

# Mind4Energy MINT

## Unlocking the value of flexibility

With the continued growth of renewables on the grid, network operators find it increasingly challenging to balance supply and demand dynamically.

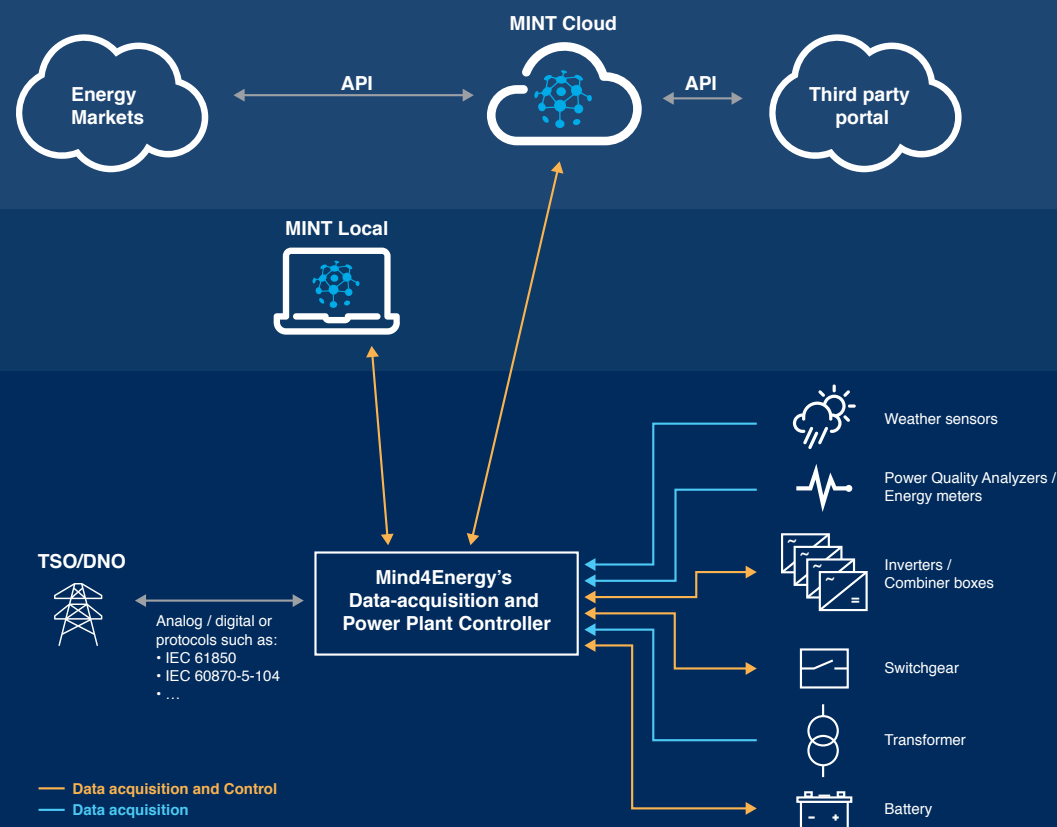
Flexibility -or the ability of power plants to adapt their output in real-time- is key in this landscape. With Mind4Energy's MINT, solar energy can be part of the solution. It unlocks new, easily accessible control possibilities and new value streams for energy traders and plant owners.

Mind4Energy MINT offers PV Data Acquisition and Power Plant Control (PPC) based on industrial quality PLC hardware. It allows to dynamically control the output of the PV plant based on control commands from grid operators, energy traders, flexibility aggregators or as part of a Virtual Power Plant. With the PPC, the solar plant is **ready to participate in the energy market** of the future.

The PPC acts on the inverters to remotely control active and reactive power of the facility and on the switchgear for coupling or decoupling the plant. **Response times of less than a second** can be reached. The closed-loop control by means of a power quality analyzer at the grid connection point, assures a high accuracy of the output.

The Mind4Energy PPC can process a wide range of commands in multiple protocols, such as analog and digital signals, but also protocols specific to the power industry as IEC 61850.

The Mind4Energy PPC is fully integrated with MINT, Mind4Energy's new real-time monitoring and control platform. This platform assures effective real-time monitoring of the facility from string level to grid connection point.



## Available features

- Real-time monitoring and real-time control of your PV plant
- Control of the PV plant based on dynamic signals like real-time or forecasted energy prices
- Control of active and reactive power with or without ramp rate
- Frequency support (via active power)
- Voltage support (via reactive power)
- Cos  $\phi$ -control (even at night, with specific inverters)
- Export limitation
- Battery management
- Soft start and soft stop of the facility
- Compliance with DNO/TSO communication requirements
- Flexible interfaces and secure connections with third parties

## Following options are available for large utility-scale plants:

- MINT Local: Local real-time SCADA
- Managed fiber optic switches for a redundant ring network
- The industrial hardware used by Mind4Energy allows for a redundant data acquisition setup
- High security VPN router



Mind4Energy® MINT Dashboard