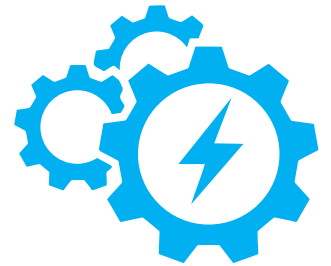


HYBRID ENERGY MANAGEMENT SYSTEM (HEMS) LICENSE BLUE'LOG XC



BACKGROUND

The market for hybrid energy systems is expanding rapidly. Energy generation, storage, and consumption technologies are being combined into a single system managed by a central control component.

For scenarios which combine renewable energy production systems and battery storage, this central component is a Hybrid Energy Management System (HEMS), which orchestrates the complex flow of energy within the system.

LICENSE DESCRIPTION

The HEMS solution from meteocontrol is intended for systems composed of PV and battery storage that are connected to a single grid connection point. The "HEMS license blue'Log XC", is a software extension that enables your blue'Log XC to optimize your energy generation and consumption based on your needs and local grid connection requirements.

FEATURES

+ **PV self-consumption**

Use a maximum of self-produced energy.

The hybrid system is controlled such that all available solar power is used for self-consumption. Excess solar power is used to charge the battery system, and excess solar power is only fed into the grid when the battery is fully charged. When solar energy generation falls below a predefined threshold at the grid connection point, the battery system begins to discharge the stored energy.

+ **Zero feed-in**

Never inject power into the grid.

Just as in PV self-consumption, all available solar power is used for self-consumption. When more solar power is produced than can be consumed locally, as much energy as possible is stored in the battery system. When the battery system is fully charged, the excess solar power is curtailed so that no power is fed into the grid. As soon as solar generation can no longer cover local consumption, the battery system begins to discharge.

+ **Band shaving (e.g. peak shaving)**

Avoid peak loads and/or power injection to avoid high electricity costs.

The hybrid system operates within a predefined band at the grid connection point. When not enough PV power is available and the lower threshold of the band is reached, the battery starts discharging to avoid expensive peak loads. If the upper threshold is reached, the battery starts charging. If the battery is already fully charged, the PV system is curtailed so as not to exceed the band.

+ **Energy shifting**

Store excess energy and release it later.

A threshold defines the level at which excess solar power is stored in the battery. The discharge of the stored energy is based on a defined threshold, time, or schedule.

+ **Energy trading**

Profit from stock exchange fluctuations.

Energy traders can remotely control the hybrid energy system via a dedicated interface. In this way, the hybrid system can also participate in intra-day and day-ahead auctions.

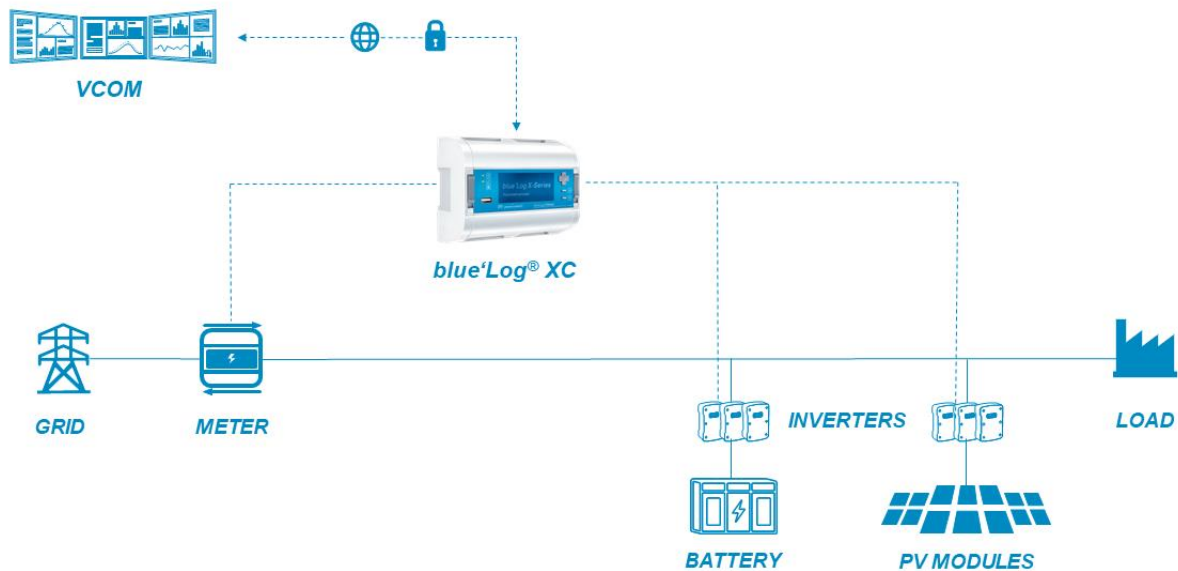
+ **Operating reserves**

Participate in the balancing service market.

The Hybrid Energy Management System reserves predefined positive and negative reserve power in order to participate in the balancing services market. In this way, the hybrid energy system can contribute to grid stability by providing ancillary services such as frequency containment reserves (FCR), frequency restoration reserves (FRR), or replacement reserves (RR).

PREREQUISITES

- + PV system
 - + Battery system
 - + blue'Log XC
 - + Meter at the grid connection point
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Example of a HEMS system layout