Enabling the Energy Transition

LIVA POWER MANAGEMENT SYSTEMS

Enabling the Energy Transition

Our LIVA system enables companies to achieve a successful energy transition, including better energy and power management, lower energy costs and reduced CO_2 emissions.

The challenge: a changing energy market

Demand for energy, and electricity in particular, is increasing worldwide, and companies must prepare for a profound change in the energy market. Three factors play a particular role in this:

1
The rising demand for electricity with fluctuating energy costs.

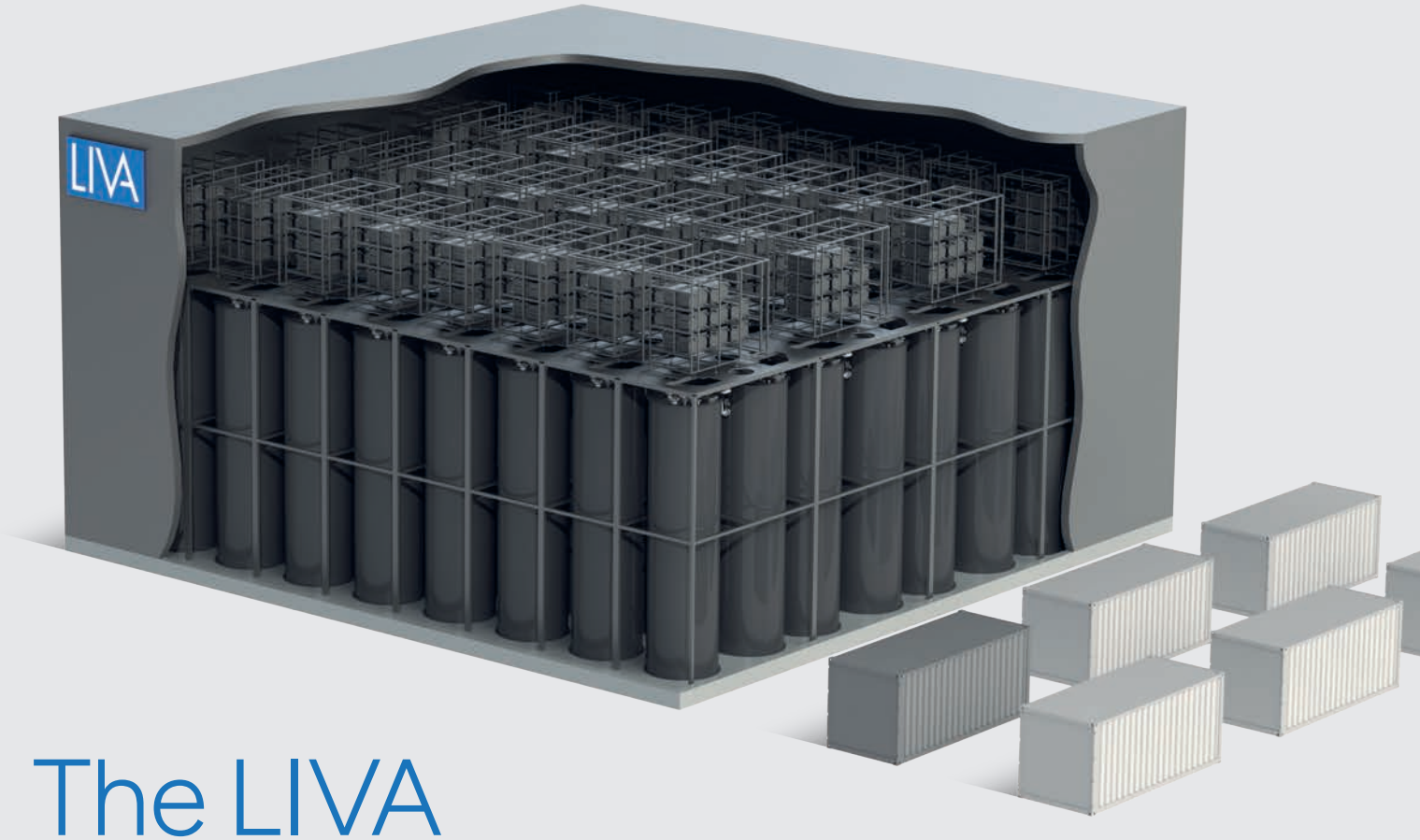
2
The increasing supply of decentralized renewable energies.

3
Rising costs for CO_2 emissions.

The LIVA solution: the LIVA Hybrid Energy Storage System

We offer companies solutions for their energy transition – from analysis and consulting to product solutions. Our LIVA Hybrid Energy Storage System (Hybrid ESS) with intelligent control enables integrated and efficient energy management in the company.

LIVA Power Management Systems is active in the B2B market for scalable energy storage systems that enable integrated and efficient energy management on the demand and supply side.



The LIVA Hybrid ESS

The LIVA Hybrid ESS optimizes industrial use of energy: Whether peak shaving, frequency containment reserve, load & energy shifting, renewable energy integration, charging station optimization or power-to-X solutions. We make the electricity and energy supply for companies secure, sustainable and efficient. The storage capacity of the Hybrid ESS can be scaled as required.

Modular structure – individual design

Our customers' requirements determine how we design the LIVA Hybrid ESS and implement it on site. The vanadium redox flow battery (VRFB) sub-module as a mass energy storage system consists of two electrolyte tanks with a capacity of, for example, 36 m³, and 1250 kWh capacity, offers 128-160 kW of power and can be supplemented with additional modules as required. Combined with lithium-ion battery units as high-performance and ultra-fast power units, our LIVA Hybrid ESS are designed to meet industrial requirements. We will be happy to advise you.

More about our products and services:

Three components effectively combined

- Software solution with artificial intelligence (AI) for analysis and control
- Lithium-ion battery as a high-performance storage unit
- Vanadium redox flow battery as a mass energy storage unit

The system enables the economic integration of sector coupling strategies with renewable energies through to the production and utilization of green hydrogen.

Experts in Energy Storage Systems

The LIVA Power Management Systems team offers companies complete development from a single source. From consultation, analysis and concept to the finished, ready-to-use solution – we are your competent partner. Together with you, we determine the individual requirements for an efficient energy storage system and tailor our offer to your specific needs. The R&D, IT and production engineering team has extensive industry expertise and years of experience in implementing technology projects.

20-40% less energy costs

Industrial peak shaving, participation on the spot market of electricity (EEX, EPEX SPOT) and energy management

From Tier-1 automative supplier with automated assembly lines to energy intensive electro-steel production: our custom-tailored LIVA Hybrid ESS enables an active energy management without intervention of the production process and helps to reduce energy cost.

Example of a tier 1 automotive supplier

Production with automated assembly lines

- Reduction of energy cost by participation on the spot market of electricity (EEX, EPEX SPOT) with predictions and trading capabilities
- Integration of fluctuating renewable energies
- Smoothing electricity demand with a hybrid energy storage system: reduction of power peaks
- Electrification of process heat
- Emergency power supply
- Power-factor correction
- Charging stations for company-owned EVs

Advantages

- Active energy management with safeguarding of critical production processes
- Reduction of electrical energy costs by 20-40 %
- Increased reliability (power quality)
- Return on investment for the customer/user: >35 %

Example of electric steel production

Production with high-current electric arc furnaces

- Reduction of energy cost by participation on the spot market of electricity (EEX, EPEX SPOT) with predictions and trading capabilities
- Integration of a remote low cost wind energy plant via power purchase agreement (PPA)
- Smoothing of electrical power demand with a hybrid energy storage system
- Production of hydrogen and oxygen with an electrolysis plant
- Electrification of process heat
- Emergency power supply
- Charging stations for company-owned EVs

Advantages

- Active energy management without interfering with production processes
- Reduction in costs for electrical energy
- Local oxygen and hydrogen production
- Return on investment for the customer/user: >25 %
- Green steel production

Example of highly sensitive production and services in industry

Biotechnological pharmaceutical production

- UPS (uninterruptible power supply)
- Integration of a local renewable energies
- Process cooling
- Power-factor correction
- Smoothing of electricity demand with a hybrid energy storage system: reduction of power peaks
- Medium and long-term off-grid capability
- Charging stations for company-owned EVs

Advantages

- Increase in reliability (power quality)
- Reduction of electricity costs
- Active energy management with the safeguarding of critical processes
- Positive return on investment (no return on investment compared to classic UPS systems)

"The future energy market will change dramatically. We are creating innovations for the green new energy world."

Dr. Volker Kölln,
Managing Director,
LIVA Power Management Systems

More energy efficiency through intelligent control

LIVA's p7 software simulates, operates and monitors the interaction of various energy storage systems such as lithium-ion and vanadium redox flow batteries as well as power-to-X systems using artificial intelligence (AI) and self-learning algorithms. In addition to maximizing the efficiency, cost-effectiveness, safety and service life of the batteries, the software enables the economic integration of sector coupling strategies with renewable energies and green hydrogen.

p7.control

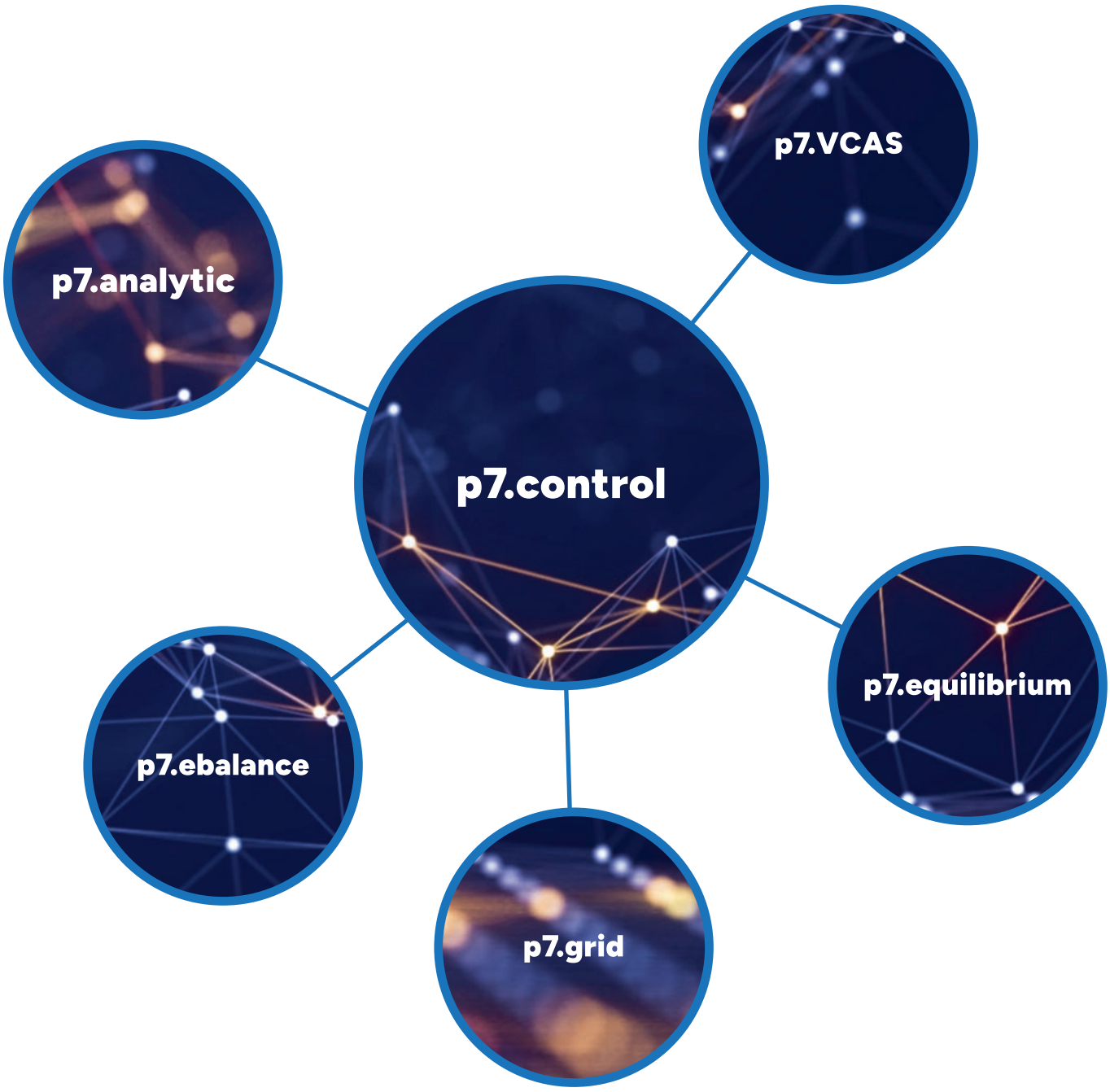
p7.control uses the simulated and optimized values from p7.analytic to control the Hybrid ESS and all other energy systems for more efficient power consumption. As a higher-level energy management system, it controls and monitors the charging and discharging of all battery systems, as well as the integration of other energy systems such as solar and wind power plants, combined heat and power generators or fuel cells. The data from p7.control is fed back for further forecasts and optimization using self-learning algorithms.

p7.analytic

With the help of p7.analytic, we can simulate and analyze the entire energy flow in the company, from electricity procurement and storage through to electricity distribution. The results of this simulation from company data enable the optimal design of an energy storage system (Hybrid ESS) tailored to the customer and the integration of additional energy systems. As a "digital twin", p7.analytic continuously analyzes and optimizes the energy flow and operation of the Hybrid ESS in the company.

p7.ebalance

With p7.ebalance, the LIVA software enables the integration and control of additional energy consumers and energy generators as well as storage systems at the industrial site. With the aim of sector coupling – e.g. through the intelligent control of power-to-heat & cool systems and power-to-gas systems (electrolyser) – the customer's overall energy efficiency is maximized under the umbrella of sustainability and cost-effectiveness.



p7.grid

The p7.grid software module enables our customers to offer grid services such as frequency containment reserve. Furthermore, p7.grid enables participation in the spot market in order to purchase electricity at favorable prices and to engage in arbitrage trading. In this way, p7.grid increases the profitability of the Hybrid ESS and helps to stabilize the electricity grid.

p7.equilibrium

p7.equilibrium combines geographically separated p7.control units to form a microgrid that exchanges all forms of energy on the supply and demand side. The automated balancing and trading system shifts energy capacities to suit the user's interests while maintaining grid stability.

p7.VCAS

p7.VCAS defines new standards in the context of balancing and verifying CO_2 emissions at product level. By comprehensively balancing the energy and material flows, the CO_2 footprint of each produced good can be precisely determined. By issuing certificates, sustainability targets can be validated and legal requirements met.

Further information on p7.control, p7.ebalance, p7.grid, p7.equilibrium und p7.VCAS

Part of a Strong Group

LIVA Power Management Systems is a part of AMG Critical Materials N.V. which is a globally operating group for critical metals, mineral products and highly specialized vacuum furnace systems including related services with over 3,600 employees.

Recycling instead of mining

AMG is the world's largest recycler of vanadium-containing refinery waste from petrochemical catalysts. High-purity vanadium is needed for the fast-growing industrial energy storage market. AMG's vanadium recycling strategy reduces CO_2 emissions by up to 85 % compared to conventional mining methods.

More about AMG Group

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