

One year after EIWG: Has BESS lived up to expectations?

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Austrian Energy Day

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Huawei: A trusted long-term partner with global presence



1987 year

Founded in



213,000

employees



No. 81

Fortune Global 500



53.7%

of employees in R&D



63.8%

of employees outside
China hired locally



170+

countries and regions

2025 annual report: **Group Revenue \$ 126 bn**

ICT

\$53.6 bn

43.6%

Consumer

\$49.3 bn

39.1%

Digital Power

\$11.1 bn

8.8%

Cloud

\$10.3 bn*

8.2%*

IAS

\$6.4 bn

5.1%

Huawei - A Private Company Wholly Owned by Employees

169,054

shareholding employees

Private company
wholly owned by its employees

Motto

Bring digital to every person, home and
organization for a fully connected, intelligent world

BESS cases - Application of each business model 57.5+ GWh globally

Application ① 400+ MWh in Nordic Europe (frequency regulation ancillary service market)

Customer S×, E×

Fastest response and adjustment time: 200 ms

Application ② 760+ MWh in Germany (innovation market + transaction market)

Customer A×, E×

One-stop solution, not a patchwork solution

Application ③ 500 MWh+ in France (ancillary service market)

Customer GAZEL

Reliable grid connection capability

Application ④ 1.7 GWh+ in Bulgaria (hybrid market)

Customer S×, B×

Dedicated localized services, saving a large amount of O&M labor costs

Application ⑤ 1 GWh+ in Greece (subsidy market)

Customer P×, F×

Dedicated localized services and one-stop solutions

Application ⑥ 660 MWh in Romania (ESS + gas frequency regulation market)

Customer E×

Fast: 50 MWh @ 30 working days

Application ⑦ 200+ MWh in Hungary (subsidy market)

Customer M x

One-stop solutions, instead of patchwork ones



Application ① 1.3+ GWh in Saudi Arabia, Middle East (grid-forming off-grid microgrid)

World's largest 100% renewable energy city

Stable operation for more than one year under the strictest grid conditions



Application ② 100 MWh+ in Qinghai, China (grid-forming on-grid plant)

World's first 100 MWh complementary ESS plant



Application ③ 4.5 GWh+ in Philippines (PV+ESS PPA)

Reliable grid connection capability and one-stop solutions



Application ④ 116+ MWh in Singapore (ancillary service market)

Customer S×

Built a 100 MWh ESS in the shortest time (six months).
Continuous and stable power supply → Higher revenue



Application ⑤ 300 MWh+ in Uzbekistan (capacity market)

Customer H×

Largest ESS project in Central Asia
Grid-forming capability + local service capability

One platform for all business models: Higher revenue throughout the lifecycle

Energy market

Capacity market

Ancillary service market

Grid forming ancillary service market

PPA

Long-term power supply contract

Microgrid

SCL
1.5/3/6 times
vs. 3 times

Inertia
3–20s
vs. 20s

Black start
Minute-level
vs. Day-level

Wideband oscillation damping
0.1–100 Hz
vs. 0.2–2.5 Hz

1st/2nd/3rd frame rate
< 100 ms
vs. > 200 ms

Overload response capability
1.5x
vs. 1.2x

Continuous power capability
0–100%
vs. 0–94%

SOC precision
3%
vs. 5%

Availability
99.9%
vs. 98%

On-grid and off-grid
One platform for all

Bulgaria's largest string ESS project: 125 MW/500 MWh



Huawei Smart String ESS 2.0: first on-grid project in Europe



Lovech, Bulgaria
Project location



April 2025
Grid connection time



125 MW/500 MWh
ESS capacity



106 MW
PV capacity

Background and challenges

Advance Green Energy is just one of the companies owned by the customer. A larger-scale holding company of the customer owns a large area of land around the project. The company plans to develop a huge industrial area and invite foreign investors to build factories and warehouses. The site already has a 106 MW PV plant, which provides renewable energy and utility services for the factories and warehouses. It may even reduce electricity prices. The ESS is initially operated only to buy electricity from the grid at low prices and sell it to the grid at high prices. In the future, the ESS project will be more deeply integrated into the Bulgarian power grid and provide additional services, such as primary and secondary frequency regulation.

Huawei solution

Pack-level optimization and rack-level management ensure constant power output throughout the day. Intelligent O&M eliminates the need for SOC calibration, reducing O&M costs and improving availability.

High efficiency and energy saving: using new Huawei-developed smart liquid cooling system, with round-trip efficiency (RTE) of 91.3%@0.25C

VDE test: an RTE of 91.2%, an energy utilization rate of 98.93%

Customer benefits



Environment-friendly: 55–60 dB operating noise of the entire site (tested at a distance of 10 m)



The project stabilizes PV power output and facilitates the transition to clean energy.



PV+ESS collaboration, maximizing PV plant economic benefits

3.5 GW PV+4.5 GWh grid-forming ESS project in the Philippines'



World's largest grid-forming PV+ESS project



South Luzon island, Philippines
Project location



January, 2026
Estimated grid connection time



1.125 GW/4.5 GWh
ESS capacity



3.5 GW
PV capacity

Background and challenges

- **Weak power grid:** The Philippines' power grid is long, narrow, and radially distributed. The backbone network is outdated and not stable, which restricts the transmission of renewable energy.
- **High technical difficulty:** 13-hour constant power operation requirement for the PV+ESS system, plant-wide coordinated control of the PV+ESS system, and plant-wide black start
- **High delivery requirements:** The project covers an area of 3500 hectares. The delivery from goods shipment to grid connection shall be completed within nine months, so as to complete grid connection in Q1 2026. These pose unprecedented challenges to delivery and

Huawei solution

Huawei provides an E2E intelligent grid-forming PV+ESS solution, which enables GW-level PV+ESS collaborative control. Throughout the ESS lifecycle, the solution achieves higher energy discharged, better investment returns, simplified O&M, safety, and reliability, and improves the grid stability and PV grid connection capability. It also provides evolving grid-forming capabilities.

Customer benefits



2.5% higher energy yield, and **payback period of 5 to 6 years**



Ultimate reliability: availability of 98.5%



GW-level PV+ESS collaborative control, ensuring 13-hour constant power output of the PV+ESS system

The EIWG – What Was Promised for BESS

“Austria’s Christmas present to the energy market — 15 years after EIWOG.”

Key provisions from the EIWG framework :

- **Grid fee exemption** for "system-supporting" storage facilities – 20 years from commissioning
- **Flexible grid access** (partial connections, faster start-up for new facilities)
 - > Clear deadlines for full grid access e.g utility scale BESS
 - 24 months (grid level 3)
 - 18 months (grid levels 4–5)
- **Transparency and dispute resolution** for grid connection procedures
- **Overall goal:** Incentivize storage to stabilize grids and reduce costly grid expansion

because

- ✓ Large-scale storage reduces grid congestion
- ✓ Storage enables higher PV and wind penetration
- ✓ Therefore storage can lower the need for transmission upgrades
- ✓ Storage provides flexibility services (FCR, aFRR, mFRR)
which stabilize the system



EIWG — Unclear Points & Ongoing Debate

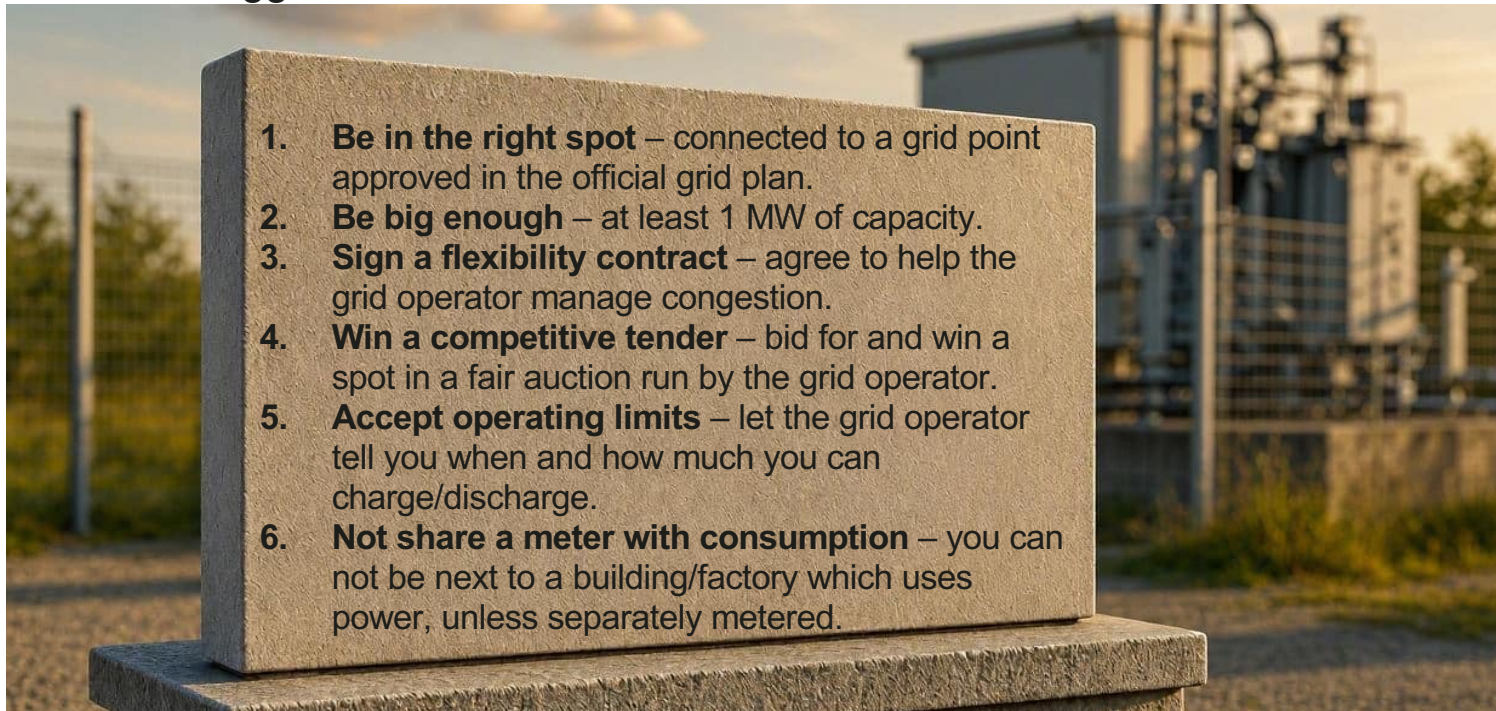
‘Systemdienlichkeit’ – One word but much room for interpretation

Ongoing Debate

“System-supporting operation” — the definition is still left open; the law only describes a “system-supporting benefit”

Core question: how should “system-supporting” be defined?

E-Control suggested **6 cumulative conditions**



Current Status

- The System Usage Fee Regulation (SNE-G-V) is still under review.
- The consultation period ended in summer
- Austrian Storage Association**, among others, has submitted input.
- The regulation is scheduled to take effect on **January 1, 2027**.

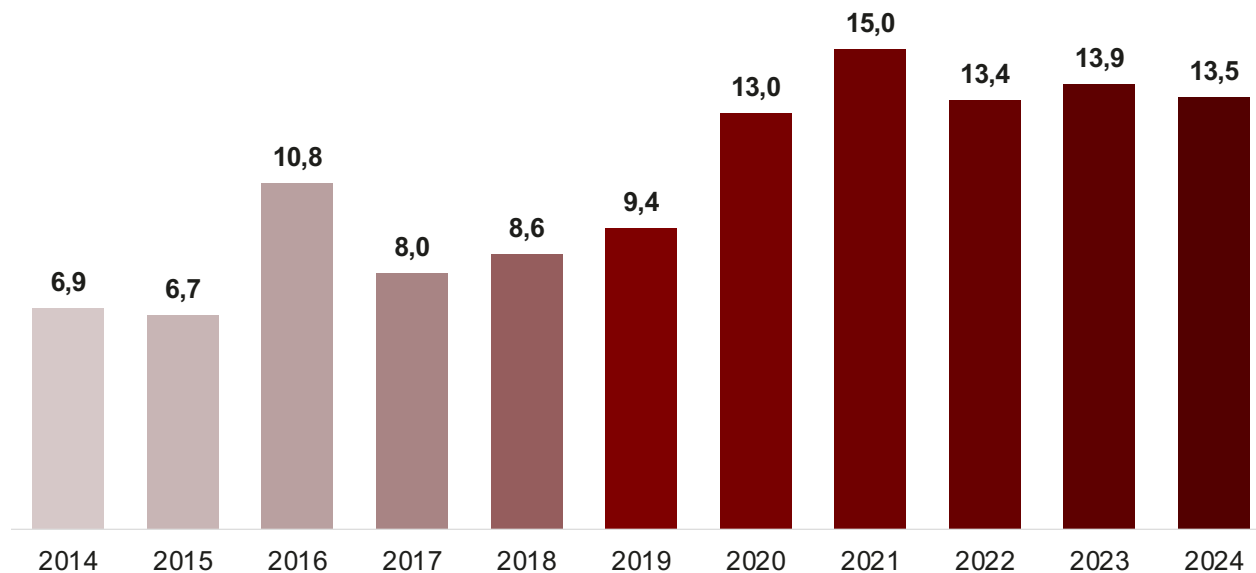
What did BESS in Austria look like before EIWG?

In 2024 the vast majority of systems installed was residential

Annual increase in **2024**: ~ **136 MWh**

- **~70,000** new battery storage systems installed in 2024
- **biggest** commissioned project **24 MWh**, 0.5 c-rate in **Fürstenfeld** Styria

Development of average battery storage capacity in kWh



Source: Austrian Federal Ministry for Climate Action (BMK), energy-storage.news, Technikum Wien



Utility-scale BESS did not grow in the year EIWG was enacted

The largest BESS project added in 2025 was 23.2 MWh, roughly the same as in 2024

- Annual increase in **2025**: ~ **242 MWh**
- But **residential + C&I storage** make up almost **200 MWh** of this #

This is **roughly ~80%**

- **Arnoldstein–Gailitz**, Carinthia, reached **43.8 MWh**
- (after second expansion phase)
- **Refresher**: first draft of EIWG went public beginning of 2024
- **Keep in mind**: The System Usage Fee Regulation (SNE-G-V) draft required **several conditions to be fulfilled simultaneously** for a project **to qualify** for the exemption under “system-supporting operation”
- The **market interprets** the original law (EIWG) as listing these conditions as **alternative options**, not cumulative requirements
- Prompt reaction of e.g. industry body **Oesterreichs Energie** none of its members' current projects would qualify for the exemption under these draft terms

Uncertainty results in delays



Source: Statistics Austria, energy-storage.news, Oesterreichs Energie

In 2026 still no breakthrough yet with large-scale projects

The federal states vary, but the result remains similar

- Still no large-scale projects commissioned — e.g. **‘Super-Hybrid Power Plant’ Nickelsdorf** (Burgenland) with **68 MWh** remains the biggest-sized project in Austria
- Other projects actually commissioned in Burgenland are 5 MWh project e.g. Eisenstandt, Oberpullendorf, Siegendorf or Reichnitz
- Güssing with **50 MWh** might come till the end of 2026
- In 2026 **Wagenham**, Upper Austria with **170 MWh** should overtake **“the title”**
 - Fact check: **Timelkam** with **14.5 MWh** is the largest in Upper Austria

Current Status

Media coverage on BESS focuses on large systems way in advance

- e.g. **140 MWh Theiss**, Lower Austria in ~ **Q3 2027** (covered in 2024)
- **Catalyzing** in inexperienced newcomers speculating **‘grid-flipping’**
- In need of accurate overview e.g.
 - Lower Austria** is adjusting **zoning rules**
- Lately Ministry of Economy announced a **“storage offensive”**



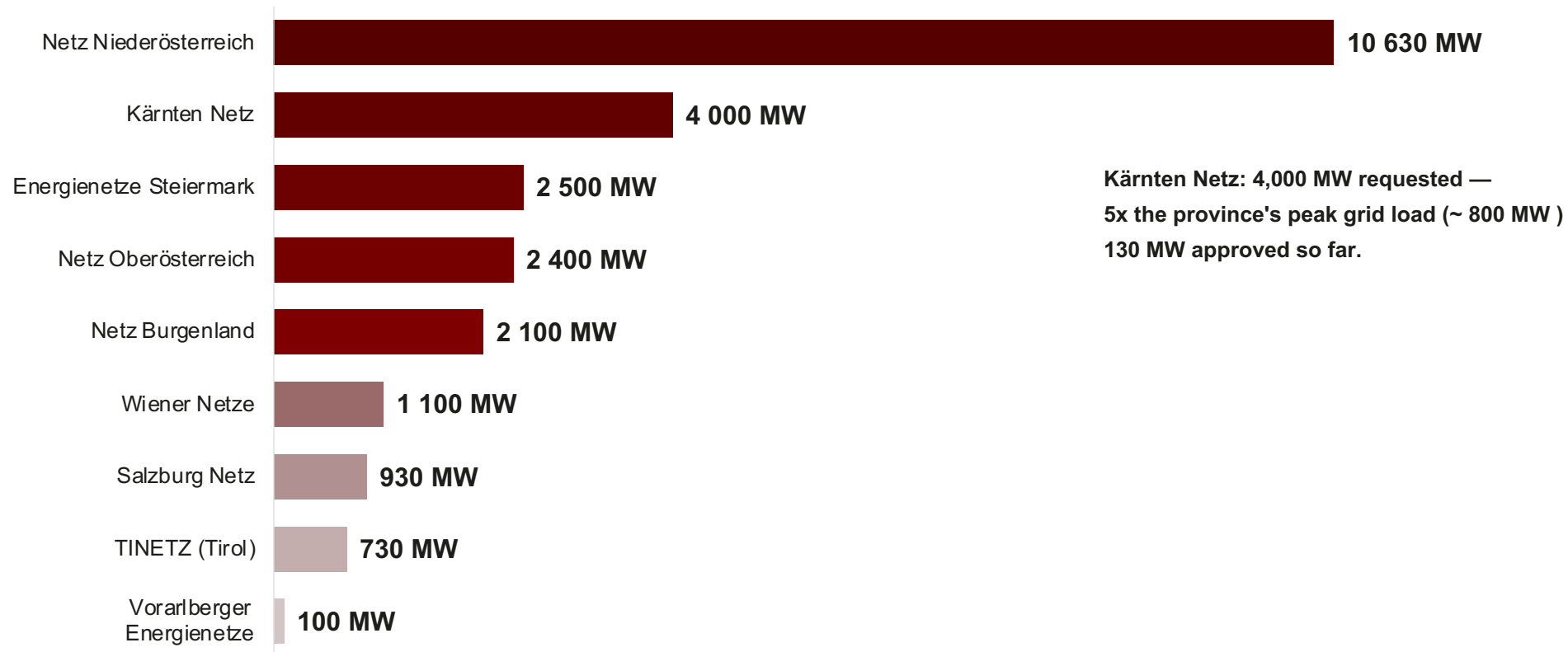
Source: energy-storage.news, E-Control, pv-magazine.com, greenenergylab.at, Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology

There's a significant gap between expectations/pipelines and installation reality

BESS Connection Requests at Austrian DSOs in 2026 is huge

>24 GW

Total pending grid connection requests across Austrian DSOs

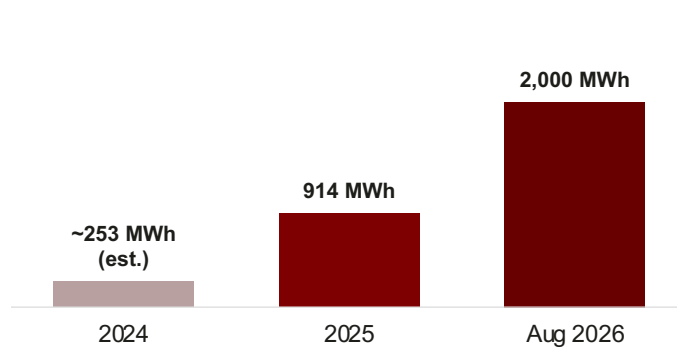


Source: Austrian DSO grid connection queue disclosures, 2026; Kärnten Netz (KNG)

Utility-Scale BESS Development in Eastern Europe (2024–2026)

The speed of project installations in the reporting period has increased dramatically

Romania — MWh installed



Romania

Some explanations:

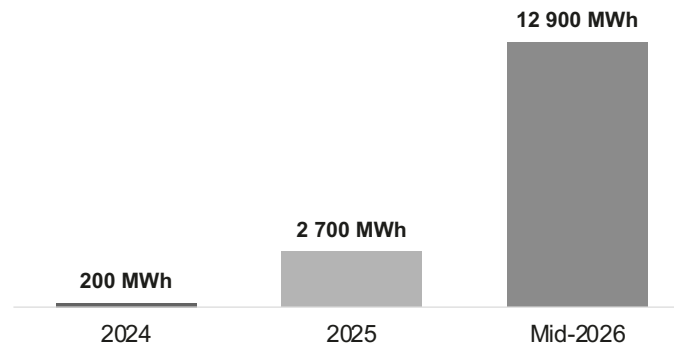
Highly generous subsidies: EU Modernisation Fund covers up to 100% of costs, €69,000 per MWh, capped at €15M/project

Mandatory storage law (Law 255/2024) requires new residential/prosumer solar to pair with storage, seeding demand

Among Europe's **best arbitrage economics**: cheap midday solar vs. expensive evening imports (ENTSO-E: ~€792/MW/day, **4th-highest in Europe**)

Deep, fast-maturing pipeline: ANRE reports 143 projects (9+ GW) in advanced development

Bulgaria — MWh installed



Bulgaria

Some explanations:

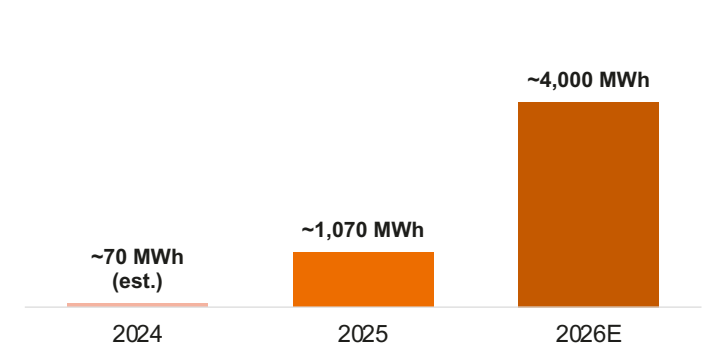
RESTORE program: EU-funded competitive tenders dedicated specifically to grid-scale storage drove rapid build-out

Lost flexibility had to be replaced: the Chaira pumped-hydro plant's collapse removed a major source of flexible capacity overnight

2nd-highest **BESS revenue potential** in Europe per ENTSO-E (~€798/MW/day) **attracted investment**

By 2026: >16% of electricity system powered by BESS — global leader

Ukraine — MWh installed



Ukraine

Some explanations:

Wartime necessity: Due to bombing the majority of pre-war generation was destroyed — storage is critical backup for hospitals, water utilities, telecoms

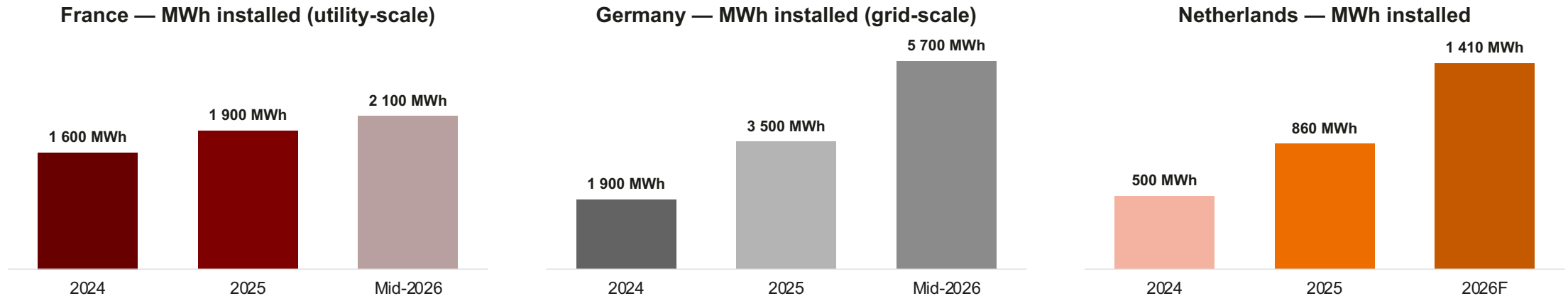
Nuclear now supplies the **large majority of electricity** but is inflexible baseload; **batteries provide the flexibility it can't**

ENTSO-E grid synchronization requires Ukraine to deliver balancing/ancillary services to European standards

High balancing-market price cap (~€300/MWh since 2019) makes storage highly profitable

Utility-Scale BESS Development in Western Europe (2024–2026)

In strictly regulated European countries, actual installations multiplied in number."



France

Some explanations:

Feed-in tariff reform pushed generators toward storage-coupled solar to keep project economics viable

“Plan France Batterie”: a national industrial strategy pairing storage with domestic battery manufacturing (gigafactories, local supply chains)

EU Battery Regulation 2023/1542 transposition (Apr 2024) and a **streamlined 2024 ICPE permitting** decree **cut approval times**

Germany

Some explanations:

BNetzA treats storage as **key technology** and therefore undelines its “**system-supporting**” character

Grid fee exemptions under EnWG/StromNEV for BESS commissioned **before August 2029** is one of the strongest drivers for developers

KfW low-interest financing lowers the cost of capital for storage investment

Clear long-term demand signal: Fraunhofer ISE estimates Germany needs 100–170 GWh of storage by 2030

75% of new capacity since Dec 2025 is standalone (not co-located), growing 82% — the market is diversifying beyond solar pairing

Netherlands

Some explanations:

Severe distribution-grid congestion makes storage one of the few practical ways to keep connecting new generation

A **lucrative imbalance market rewards fast-response batteries** that can arbitrage price swings

EU RRF funding co-financed early hybrid wind-solar-storage parks, proving the model

Dec 2024 Energy Act and Omgevingswet permitting reform removed regulatory friction

Co-locating storage at existing wind/solar sites lets developers reuse scarce grid connections rather than queue for new ones

Source: RTE , ModoEnergy, BNetzA, DNE Research

Conclusion: Has BESS Deployment Lived Up to Expectations?

Expectation

- Storage positioned as an **alternative to grid expansion**, with a **rapid rollout** expected across Austria.

Outcome so far

- Strong market enthusiasm, but **only a handful of large projects** built to date — **most capacity is still stuck in permitting**.

Final Verdict

- Potential proven — **Austria has the demand**, technology and **investor interest**.
- Implementation lagging — **without pragmatic regulation** and **faster DSO approvals**, Austria will not meet expectations.
- In the future, there should be **fewer criteria that must be fulfilled cumulatively** in order to be ‘system-supporting’

Clear rules, efficient compliance, less overregulation.



Thank you.

Bring digital to every person, home and organization for a fully connected, intelligent world.

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