

# Using renewable energies intelligently

Grid | Generation | Procurement | Trade | Sales

Digitalization of the energy system by rolling out intelligent metering systems right through to the final consumer opens up crucial areas of potential for the next stages in the energy transition. Associated with this rollout is the potential harnessing of **flexibilities on a broad scale**, e.g. in **decentralized, controllable generation and consumption systems, storage systems and e-mobility**. The integration of millions of households and companies into a digitalized energy system will allow for intelligent, efficient balancing of generation and consumption, thus facilitating a decoupling of grid expansion and the expansion of renewable energies.

## Flexibility management with the BelVis+ FlexManager

The operational management of flexibilities within this vast quantity structure while taking into account sector coupling requires **an IT system that is capable of dealing with mass data in order to handle flexibility management for grid, market and system purposes**: the BelVis+ FlexManager. Software-controlled, highly automated flexibility management is the engineering foundation for a **balanced energy system that is cost-effective, efficient and sustainable**. This avoids the curtailing of wind and solar energy systems, reduces the requirements for electricity storage facilities, and avoids the transmission of energy across long transport paths.

## An overview of the BelVis+ FlexManager

The FlexManager **connects all the components within an energy system** and facilitates integration right down to the smallest level: generators, consumers and storage systems – both conventional and renewable, controllable and non-controllable, centralized and decentralized, connected using conventional remote control technology or as controllable local systems (CLS) within intelligent metering systems. For higher-level systems such as virtual power plants (e.g. KISTERS Virtual Power Plant Manager VPPM) or optimization systems (e.g. KISTERS ResOpt) that develop the best-possible solution for the controlling of both centralized and decentralized flexibilities on the basis of the available metering and SCADA data and of predictions, the FlexManager is the connection for **access to every individual unit** as CLS.

In this way, the interplay between all components and flexibilities in particular **can be controlled in an intelligent manner**. The FlexManager carries out the main tasks of highly automated management, group formation, switching, and monitoring of components and processes. The FlexManager uses horizontally scalable **big data technology** that has proven itself in practice and also includes **artificial intelligence algorithms**.

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All components within an energy system can be controlled using the FlexManager.

As a result, it can deal with the enormous quantities of data that are produced as part of the smart meter rollout and can quickly deliver intelligent and precise solutions. The FlexManager will be able to integrate millions of households and companies, and can thus take advantage of flexibilities at every market location. It is operated using user-friendly interfaces in the web browser.

## Applications

The FlexManager supports energy-sector actors in using renewable energies in an intelligent manner and is a key engineering element in **flexibility management for grid, market and system purposes** with the aid of intelligent measurement systems.

As a universal link between the conventional energy sector and CLS-controlled components, the FlexManager can be integrated into **overall solutions along the entire value-added chain in the energy sector** – for example, in combination with grid and operational management, portfolio management, market communication, forecast systems, with algorithm-supported trading and in sales to end customers.

This extends from simple use cases such as the replacement of ripple control systems in load control or grid optimization applications such as peak shaving or voltage stability, right through to the automated integration of CLS into next-generation virtual power plants. Additional use cases can be gradually added to the FlexManager. In this way, it supports a range of innovative applications that contribute to the success of the **integrated energy transition**, e.g.

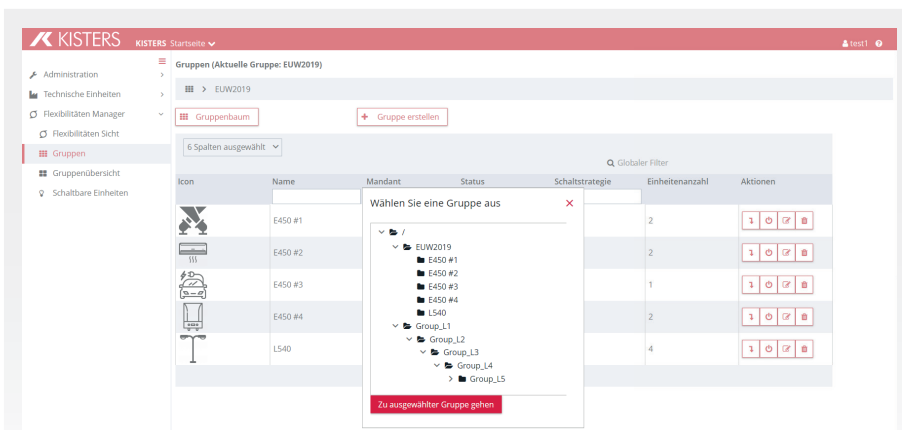
- Integration of sector coupling applications for grid and market purposes: power-to-heat, power-to-e-mobility (if applicable, vehicle-to-grid), power-to-gas, etc.
- Selling of energy on the futures, spot and intraday markets, selling of control energy
- Settlement area management
- Demand response or demand side management for optimization of own consumption, reducing grid charges, optimization of energy procurement costs
- Voltage stability, provision of reactive power

## Why the FlexManager?

The FlexManager is the ideal solution for market participants who are looking for a **progressive, scalable overall solution** for flexibility management that can grow along with requirements. The basic functionalities can be implemented in a cost-effective, simple and quick manner. At the same time, the FlexManager offers the prospect of handling the entire spectrum of decentralized flexibility management that will emerge in the future, without having to abandon or switch systems.

The advantages for you:

- Closed, integrated overall solution from a single source
- Very **quick time-to-market**: The FlexManager is already in productive use at field level with final consumers.
- Modern, future-proof **big data technology**, which provides horizontal scalability up into the range of millions of flexibilities
- **Low one-off and entry costs**, gradual expansions up to integration into virtual power plants
- Modern, user-friendly operating interface in the web browser
- **Easy integration into existing IT systems** (e.g. CRM, MDM, control technology)
- Optionally available as a KISTERScloud solution from the KISTERS data center (certified according to DIN EN ISO 27001)
- Development in direct cooperation with the world market leader in the area of smart grid and smart metering solutions



Easy to operate in a web browser using the dashboard – at any time, from anywhere.