SAVE | GENERATE | STORE | UTILISE

Flow battery applications for the utility world.

Reliable storage systems based on vanadium redox flow technology.

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EFFICIENT ENERGY STORAGE WITH CELLCUBE

Flow Battery Applications for the utility world.

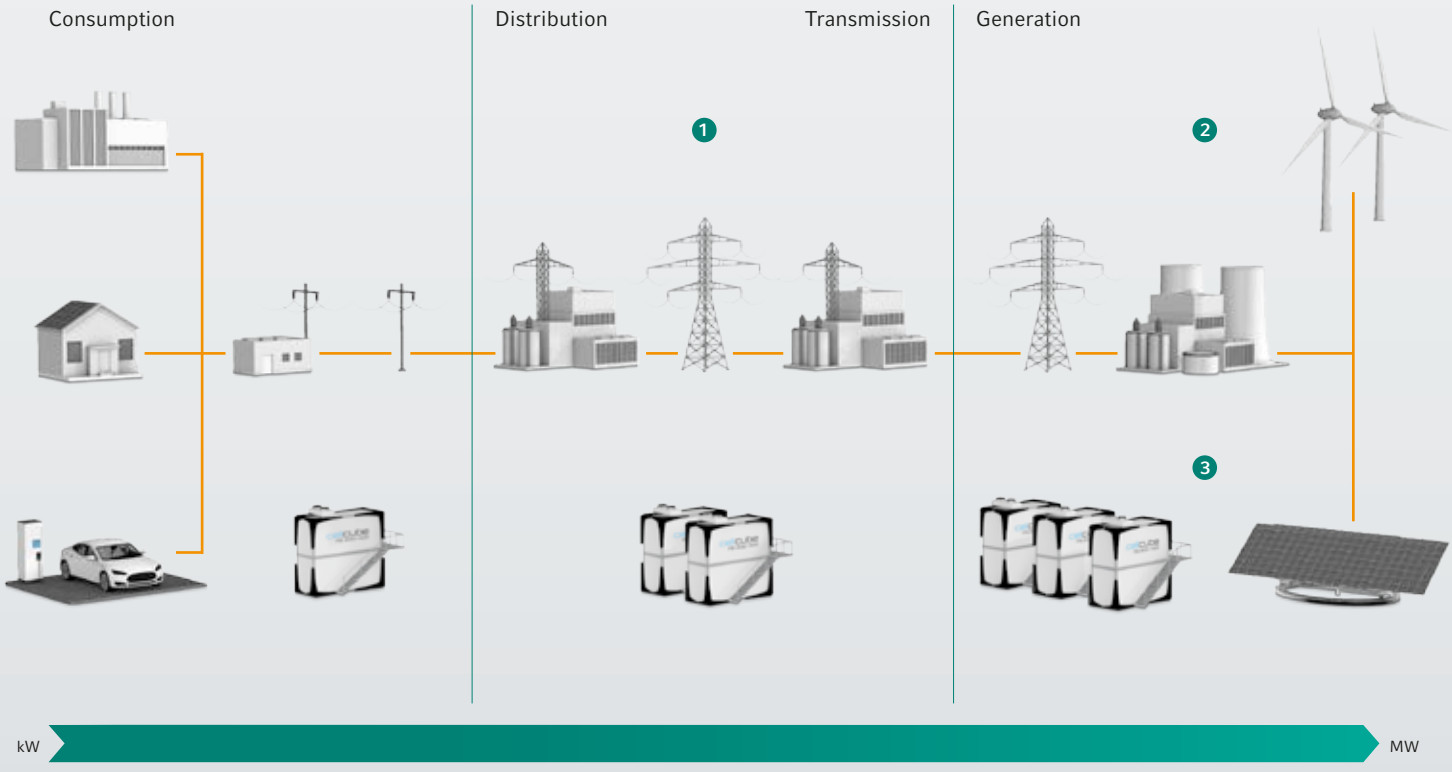
Plans for the future electricity markets are already underway. The growing expansion of renewable energy is increasing the need to stabilize the grid – a task typically fulfilled by distribution and transmission system operators.

- As early as 2018, the new generating capacity of local renewable energy producers will influence the base load capacity of grids. The fluctuating power output of renewable energy sources requires traditional regulator plants to keep additional reserves (peak load reserve capacity), which puts their business model in danger.
- The increasing surplus generation from renewable energy – primarily solar and wind – change the way we think about base-load power supply assets. Intermittency and decentralization of such assets require local, time-based buffer solutions. Solutions, ranging from minutes to hours in the daily cycle of energy supply, spawn the need for the modular CellCube Vanadium Redox Flow storage system.

Applications

1. Ancilliary services for the grid
2. Replacement or addition of peaking capacity
3. Firming and capture of renewable generation from wind and solar

The Electricity Transmission Model



1 Ancilliary services for the grid

- From frequency regulation and voltage support to energy reserves and wholesale marketing of energy, CellCube is the answer you are looking for.
- The energy grid is transitioning – we have the solutions for you to excel within these new markets. CellCube Flow Batteries make time shifting of energy possible, ranging from seconds to 8 hours and more. Our technology is the key to hedge and secure against grid instability.

The solution

- Providing regulation for all control reserves (primary, secondary, and even tertiary). Manage additional capacity in the minute reserve or day ahead market segments.
- The CellCube product line is ready for energy storage solutions from 1 MW up to 20 MW. Capacity can be varied according to our CellCube models depending on your needs. The more MW you choose – the bigger the capacity and your flexibility in building the right usage case for your business.

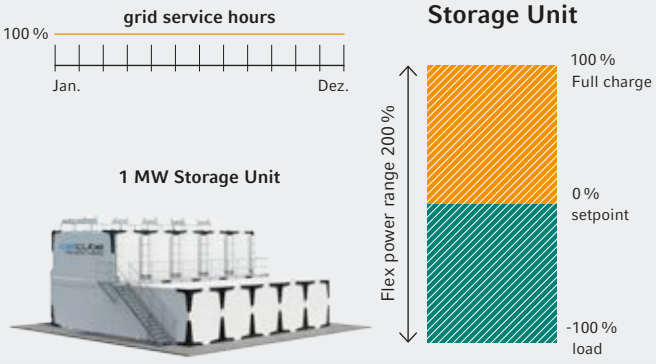
2 Replacement or addition of peaking capacity

Energy Storage Systems demonstrate superior flexibility since they can operate as both a power source and sink, thus covering up to 200 % of its rated capacity.

Flow batteries excel with 100 % utilisation of their energy capacity, with zero direct emissions and low standby costs.

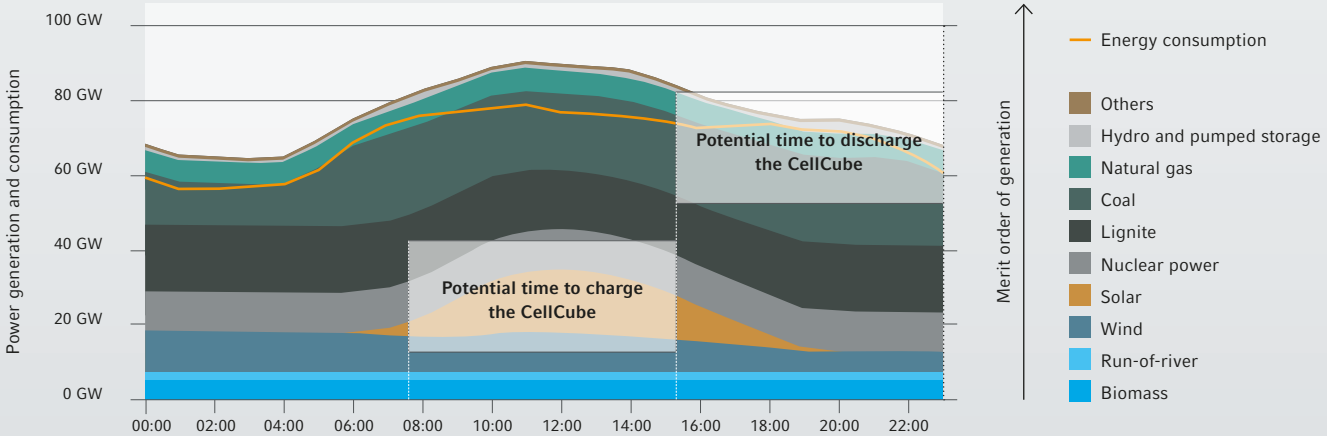
The solution

- Capacity can be easily expanded with the CellCube FB 200-400, the CellCube FB 200-800 and the CellCube FB 200-1600 Vanadium Redox Flow Batteries
- Maximum flexibility is reached with FB 200-800
  - Non predictability of grid capacity shortages
  - Additional capacity reserves for future business cases
  - Protects against future increases of peaking capacity regulatory requirements
- Market trading capacity



3 Firming and capture of renewable generation from wind and solar

Flow battery systems enable long duration time shifting to mitigate the surplus daytime energy generation and transfer it to the evening or other peak demand hours. Combining flow battery storage with renewable generation assets allow for a smooth grid integration and avoid both curtailment and inconsistent contractual energy delivery.



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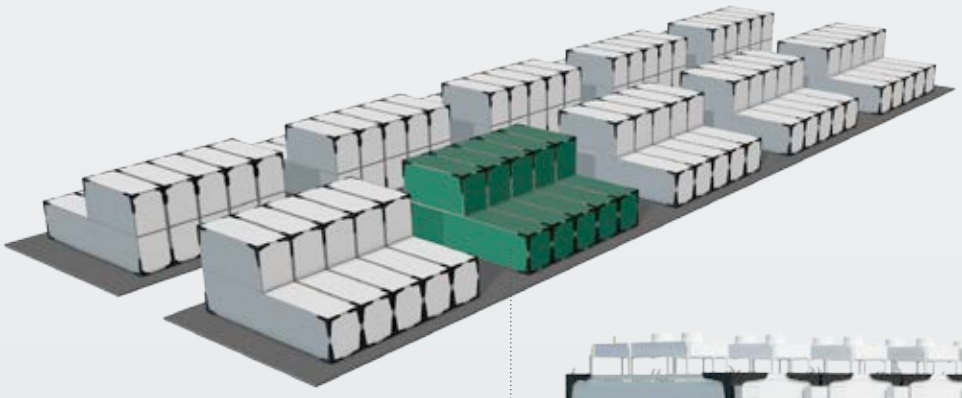
Utility Scale CellCube.

Advantages		Benefits
Flexible sizing in power rating and energy capacity	»	Tailored solutions to mitigate supply bottle-necks at local grid topologies
Modular containerized systems	»	Versatile adaptation to available space and duration of deployment
		Allows capacity buildup over time
Re-usable battery medium	»	Typical power plant usage beyond 20 years
No detoriation of battery performance due to cycling		High residual value
Inherently safe with non-flammable/non-explosive medium / no Emissions	»	Deployment in every suitable location, even environmentally sensitive areas
Fast build up and time to operation	»	Enabling revenue improvement and grid safety today rather than tomorrow
Fastest reaction times	»	Suitable for all grid service applications

CellCube – MW Scale Solutions with the CellCube



Applications:
- Primary control reserve
- Secondary control reserve
- 15-minute block delivery
- Minute reserve
- Hourly intermarket delivery

Plant Layout: 10 MW at 40 MWh
Example: 10 x 5 x FB 200 - 800

1 MW CellCube Cluster: 5 x FB 200
- 5 Batteries
- 1 MW Power
- 2-8 MWh Capacity

D6744/1015 MONTFORT WERBUNG

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Alle Infos hier!

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