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Intelligent Energy Management: From Data to Decisions

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Panel: What If Energy Could Think? AI – From Forecasting to Autonomous Energy Decisions

ICT CLUSTER VARNA
BSMEPA BULGARIAN SMALL AND MEDIUM ENTERPRISES PROMOTION AGENCY
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Industrial-scale energy know-how — now for every producer

7
countries on 3 continents

1,737 MW
installed hydropower

2.6M
network customers

9,700+
employees

In Bulgaria

1.2M
network customers

14
hydropower plants

30,000 km²
service territory

2,500+
employees

H1 2026: €857M revenue

Then: one price, one bill a month. Now: 96 prices a day

THEN *One-way · regulated · monthly*

1. **One-way power**
   Big plants → grid → passive customers
2. **Regulated prices**
   Set by the regulator (EWRC); supplier assigned by territory
3. **Monthly, manual billing**
   Meter read on site; kWh × tariff; paper bill at the cash desk
4. **No market risk for producers**
   Fixed preferential prices, sold to the state company NEK
5. **Balancing**
   The system operator's problem, not the supplier's or customer's

NOW · what changed

2016
IBEX power exchange goes live

Oct 2020
All non-household customers on low voltage move to free-market prices

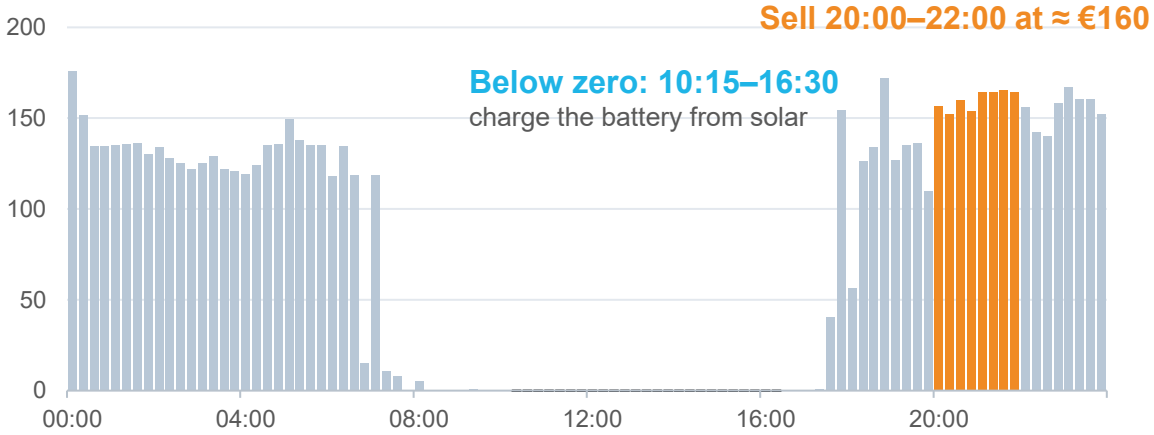
Oct 2025
Day-ahead market moves to 96 prices a day, in 15-minute intervals

Today: anyone can produce, consume or sell flexibility, and prices can go negative

Sources: EWRC, IBEX, CMS Bulgaria.

Then: sell when the sun shines.
Now: sell when it pays

Day-ahead price, Bulgaria, Saturday 25 July 2026 · 96 quarter-hours, €/MWh



Actual client: 5 MW solar charges a 20 MWh battery 11:00–15:00; 90% round-trip efficiency; sold 20:00–22:00 at the average price; excl. fees and tariffs. Source: IBEX day-ahead.

One client: 5 MW solar + 10 MW battery

THEN · sell at midday, pay to deliver

–€0.20

20 MWh at –€0.01/MWh

NOW · store, sell in the evening

€2,882

18 MWh at €160.14/MWh

Same sunshine: from paying to earning

No team can make these calls manually, every day. Energy has to think.

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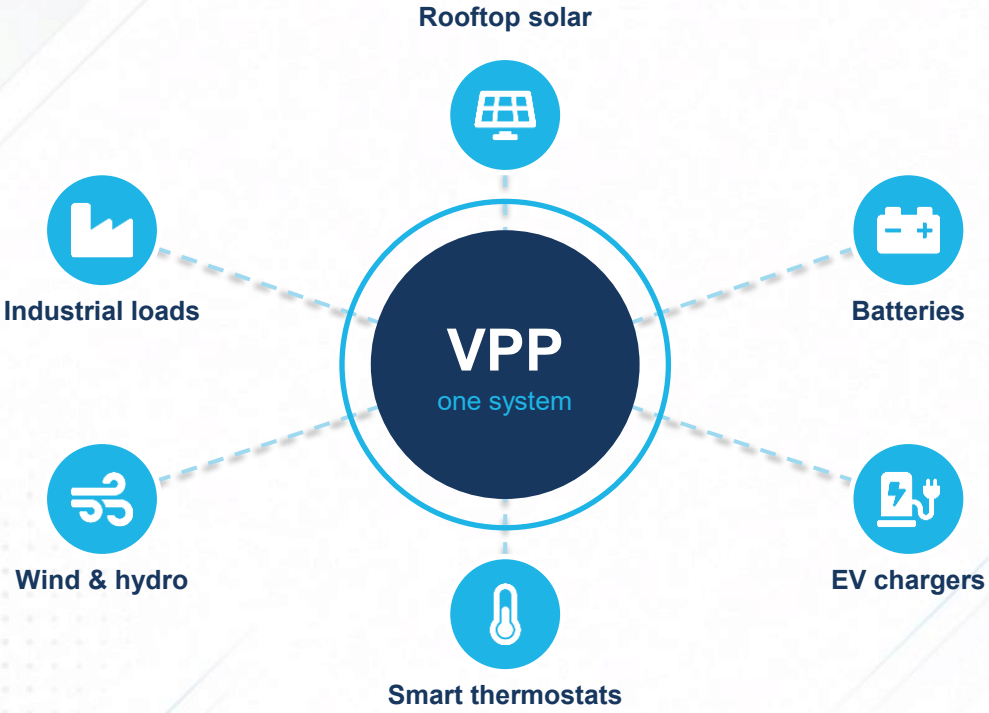
Many small energy assets, orchestrated as one power plant



A Virtual Power Plant connects thousands, even millions, of distributed devices into one orchestrated system that fits into the grid like a traditional power plant.

Behaves like a power plant
One dispatchable unit, measurable and reliable

Cuts peak demand
Releases energy when the grid needs it most

Avoids new fossil plants
Uses assets already connected to the grid

40–60% lower cost than alternative ways to supply the same power

Sources: Solar United Neighbors, "Virtual Power Plants: A better grid, now!"; Brattle Group (2023).

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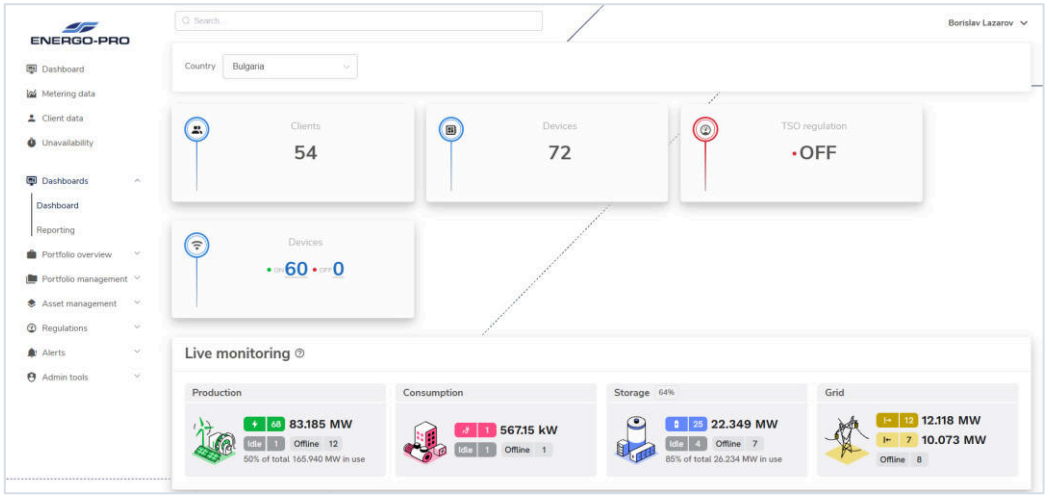
A Virtual Power Plant turns scattered assets into one smart plant

1 Connect
Any producer: solar, hydro, wind, batteries, industry

2 We optimise
Forecasts, trades and dispatch, 24/7

3 Client earns
Assets run when most valuable, plus balancing revenue

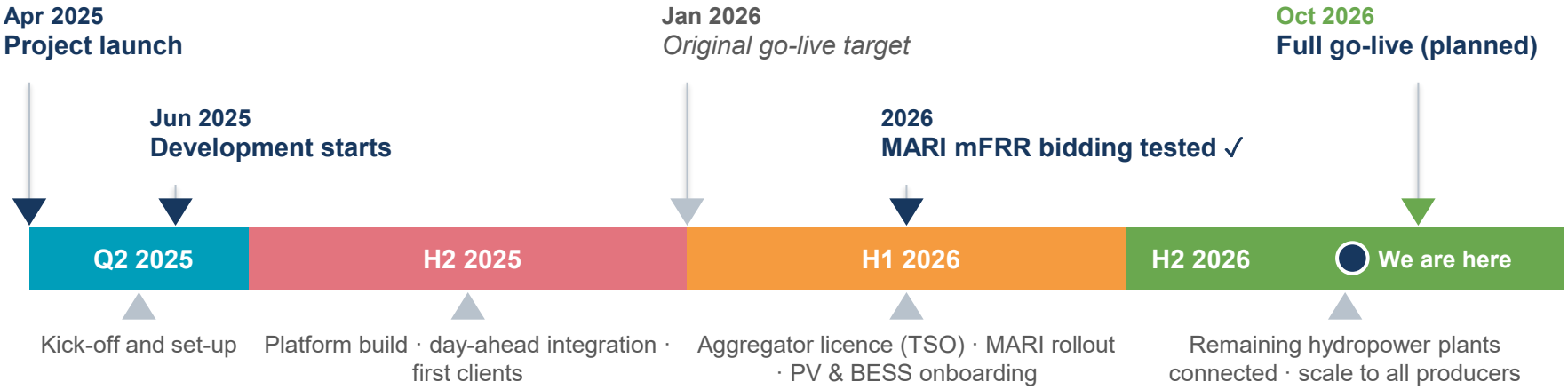


Live from our VPP: 54 clients · 72 devices · 83 MW producing · 22 MW storage

From forecasting to autonomy

Forecast → Optimise → Act automatically → Humans supervise

Virtual Power Plant: from launch to go-live in 18 months



Lesson: the technology was ready on time. Licensing and the European MARI balancing platform set the pace, which moved go-live from January to October 2026.

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Beside the VPP Smart Solution, we also embedded an AI solution that already pays off.

Scaling it is about people, not technology.

Bringing forecasting, trading, balancing and billing into one model let us add AI where the volume is: producer invoice checks.

Seconds

not minutes, per invoice check

2,000+

producers on self-billing

150 → 20

hours of checking a month

0

extra headcount to scale

Scaling the VPP: what we learned

1. **Regulation sets the pace**
2. **Onboarding is harder than code**
3. **Automation talent is scarce**
4. **Get the data right at contract stage**

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Where to start: four moves

01

Start small, prove fast

One high-volume, rule-heavy process

02

Follow the money

One domain with a clear revenue case

03

Fix data at the source

Capture it right from the first contract

04

Build the team

Pair domain experts with IT partners

We bring the assets and market access.

We're looking for IT partners to build what comes next. Let's talk after the panel.

“I’ve seen what AI can change. I know where to start
— and I’m ready to act.”