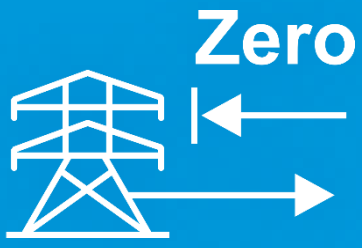
meteo control

ZERO FEED-IN

100 % self-consumption guaranteed

FOR POWER SYSTEM STABILITY AND A FASTER CONNECTION APPLICATION PROCESS:

HOW TO CONTRIBUTE TO GRID STABILITY WITH YOUR NON-EXPORTING PV SYSTEM THROUGH DYNAMIC ACTIVE POWER CURTAILMENT.



ZERO FEED-IN

As the number of decentralized PV systems has grown, the share of fluctuating generation capacity both in national and international electricity grids has significantly increased in recent years.

The resulting high PV penetration, in particular in the low-voltage grids, might lead to prohibited thermal or voltage exceedances, which jeopardize the system stability of the electricity grid.

As a consequence of this change, grid operators require system operators to take measures in order to improve grid integration so that future PV deployment does not have to be restricted due to limited grid capacity.

If there is already severe grid congestion, system operators are obliged to equip the PV system with a technical device which ensures that there is no electricity fed into the public grid at any time. As such, the system must implement a so-called export limitation scheme (zero feed-in / zero export) whereby either the energy generated is consumed by the producer (100 % consumption) or the PV systems power output is limited.

POWER PLANT CONTROL WITHBLUE'LOG XC ®

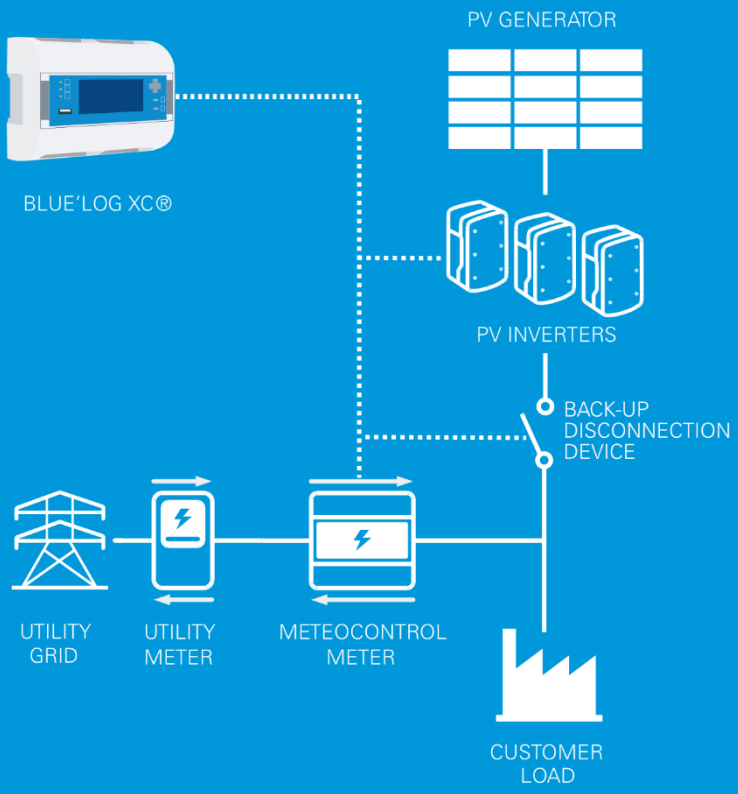
The high-performance controller blue'Log XC® offers a wide range of features for active and reactive power control, which guarantees grid stability – in fact manufacturer independent.

For zero feed-in the blue'Log XC® de-rates the PV inverters and curtails their active power output when the balance between generation and consumption reaches a point where the PV system might export more than the agreed export capacity.

The controller is sending active power setpoint commands within a highly dynamic zero watt closed-loop control and matches the power output limit of the PV system to the actual customer power demand. If an active power load / appliance in the customer installation (household / industry) is switched off, the feed-in of excess PV power will automatically be reduced.

The graphical user interface of the blue'Log XC® will provide you with optimal support during commissioning and requires no programming knowledge on your part.

FUNCTIONAL PRINCIPLE

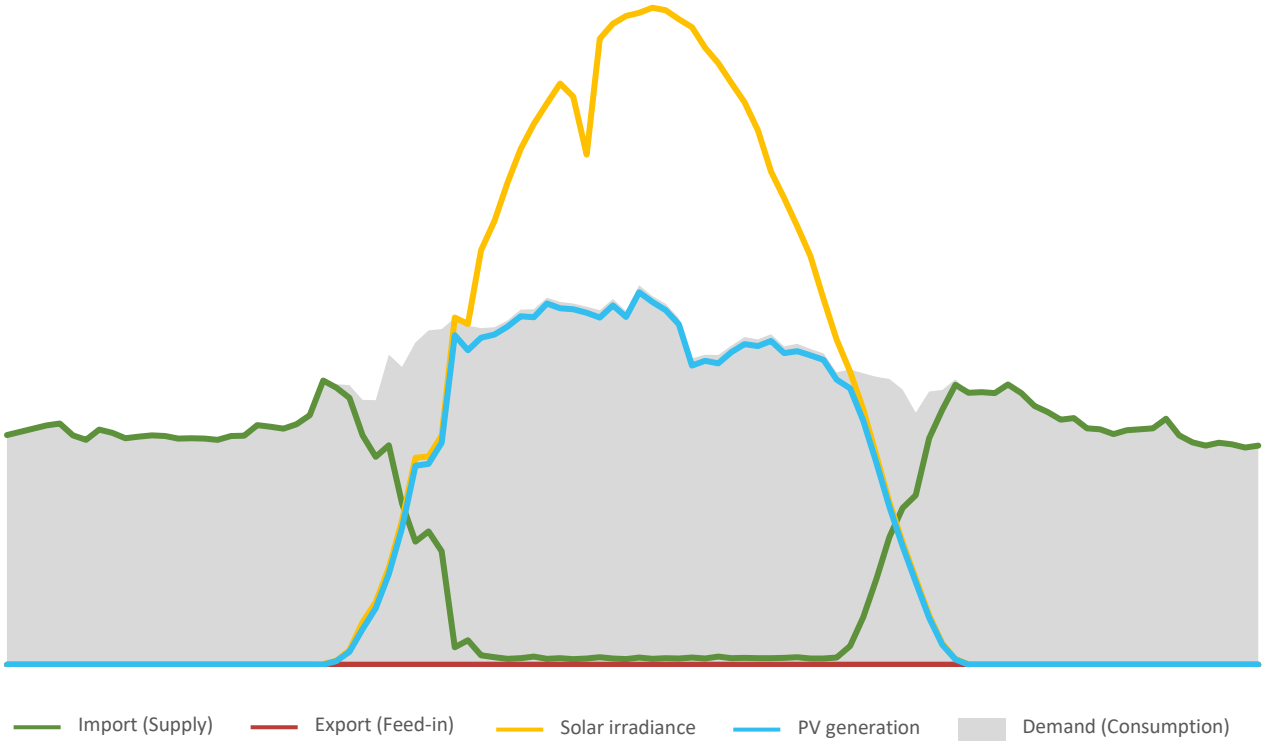


Closed-loop control

- Continous feedback of actual parameters at the grid connection point enables fast and stable control
- High-accuracy utility measurement ensures precision control
- Dynamic active power setpoint calculation considering actual load and PV generation

Fail-safe operation

- Auto-detection of communication failures
- Automatic switch from normal to fail-safe operation mode
- Configurable behaviour in event of error - hold last setpoint, default setpoint (e.g. 0 %) or automatic grid disconnection

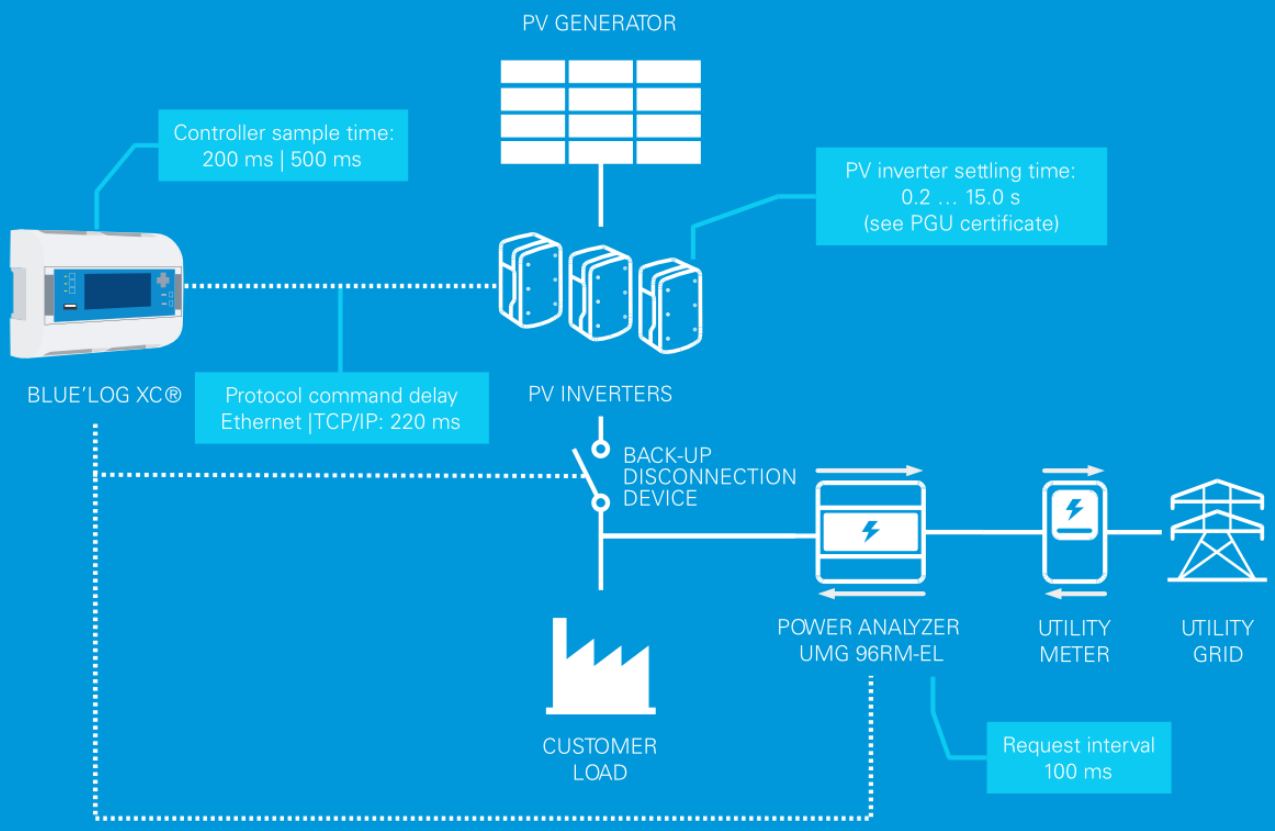


CONTROL DYNAMICS

The dead time of the entire control loop consists of the individual dead times of the system, dependent on the interfaces used for correction value command (protocol command delay) as well as for measured value feedback (dead time of the power analyzer / energy meter).

Further project-specific external dead times such as the PV inverter settling time cannot be influenced by the controller blue'Log XC®, but contribute significantly to the total dead time.

Since the request interval of the power analyzer UMG 96RM-EL is sampled at a shorter interval (100 ms) than the controller (200 ms | 500 ms) when using the Modbus TCP protocol, the dead time of the measured value feedback does not have to be summed up separately when determining a total dead time. The maximum permissible dead time of the entire control loop including the PV inverters settling time, depends on project-specific factors and therefore cannot be specified in general terms.



REMOTE MONITORING WITH VCOM

meteocontrol's remote monitoring portal VCOM (Virtual Control Room) provides an extensive set of functions for data analysis, alarming and reporting using on-site measurements and satellite irradiance data.

The web-based user interface can be adjusted to specific needs and allows a quick overview of the performance of your entire system portfolio or a single PV power plant regardless of its location.

Visualization of the self-consumption allows a daily, monthly, yearly or user-defined analysis of the zero feed-in control quality.

The self-consumption ratio is defined as the part of the PV energy production, which is instantly consumed by the customer installation over the total production.

SELF-CONSUMPTION RATIO

SYSTEM REQUIREMENTS

PV inverter compatibility

- Usage of supported PV inverter types (see blue'Log XM/XC® compatibility list)
- Interface and protocol types significantly affect control dynamics (grid operator requirements must be observed!)
- Project specific PV inverter driver development on request

Utility measurement (energy meter)

- Feed-in and import meter at the grid connection point
- Usage of a Power Control supported power analyzer or energy meter (see blue'Log XM/XC® compatibility list)
- Optional: Usage of a power analyzer or energy meter that supports phase-related control (see blue'Log XM/XC® compatibility list)
- Accuracy class of applied instrument transformers (CTs and VTs) significantly affect steady-state errors (grid operator requirements must be observed!)
- Optional: Usage of a back-up disconnection device (e.g. contactor or circuit breaker) - Licence 'Zero Feed-In (Automatic grid disconnection)' required

Communicates with all major inverters:

Benefits of meteocontrol's zero feed-in solution

- Reliable grid code compliance thanks to sophisticated control topology
- Highly flexible system design through inverter manufacturer independence
- Suitable for mixed PV systems with different inverter types
- Future-proof solution due to regular feature and compatibility updates (inverters, sensors, meters, etc.)
- Quick and easy commissioning with convenient, user-friendly system – parameterizing instead of programming