **(§14a EnWG)** can be implemented in practice

Working Closely with EEBUS

enjoyelec is one of the members and leading companies supporting EEBUS

Become a EEBUS Member 2023

EEBUS Plugfest 2024

Join Working Groups 2024

EEBUS Summit 2024

Cologne Living Lab Testing & Qualification 2024 & 2025

enjoyelec HEMS Ready for Germany § 14a

enjoyelec HEMS in Germany, the standard bridge of the grid and home energy

HEMS Controller and Application: key part of

Home Management

A **bridge** combined the grid and distributed home energy resources

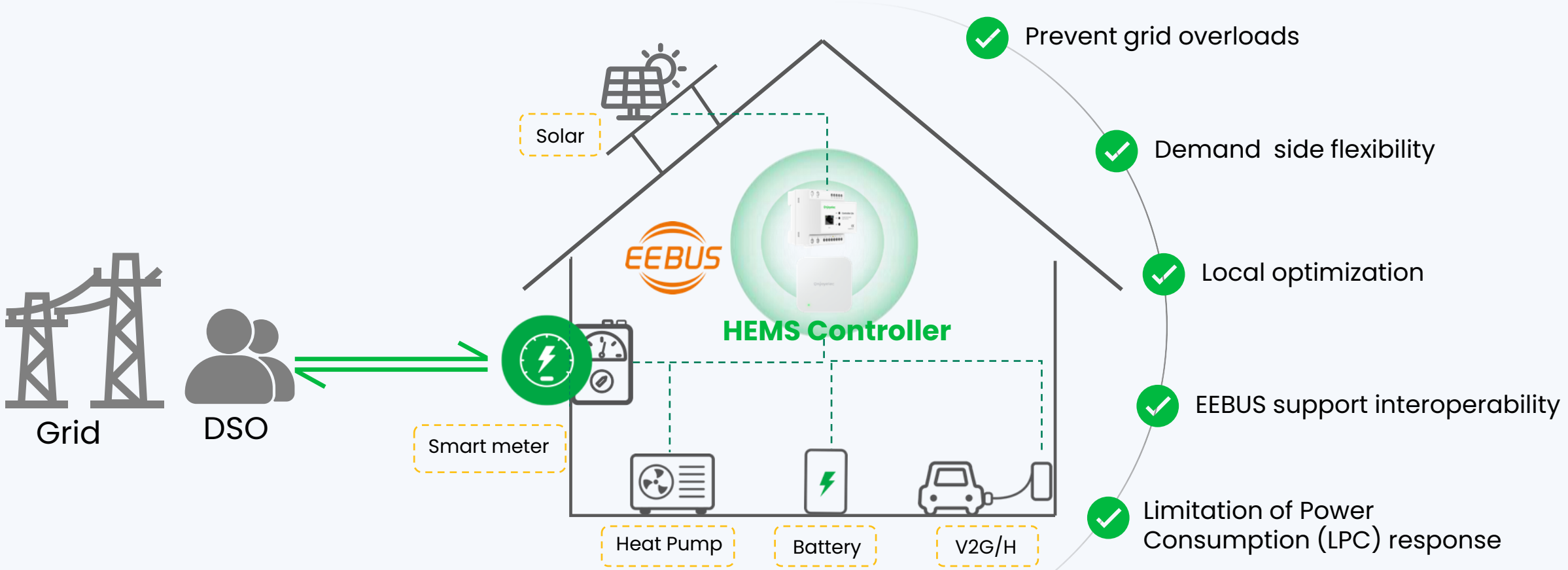
enjoyelec HEMS's key points
for the Germany Compliance of § 14a EnWG

- Prevent grid overloads
- Edge side capability
  - Energy management with more flexible, scalable
- Local optimization and quick adjustment based on variance of PV and user's consumption
- EEBUS supported
  - Interoperability
  - LPC (limitation of power consumption) ready for grid signal
- Ensure subsidy from DSO

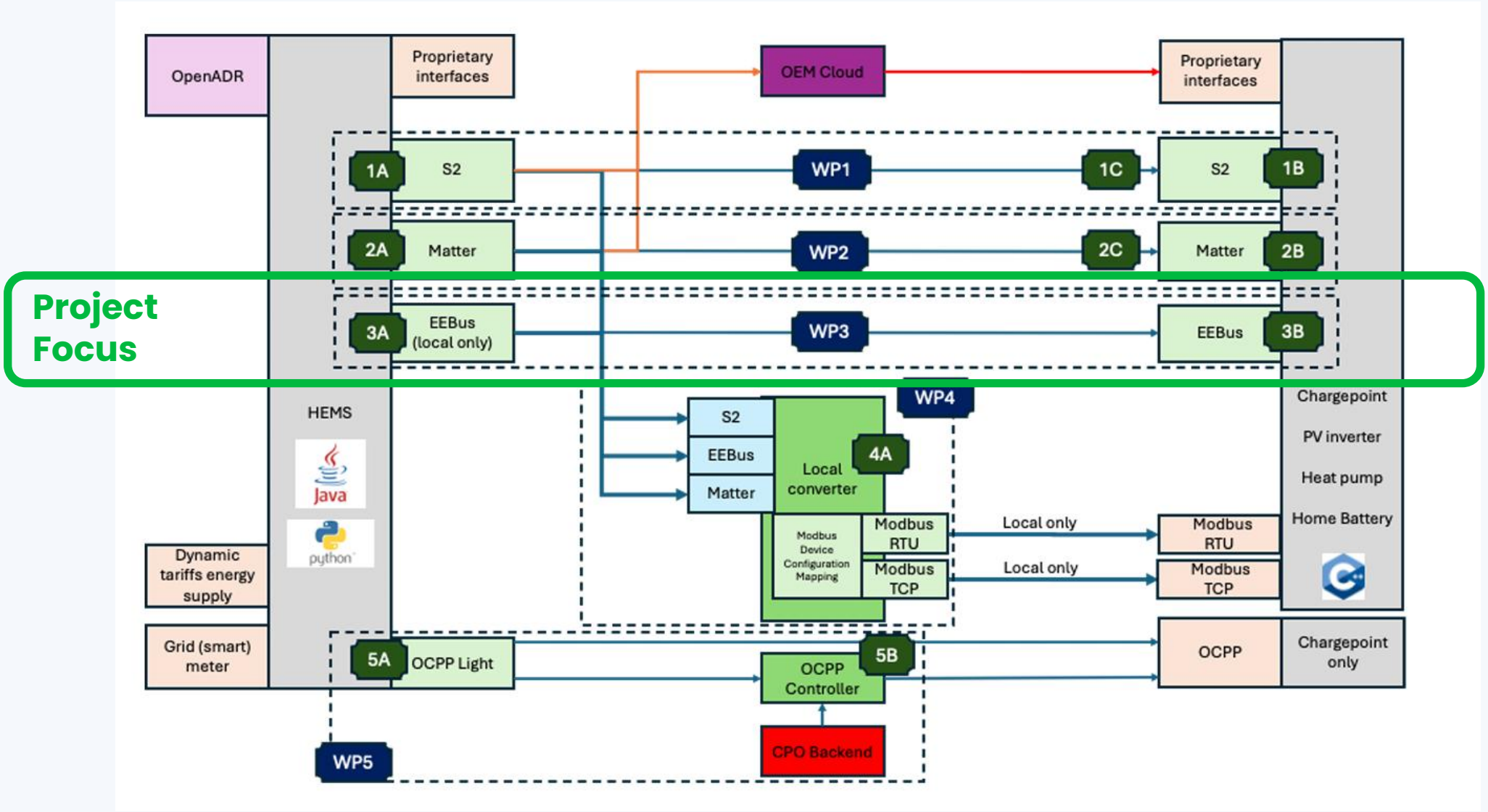
§14a EnWG

enjoyelec HEMS Ready for Interoperability with EEBUS

enjoyelec HEMS with EEBUS, the standard bridge of the grid and home energy

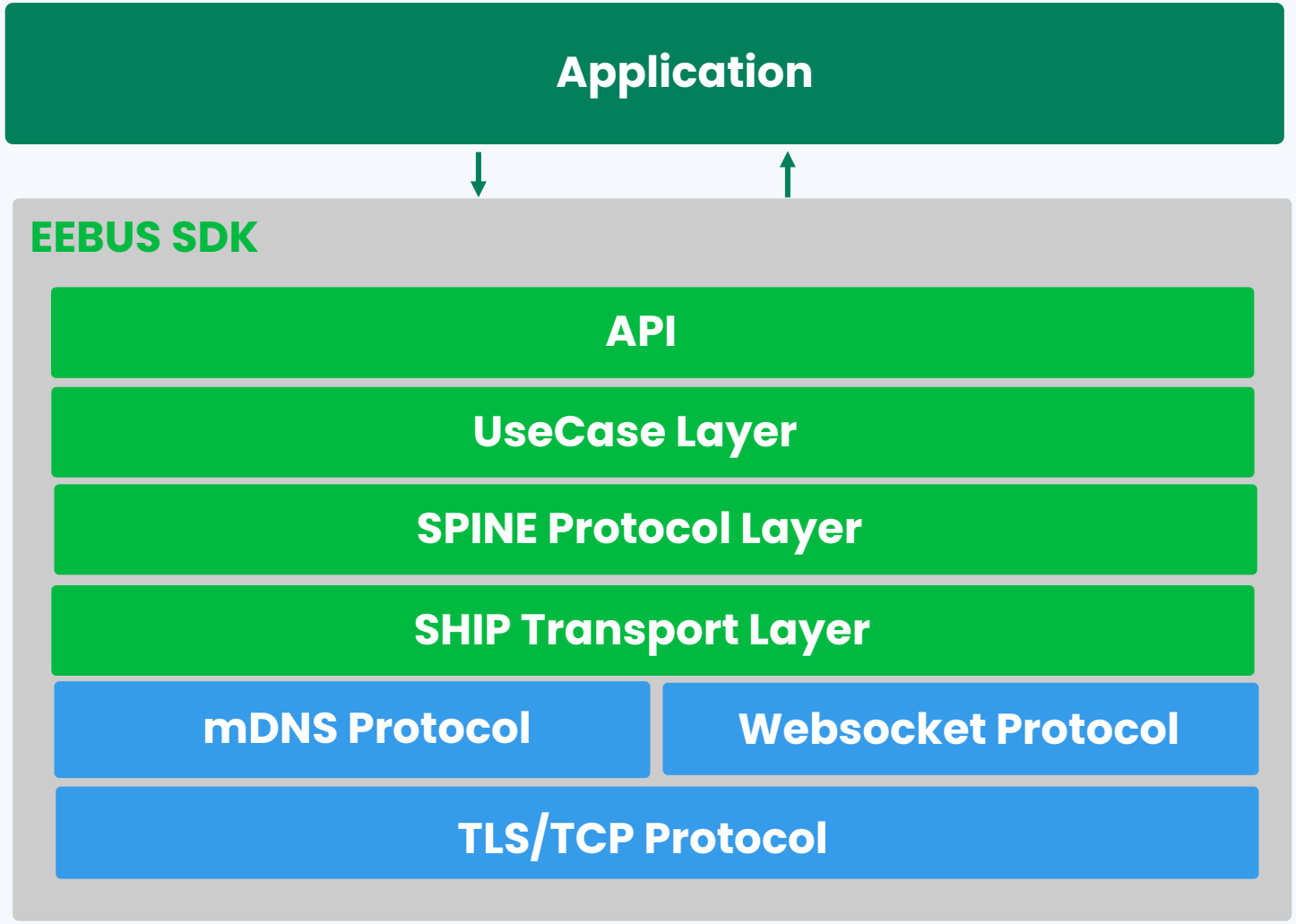


Elaad Open Source Project for EEBUS Interoperability



enjoyelec Own Stack for EEBUS Implementation

Well-defined APIs for the application layer to use.



Dev Language

C Language,

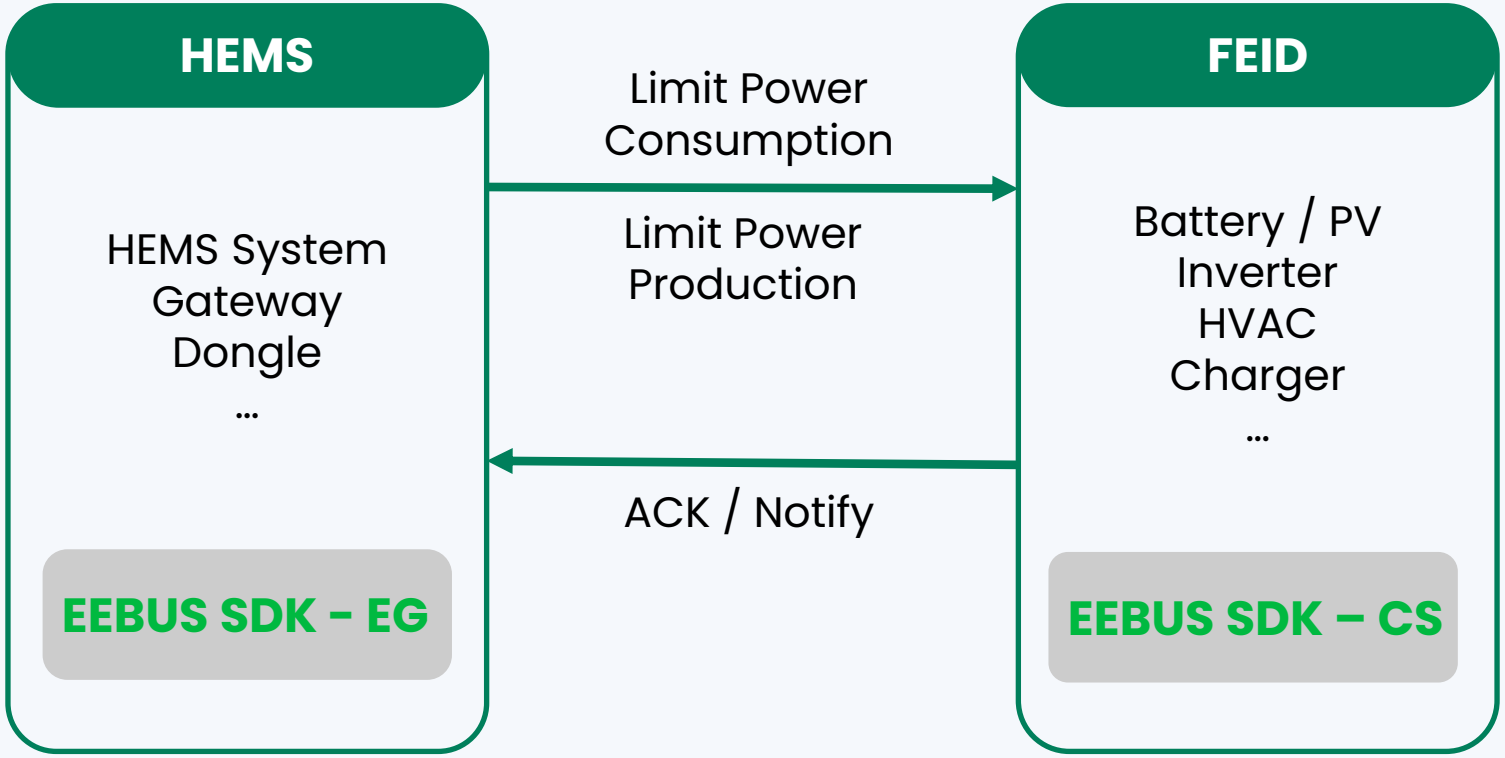
Suitable for embedded system

Open Sourced

Under the Apache 2.0 license

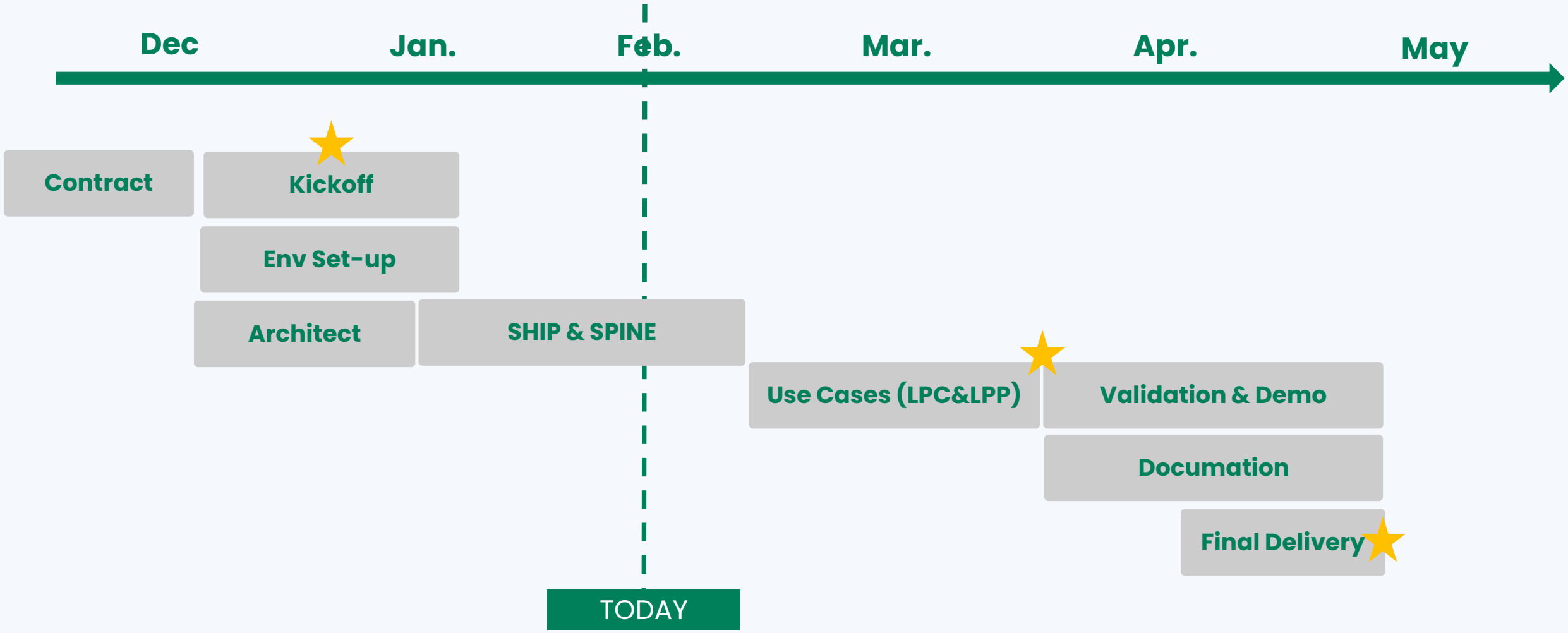
Open Source Project for EEBUS Interoperability

Enhance HEMS ecos with capability of EEBUS interoperability



Quick Integration with well-defined APIs under HEMS practice

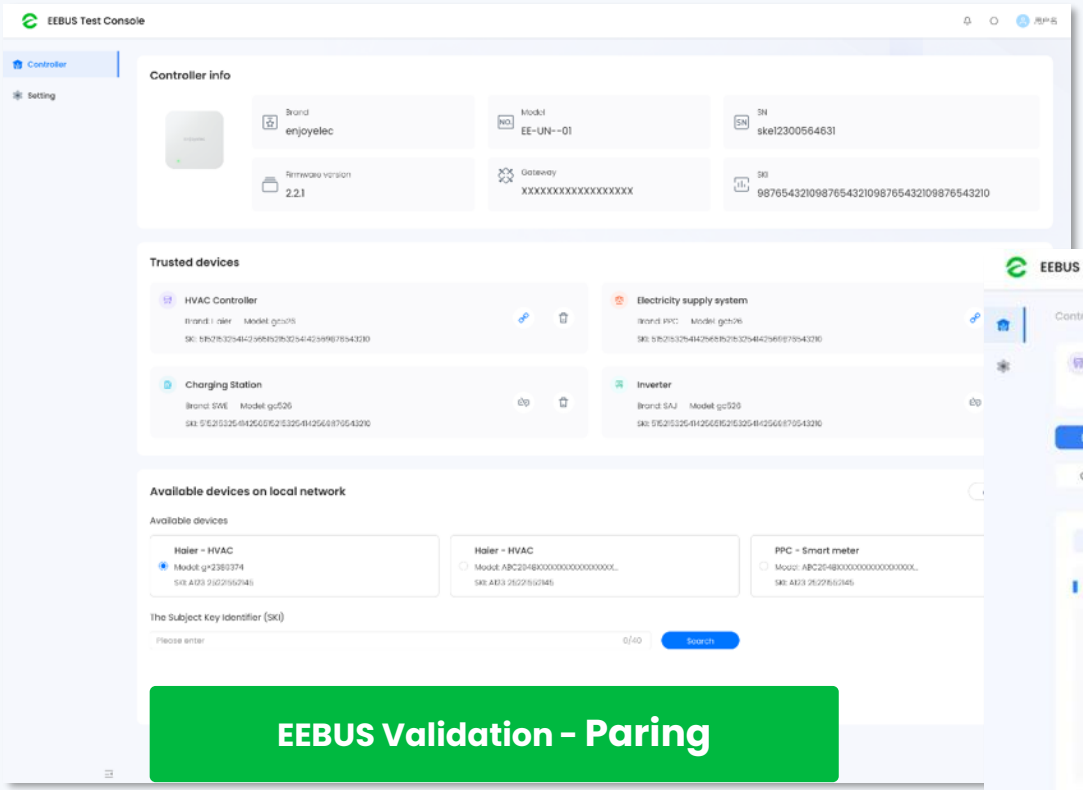
Timeline of Open Source Project for Interoperability



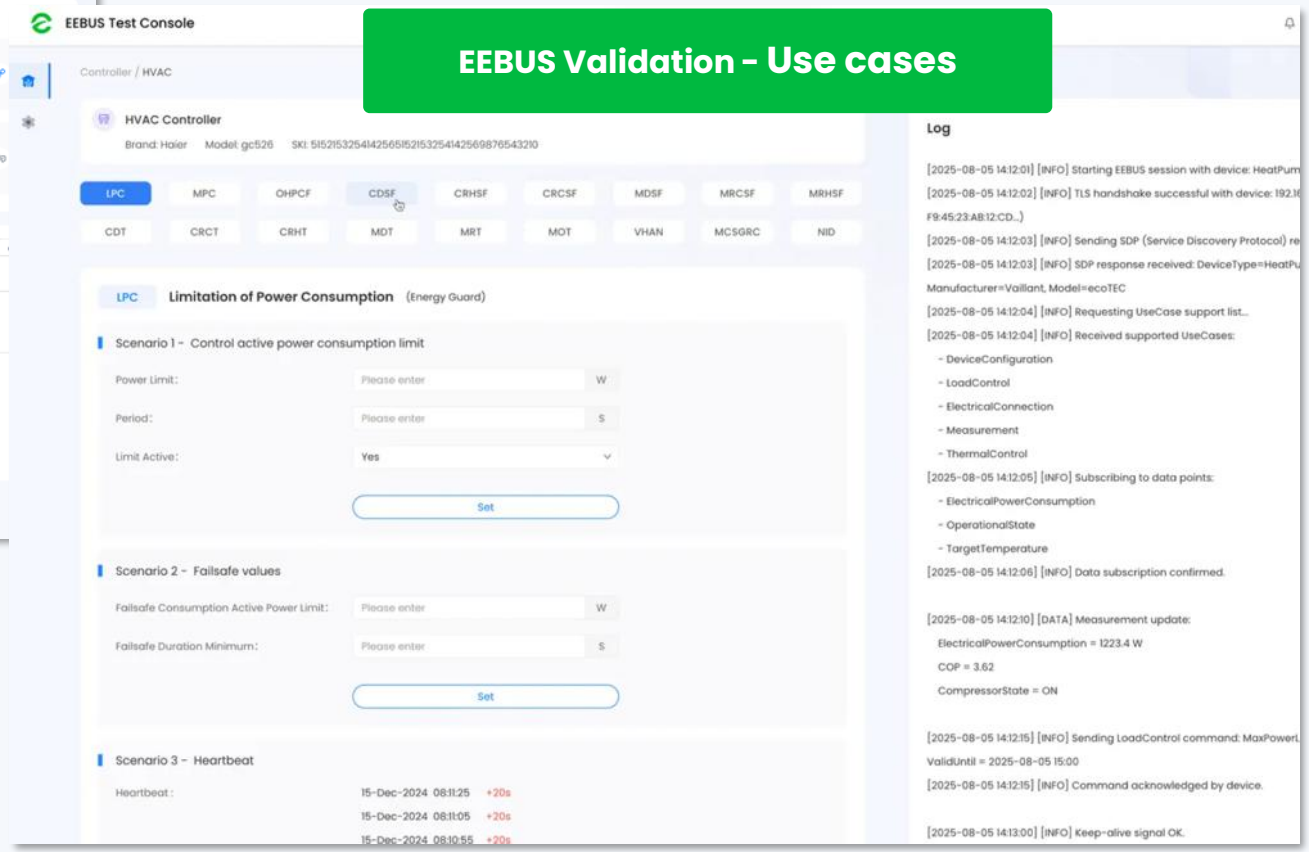
Local WEB Portal for EEBUS testing

Easy testing of EEBUS testing portal running locally

Testing Portal Inside



EEBUS Validation - Paring



EEBUS Validation - Use cases

enjoyelec HEMS Eco-system - Inverter &battery OEMs

Solar and Battery

HUAWEI
SIGENERGY
SEPLOS
BEXIE GROUP
Solis
GROWATT
SOLAX POWER
SINENG
TCL
SUNKET
Deye
KOSTAL
NAHUI
ECACTUS
SOLINTEG
Senergy
ThinkPower
Haier
LOTUS
MAGIC POWER
SAJ
Dream Maker
...

EV Charger

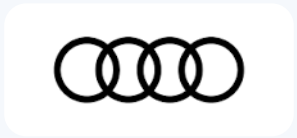
StarCharge
EATON
go-e
ALFEN
wallbox
ABB
circontrol
EN+
DELTA
EV SWITCH
Fronius
KEBA Automation by innovation.
MG
OCULAR
ORBIS
Schneider Electric
ZBENY
eo

Multi-Brand Ecosystem - Heat Pump OEMs Connected

Vaillant
DemirDöküm
Dimplex
Midea
protherm Always at your side
Bulex
STIEBEL ELTRON
Dream Maker
Hermann Saunier Duval
TCL
GEP German Energy Power
POWER WORLD
glow worm
NIBE
Haier
DAIKIN
awb
LG
GREE
...

FOX ESS
FUJITSU
Panasonic
MITSUBISHI
Coming soon

enjoyelec HEMS Eco-system – EV OEMs Connected








enjoyelec HEMS Eco-system： Smart Home Connected

Smart Meter

Shelly

Acrel

PPC
Power Plus Communications

lixee

Eastron
EUROPE

Schneider Electric

Smart Plug

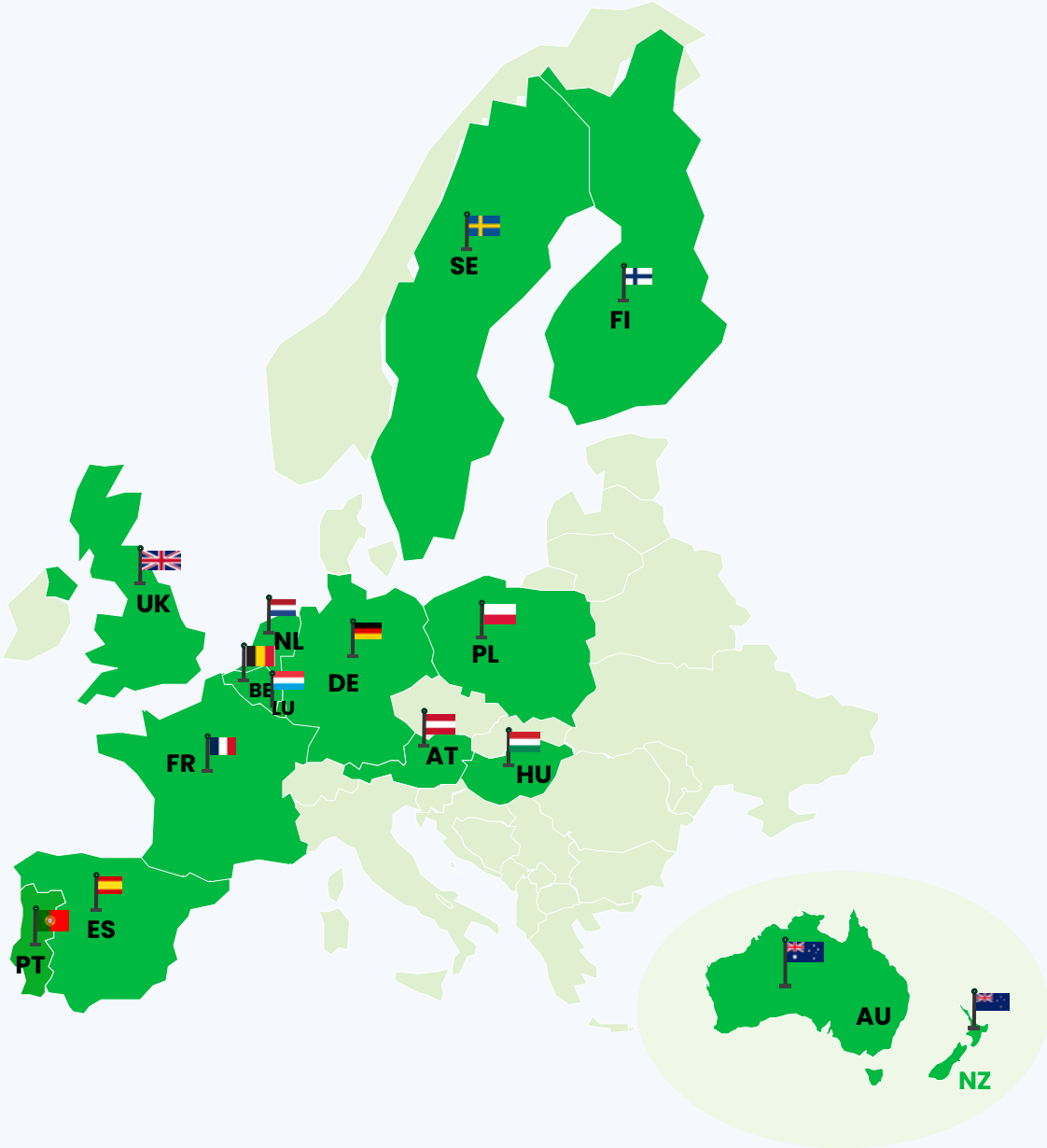
LEDVANCE

tuya

Aqara

Shelly

HEMS Cases



Use Case in Ulm, Germany

enjoyelec solution helps German customers lower their home electricity bills with dynamic tariff

20%
energy bills reduction

GROWATT · Dimplex · SVE · tibber

Problem Solved

4 persons in a house. The electricity bill for **heating** in winter is particularly **high**.

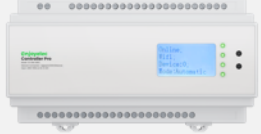
Use Case in Stuttgart, Germany

enjoyelec sets up the use case for the company providing building technology & electrical installation in Germany

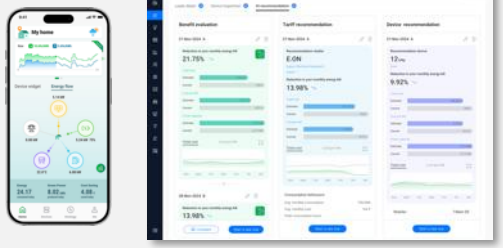
Location Stuttgart, Germany, 2024

Problem

- Need complete HEMS solution to expand the business for home energy area.
- Quick setup with energy devices to complies with German 14a Act



Controller Pro



HEMS Application

PV: 5.04 kWp

KOSTAL Inverter: 5.5 kW

KOSTAL BYD

ostrom

Ostrom SimplyDynamic

Use Case In Kölnin, Germany

enjoyelec HEMS helps German customer with improving solar self-consumption and smart heating.

Energy Tariff

- **Day-ahead prices: Hourly** fluctuating prices based on **day ahead** electricity market
- **Low injection prices** : 7.94 c/kWh

Strategy

- Improve PV **self-consumption**
- PV **injection protection**
- **Peak shaving**
- **Smart charging**
- **Solar charging**

§14a EnWG

Bill Reduction for half year

19%

SOLINTEG STIEBEL ELTRON Star Charge e·on

Use Case In Drenthe, Netherlands

Achieve **59.6%** cost saving

SEP Reduce **€ 123.43**

AUG Reduce **€ 99.37**

JUL Start the saving journey with enjoyelec

What Our Customer Say

enjoyelec HEMS controller pro is doing a fine job of optimizing the cost of electricity. Before I had to do this by hand and now it is automated. And I wanna thank you for the quick reply to the questions I had. I'm glad about the progress 😊

Thanks, Wybren

Use Case In Noord-Brabant, Netherlands

enjoyelec HEMS helps Dutch customer with energy trading via two-way dynamic tariff

52%

First-Month savings*

Haier SIGENERGY anwb

Cut the bill from ANWB

*Based on a combination of energy savings and revenue from selling excess power

Use Case In Friesland, Netherlands

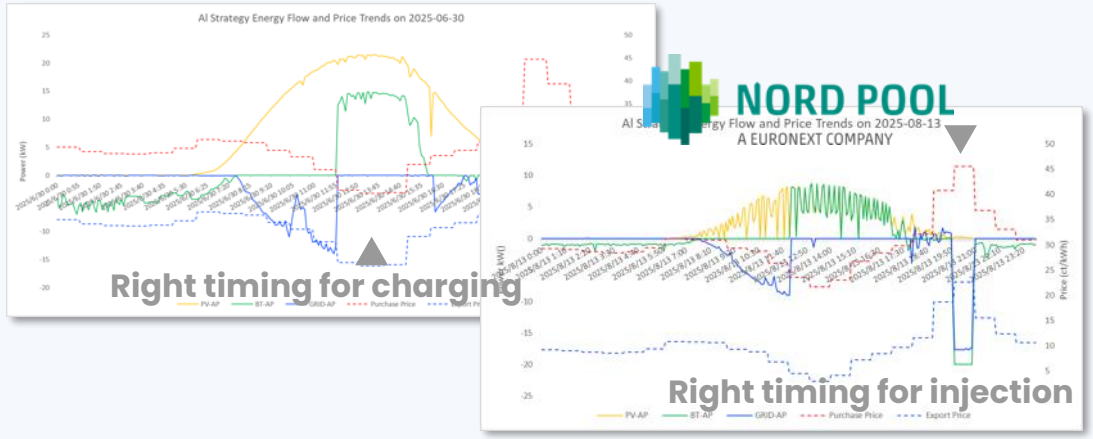
enjoyelec HEMS helps Dutch customer with energy trading via dynamic tariff referenced from NL market

33%

Bill reduced for half year

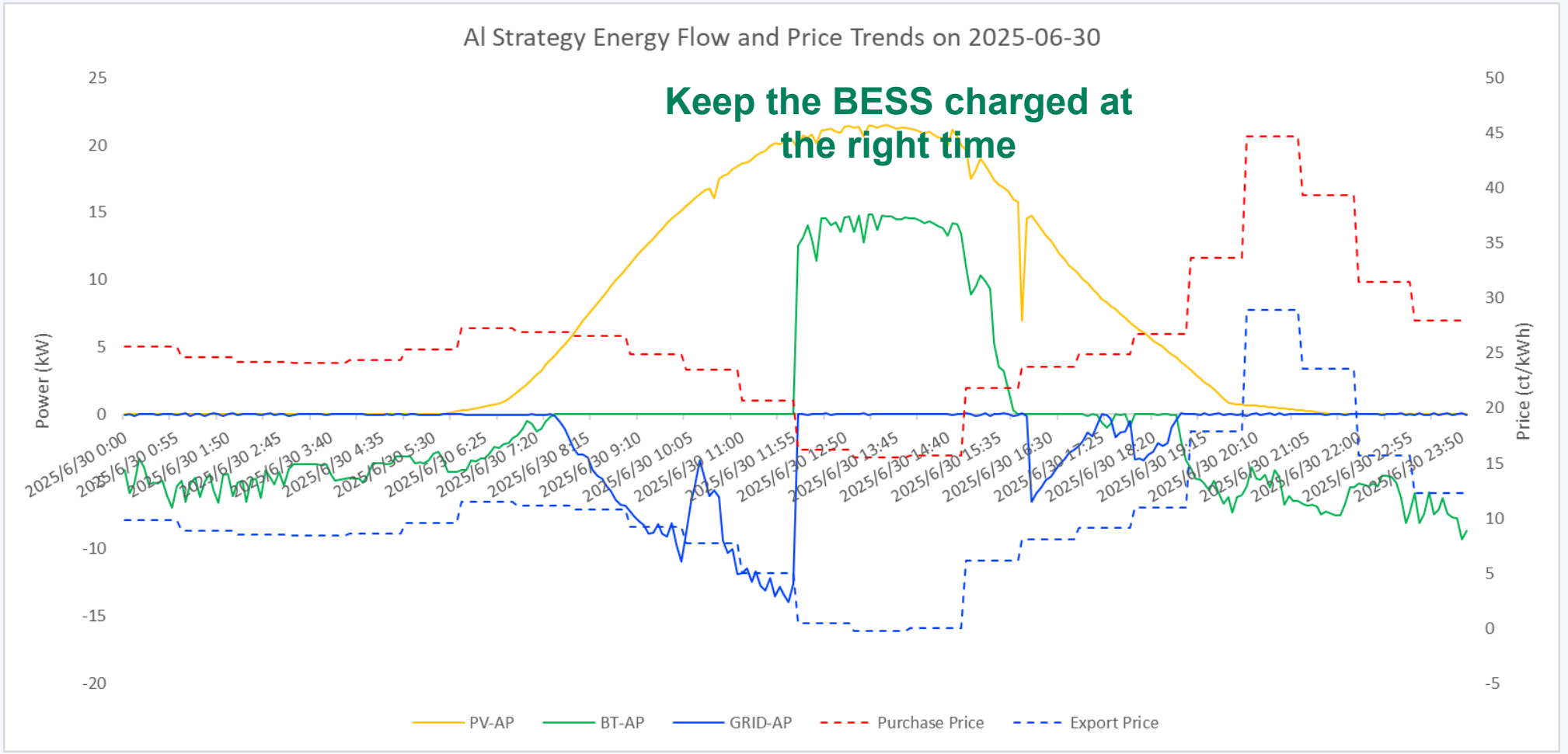
MAGIC POWER ETREL NL Markets

two-way dynamic tariff in NL from Nord Pool



Strategy Tracking Details

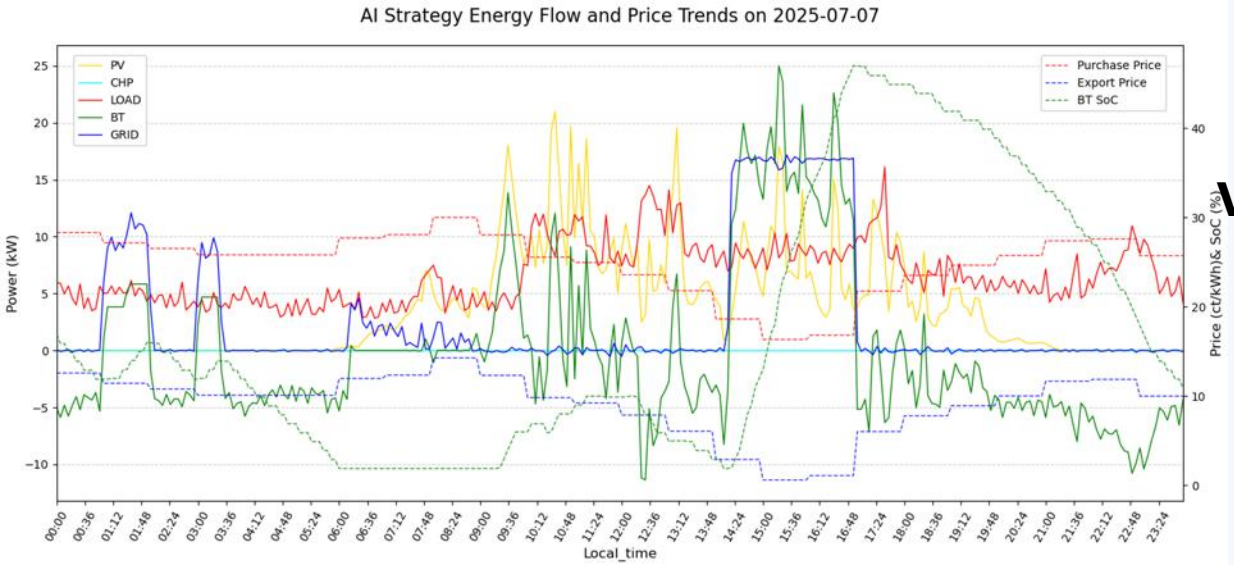
Real case in the Netherland with very sufficient PV energy



Strategy Tracking Details

Real case in the Netherland with less PV energy

With HEMS



BESS Charging at very low prices

V.S.

Without HEMS