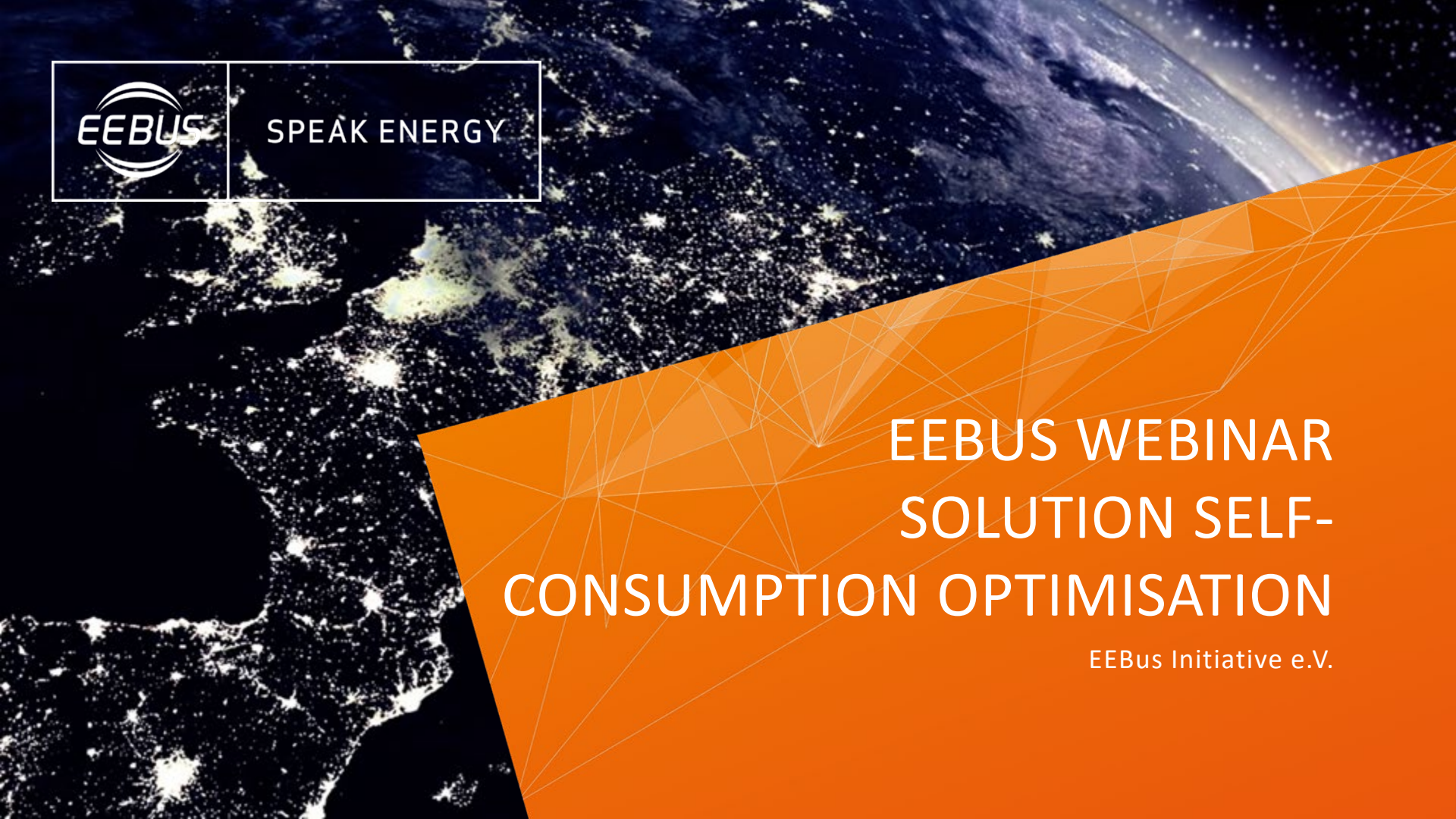
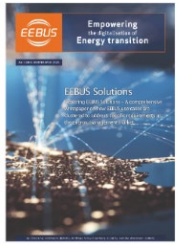


EEBUS WEBINAR SOLUTION SELF-CONSUMPTION OPTIMISATION

EEBus Initiative e.V.

EEBUS WHITEPAPER WAS PUBLISHED IN JANUARY 2024



EEBUS Whitepaper - Exploring EEBUS Solutions

English [PDF, 3,4MB]

DOWNLOAD

01 Solution Self-Consumption Optimisation

02 Use Case Control of Battery

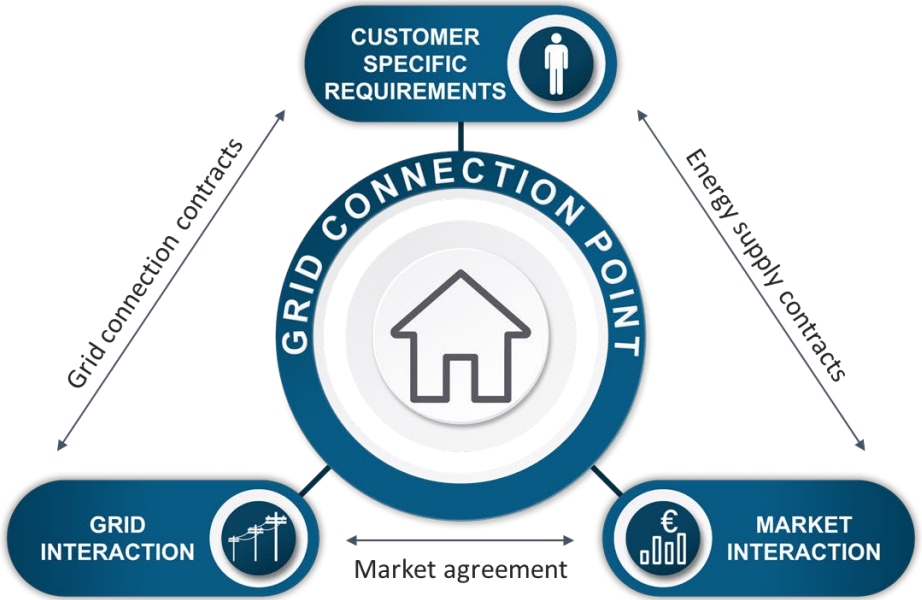
03 Use Cases E-Mobility

04 Use Case Optimization of Heat Pump Compressor Flexibility

05 Use Case Flexible Start for White Goods

FOUR EEBUS SOLUTIONS TACKLE ENERGY MANAGEMENT RELEVANT CHALLENGES

Solution: Self-Consumption Optimisation



Emergency control | curative grid measures

Solution: Power Limitation

Price control | free trade for energy procurement | sales

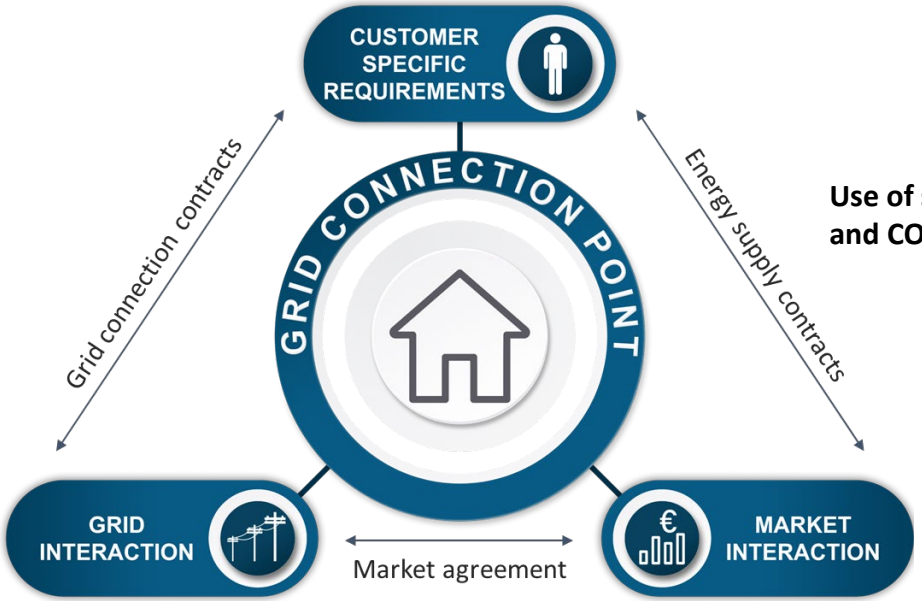
Solution: Dynamic Pricing

Price control | preventive grid measures

Solution: Flexibility Provision

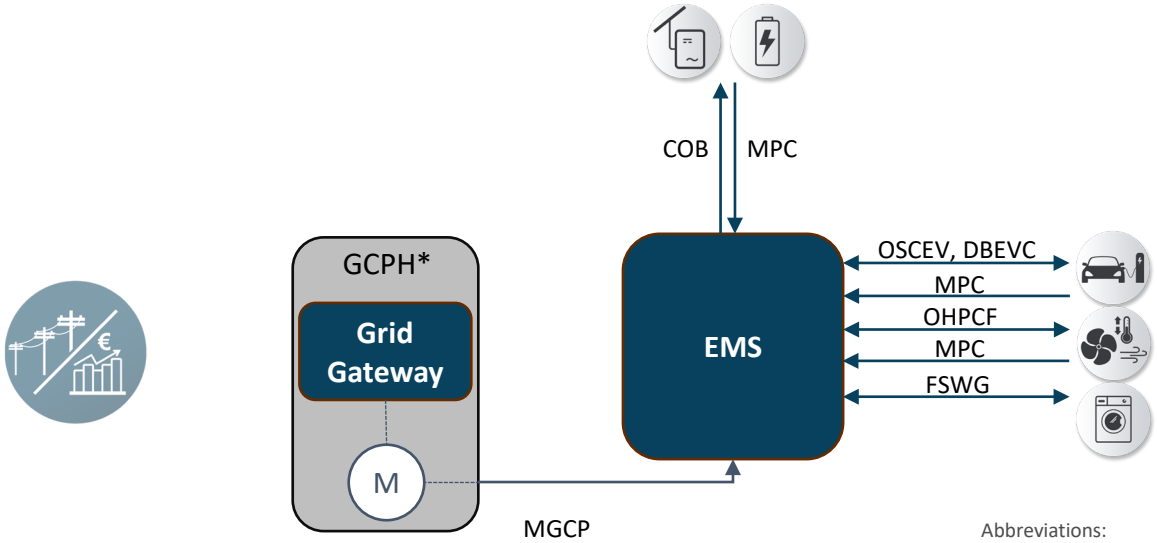
SELF-CONSUMPTION OPTIMISATION SAVES COSTS AND CO_2 EMISSIONS

Solution: Self-Consumption Optimisation



Use of self-produced energy to save costs and CO_2 emissions

THE SOLUTION SELF-CONSUMPTION OPTIMISATION ONLY PLAYS A ROLE WITHIN A HOUSEHOLD OR PREMISES



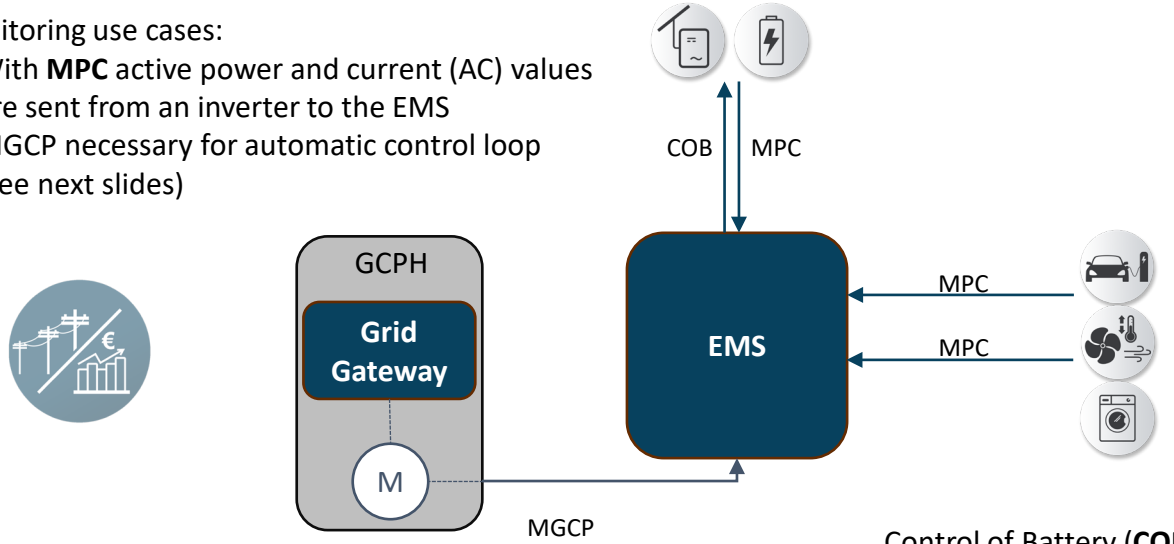
EEBUS

*Grid Gateway: group of different devices like SMGW, control unit or smart meter depending on the infrastructure

Abbreviations:
MGCP = Monitoring of Grid Connection Point
MPC = Monitoring of Power Consumption
COB = Control of Battery
OSCEV = Optimization of Self-Consumption During EV Charging
DBEVC = Dynamic Bidirectional EV Charging
OHPCF = Optimization of Self-Consumption by Heat Pump Compressor Flexibility
FSWG = Flexible Start for White Goods

CONTROL OF BATTERY ENABLES THE INVERTER WITH CONNECTED BATTERY TO RECEIVE CONTROL SIGNALS

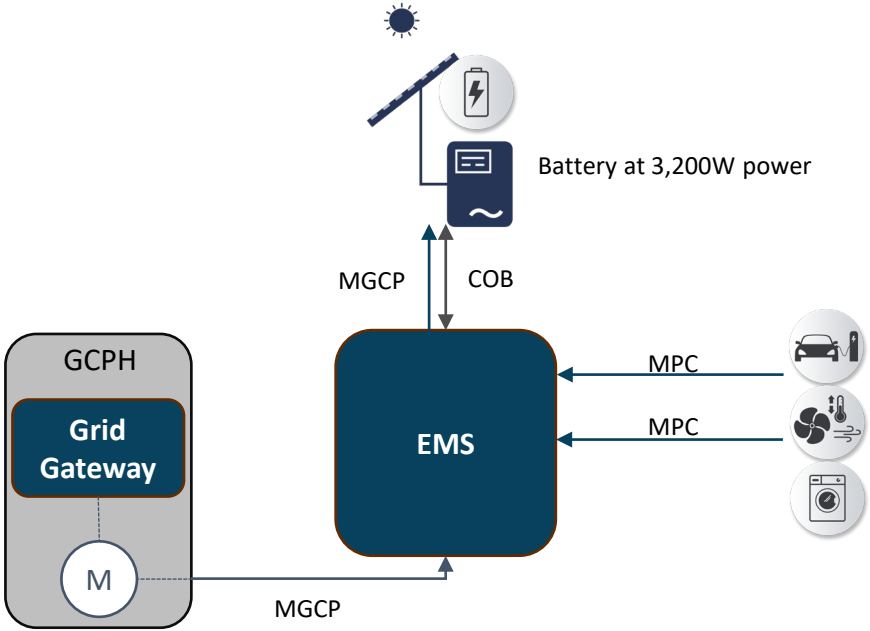
Monitoring use cases:
- With **MPC** active power and current (AC) values are sent from an inverter to the EMS
- MGCP necessary for automatic control loop (see next slides)



*Grid Gateway: group of different devices like SMGW, control unit or smart meter depending on the infrastructure

Control of Battery (**COB**) enables the inverter with connected battery to receive control signals (charging/discharging).
Control modes:
- Automatic control loop
- Remote control

EXAMPLE CONTROL MODES (1/2)

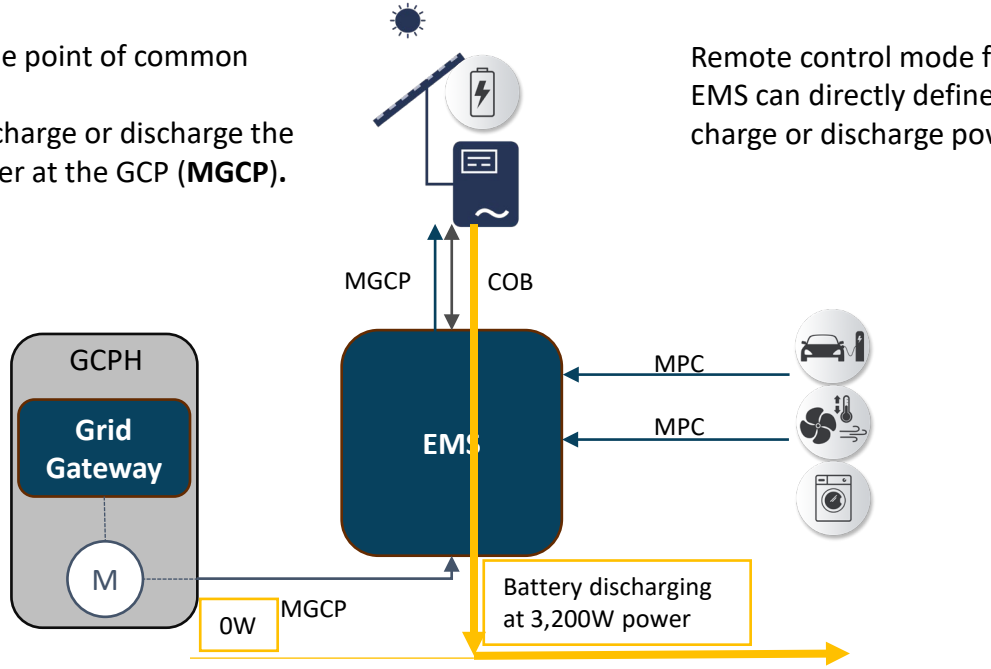


Aggregated power consumption of the building’s devices: 3,200W

EXAMPLE CONTROL MODES (2/2)

Automatic control loop for the point of common coupling (PCC):
Inverter decides whether to charge or discharge the battery according to the power at the GCP (**MGCP**).

Example: With a PCC power setpoint of 0W and a measured power value of 1,500W at the GCP, the inverter would start discharging its battery with exactly 1,500W, resulting in a power value at the GCP of 0W.



Remote control mode for power:
EMS can directly define a setpoint that controls the charge or discharge power of the battery.

Example: The battery gets the command to discharge exactly 3,200W.

TWO USE CASES ENABLE SELF-CONSUMPTION OPTIMISATION FOR E-MOBILITY

Dynamic Bidirectional EV Charging (DBEVC)

- Direct setpoint control
- Consideration of energy demand and departure time
- Discharging of battery to supply other devices

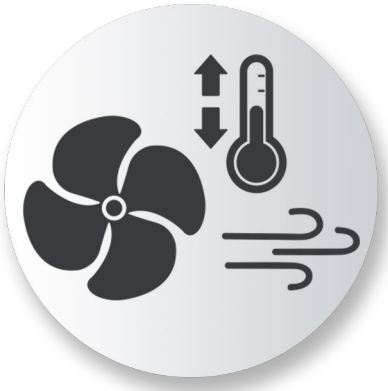
Optimization of Self-Consumption During EV Charging (OSCEV)

- Charging within the limit of available PV surplus power
- Limit is not mandatory in case charging process should be faster

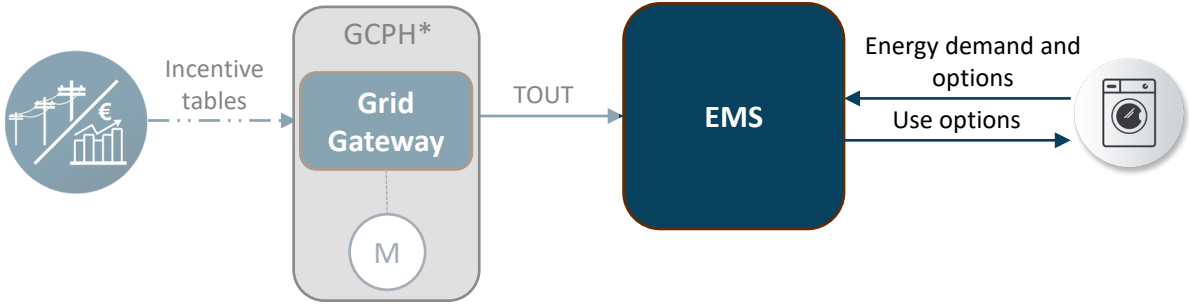
THE HEAT PUMP COMPRESSOR CAN OFFER A FLEXIBILITY TO USE PV SURPLUS POWER

Optimization of Heat Pump Compressor Flexibility (OHPCF)

- Optional power sequence is by the heat pump
- EMS can control the flexibility according to the available PV surplus power

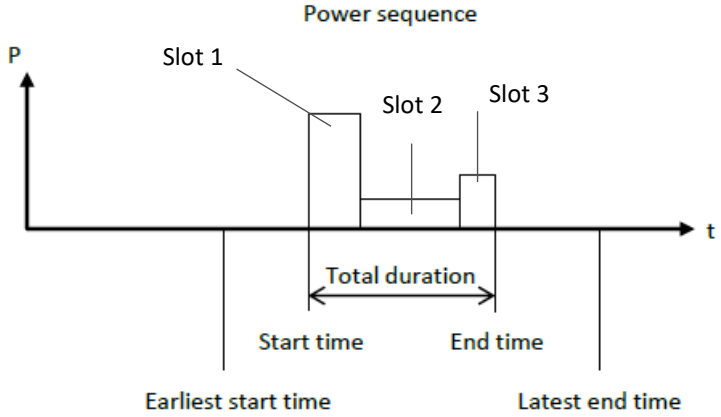


FLEXIBLE START OF WHITE GOODS PROVIDES OPTIONS TO THE EMS FOR OPERATION BASED ON INCENTIVES

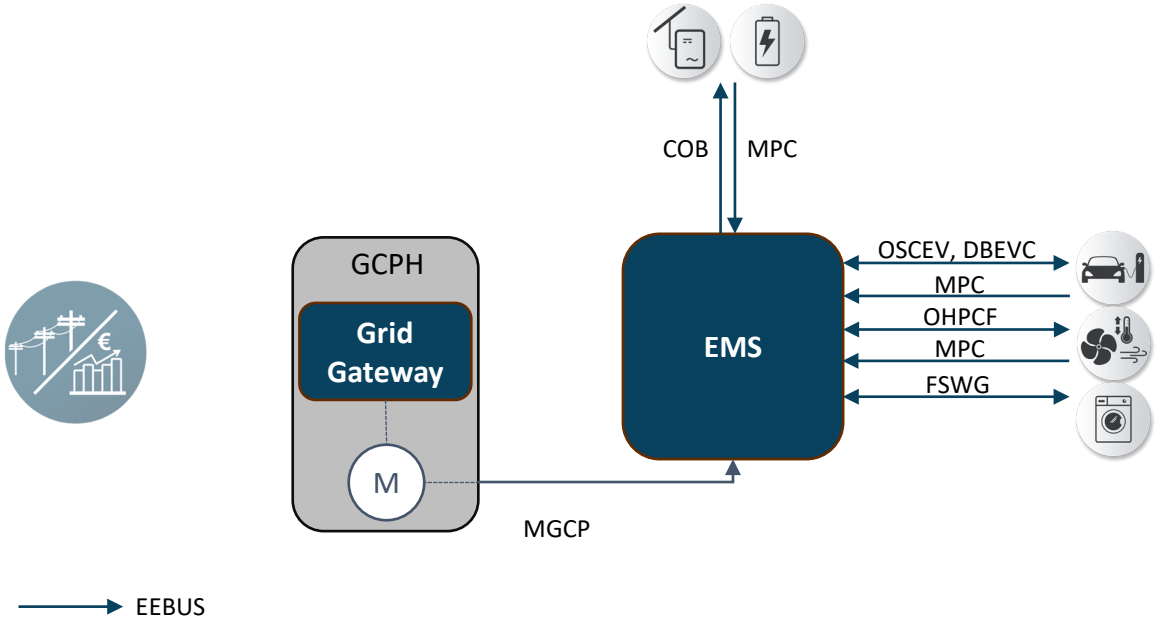


THE HOME APPLIANCE SHOULD RUN BETWEEN EARLIEST START TIME AND LATEST END TIME

The device provides the information when the device‘s programme must be finished. Within this time range the EMS has the possibility to adjust the power sequence according to the incentive table by shifting, selecting, pausing power sequences to use the full potential of cost-efficient operation.



THERE ARE DIFFERENT WAYS TO USE PV SURPLUS POWER



Different ways to use the PV surplus power:

a) Feed the electrical energy into the grid

b) Store the electrical energy (e.g., in a battery) and use the electrical energy later

c) Operate a device (e.g., a heat pump) and store the energy as thermal energy for later use

d) Do not use the energy at all (e.g., reduce power production of the PV inverters)

*Grid Gateway: group of different devices like SMGW, control unit or smart meter depending on the infrastructure