SAVE FUEL, HARNESS THE SUN

PV-Diesel Hybrid System

*Implement the **blue'Log® XC** as the central component between a Diesel generator, a PV system and the point of interconnection to dynamically curtail the active power output of the PV system, operate the Diesel generator with a minimum load, and meet your remaining energy demand using PV.*

PV-DIESEL HYBRID SYSTEM

Reduce Diesel and maintenance costs using solar energy

In regions with inadequate nationwide power grids, Diesel-only systems are often used to ensure that industrial applications are continuously supplied with sufficient energy. Diesel-powered systems constitute the local grid and ensure constant supply to all connected consumers (island grid). However, Diesel systems are also used in regions where grid operators cannot maintain a constant supply for all consumers. In these cases, a practice called load shedding is used. Load shedding means that the grid operator temporarily does not supply consumers with electricity. During these periods, Diesel systems serve as a backup to maintain the local power supply.

Diesel generators constantly require fuel and need regular maintenance, and therefore are often the highest operating cost in such scenarios. Combining Diesel generators with a PV system reduces the need for fuel and maintenance, cutting overall operating costs. The lower electricity production costs of a PV system compared to those of a Diesel system not only mean lower CO_2 consumption but lower overall electricity costs as well.

Since the production capacity of PV systems fluctuates by its very nature, we recommend integrating battery storage into the system to compensate for the energy gap. For periods with low solar irradiation and at night, a battery will allow the Diesel generator to operate at a minimum load and to avoid unnecessary start-ups and shutdowns.

At meteocontrol, we are currently working on enhancing the **blue'Log® XC** plant controller so that battery storage can also be integrated alongside PV-Diesel systems to support optimal operation.

Your advantages at a glance

Save fuel

Reduce maintenance

Cut CO$_2$ emissions

Hybrid control with blue'Log® XC

The high-performance **blue'Log® XC** controller offers a wide range of functions for active and reactive power control, ensuring greater grid stability, regardless of the manufacturer.

In PV-Diesel hybrid systems, the **blue'Log® XC** can function in different operating modes. For example, a digital signal can initiate the change of operating modes.
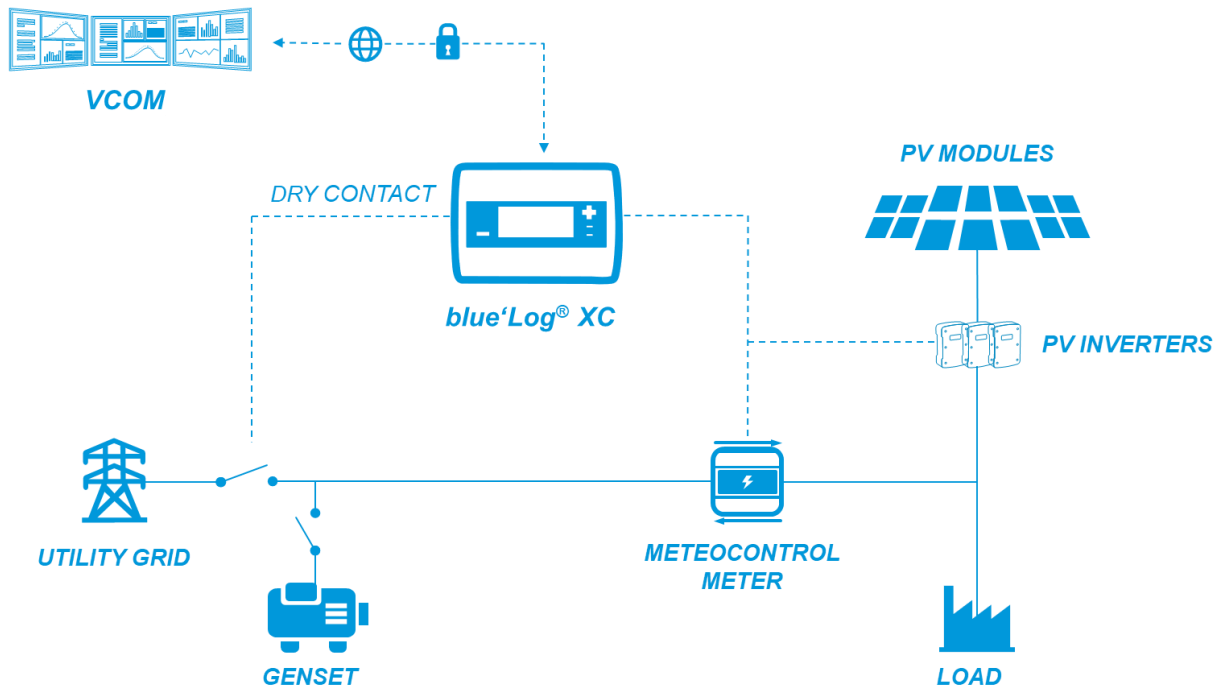
In normal mode, the **blue'Log® XC** controls the active power to a user-defined setpoint value. Zero-feed-in requirements can also be implemented in this way, for example. The controller sends active power setpoint values within a highly dynamic control loop and curtails the power of the PV system to the customer's actual energy demand.

In contrast, in Diesel mode, the **blue'Log® XC** curtails the active power of the PV system such that the required minimum load of the Diesel generators is always maintained.

The graphical user interface of the **blue'Log® XC** guides you intuitively through the commissioning process, requiring no programming knowledge whatsoever.

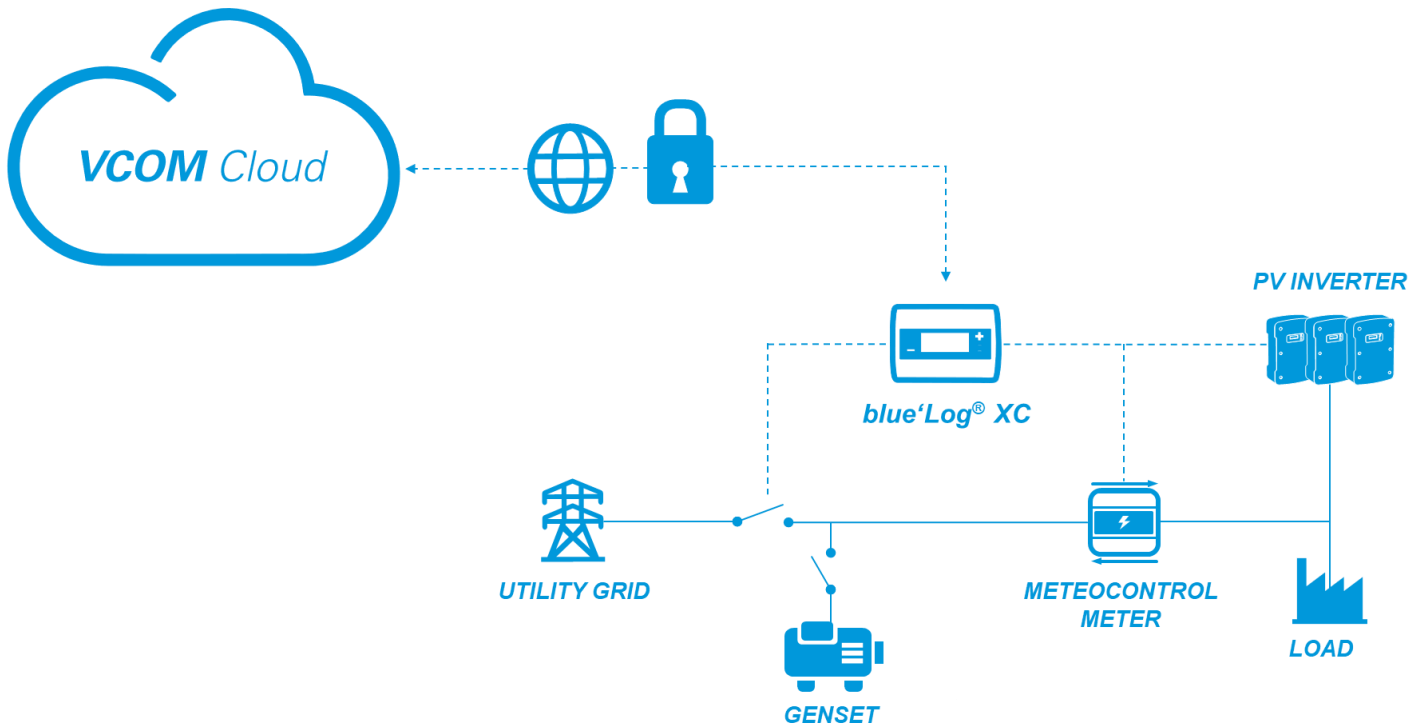# Functional principle of the PV-Diesel hybrid system

Product features

✓ Fast and stable control due to continous feedback of measured values

✓ Dynamic calculation of the active power setpoint value while taking into account the current consumption and PV energy production

✓ Highly accurate measurement of grid parameters, ensuring precise control

✓ Multiple meters can be combined into a single virtual meter if different meters are used to record consumption and PV energy production

✓ Signal reception initiates switching between Diesel mode and normal mode

✓ Minimum output load for the Diesel generator (e.g. -30%) is ensured

✓ Integrated remote access with TLS encryption

✓ End-to-end encrypted configuration and data transmission
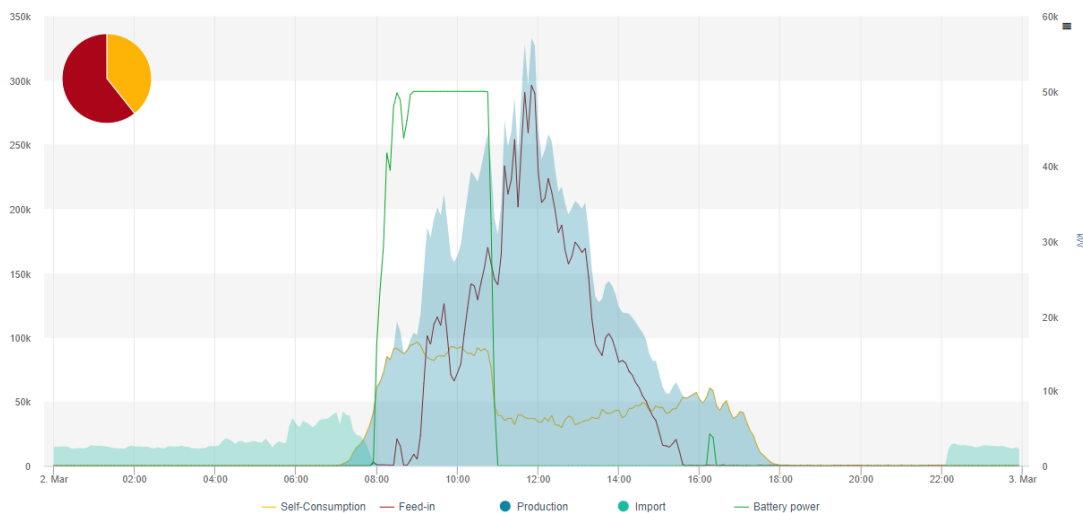
Link to VCOM

meteocontrol's remote monitoring portal VCOM (Virtual Control Room) uses on-site measurements and satellite radiation data to provide you with extensive data analysis, alarms, and reporting functions.

The web-based user interface can be customized to meet your needs: it provides a quick overview of the performance of the entire PV system portfolio or individual PV systems, no matter their location.

Visualization of on-site energy consumption allows you to analyze the zero feed-in control quality on a daily, monthly, or annual basis, or over user-defined time periods.

The on-site energy consumption rate is defined as the percentage of PV energy production that is directly consumed by the customer's installation rather than being fed into the grid.

Self consumption chart

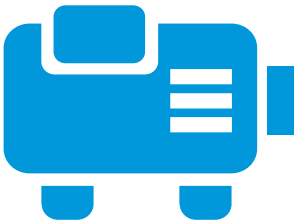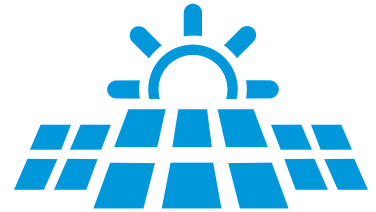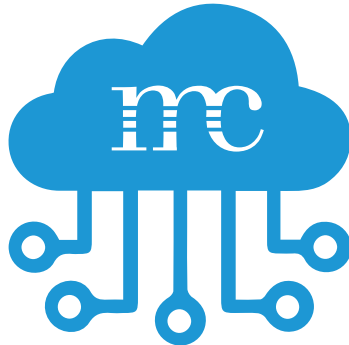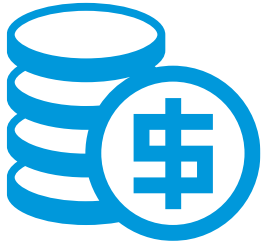# *System requirements*

Recording of network parameters and signals

✓ Power analyzer or energy meter that supports power control (**see blue'Log® XM/XC Compatibility List**).

✓ The power analyzer or energy meter must be installed such that the point of interconnection and Diesel generator are located on one side and the PV system and consumption are recorded on the other (see graphic on page 6).

✓ If consumption and PV energy production are recorded using different meters, they can be combined into a single virtual meter.

✓ A digital signal from the ATS (automatic transfer switch) or Diesel generator controller is required to initiate the change of operation modes.

✓ Optional: If a backup disconnection device (e.g. power contactor or circuit breaker) is used, the "Zero Feed-In (automatic grid disconnection)" license is required

Compatible with PV inverter

✓ Supported PV inverter type (**see blue'Log® XM/XC Compatibility list**.)

✓ Interfaces and protocol type have a significant effect on the dynamics of the control mechanism

✓ Project-specific drivers for PV inverters can be developed on request

Your benefits with PV-Diesel

✓ Environmentally friendly solution that saves fuel and reduces CO_2 emissions

✓ Lower costs due to fuel savings and reduced maintenance of the Diesel generators

✓ Manufacturer-independent components make system design highly flexible

✓ Can be implemented in mixed PV parks that use a variety of inverter types

✓ Regular function and compatibility updates make for a future-proof solution

✓ Convenient, user-friendly system makes commissioning quick and easy: parameterization instead of programming

✓ Diesel generator-friendly operation with PT1 control means no overshoot

✓ Cost-effective solution

Optional services

Engineering

✓ Expert planning and consulting
including installation plans and
documentation

Remote commissioning

✓ Save time and costs with process
optimization and
smooth commissioning

Project-specific controller tuning

✓ Ensure fast
reaction times with project-
specific controller tuning
to determine
control parameters.

THINK AHEAD

meteocontrol GmbH
Pröllstraße 28
86157 Augsburg

Telephone   +49 821 34 66 6-0
Fax   +49 821 34 66 6-11
e-mail   vertrieb@meteocontrol.com

meteocontrol.com