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World's largest vanadium flow battery project to anchor Europe's energy resilience and grid stability

LONDON, 14 April 2026 – Energy storage, particularly long duration energy storage (LDES), is pivotal to securing a resilient and sustainable energy future for Europe. With a growing share of the electricity supply coming from renewable but intermittent sources, long duration storage is required to assure stability of the grid. Achieving the European Union's (EU) target of a net-zero emission power system by 2050 will require substantial expansion of both renewable generation and the storage capacity needed to integrate it reliably. To enhance cross-border grid flexibility and stability, construction is underway on the world's largest vanadium flow battery (VFB) in Laufenburg – a strategic electricity interconnection point on the borders of Germany, France and Switzerland.

Vanadium flow batteries are being recognised across the globe for their suitability in long-duration and high-cycle applications. Using a non-flammable, water-based electrolyte, the technology enables deep discharge without degradation, supporting operational lifespans of 25 years or more and in excess of 13,000 charge-discharge cycles with no loss of capacity.

Vanitec has released a new video that examines the technical, operational, and policy drivers behind the growing momentum for VFB storage in Europe. It also takes a look at the Laufenberg installation. To watch the video, visit: <https://youtu.be/JXUDoGhZq4>.

Europe's deployment of renewable energy has already resulted in the installation of more than 65 MWh of VFB capacity across the region. With renewable energy penetration expected to reach 42.5% of the energy mix by 2030, demand for LDES is expected to grow to ensure long-term energy security. In response, more than 4,000 MWh of new VFB projects are already planned across Europe, requiring over 20,000 metric tonnes of pure vanadium.

Tristan Bannon, Chief Commercial Officer at [CellCube](#) says: "CellCube is world leader in vanadium flow battery technology and one of the only energy storage manufacturers which is certified 'Made in Europe'. These projects are further proof that VFBs are a critical enabler not just to clean energy adoption, but to energy resilience for critical infrastructure and improved efficiency of generation and transmission assets. There is literally no energy system which can't be improved by adding VFB storage."

World's largest VFB takes shape in Laufenburg

Understanding the importance of establishing sustainable, innovative and future-focused energy supply, Swiss firm FlexBase Group is building what will be the largest VFB in the world in the town of Laufenburg, which is home to Central Europe's cross-border energy distribution infrastructure and is a critical energy hub for European power supply.

The 2,100 MWh VFB will support grid stabilisation for Central Europe, energy trading and industrial heat utilisation for a nearby town, while also supporting the operation of a water-cooled Artificial Intelligence data centre that is being built at the same site.

Pascal Wyss, Chief Innovation Officer and Head of R&D at [FlexBase Group](#) says: "The integration of a data centre and battery system in a single building created strict safety requirements and highly volatile load profiles. We opted for vanadium flow battery technology due to its superior safety, durability, and maintainability."

Closing Europe's critical energy storage gap

While Europe recognises the critical role of energy storage in enhancing energy system flexibility, LDES deployment in the region remains below what the system requires. In January 2026, a group of European industry stakeholders issued a [joint statement](#) calling for a sequenced EU framework to accelerate LDES deployment. These enabling LDES technologies are capable of balancing supply and demand and maintaining grid stability across hours, days, and even seasons, particularly during periods of low renewable output.

VFBs are particularly well suited to Europe due to their multi-hour and multi-day flexibility. They reduce the region's reliance on fossil-fuel backup capacity, minimise intentional renewable energy curtailment caused by grid bottlenecks, and support industrial electrification.

Europe also benefits from a secure and increasingly localised supply chain, spanning vanadium deposits and producers to electrolyte suppliers and battery manufacturers, as well as technology innovators.

"We are excited about the impact that the long-duration capabilities of VFBs will have in strengthening Europe's grid stability and flexibility. With a secure and localised supply chain, combined with the confidence already placed in VFB technology across the region, we are optimistic about the commercial deployment of VFBs at scale in Europe," says John Hilbert, CEO of [Vanitec](#).

As Europe heeds the call to scale LDES to support its clean energy transition, VFB technology is increasingly proving itself as a strategic technology enabler for the region's clean energy transition.



To view Vanitec's map of Vanadium Flow Battery projects in Europe, and around the world, visit vanitec.org/vanadium/map.

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About Vanitec

Vanitec is a not-for-profit global vanadium member organisation, bringing together representatives of companies and organisations involved in the mining, processing, manufacture, research and use of vanadium and vanadium-containing products. The objective of Vanitec is to promote the use of vanadium bearing materials, and thereby to increase the consumption of vanadium.

Vanitec members in Europe include [CellCube](#), [Duferco S. A.](#), [GfE](#), [Glencore](#), [Invinity Energy Systems](#), [Oxkem](#), [Treibacher Industrie AG](#), [Vantage Alloys](#) and [Wogen Resources Ltd.](#)

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