

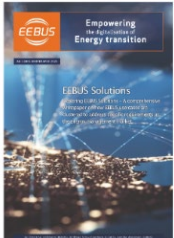
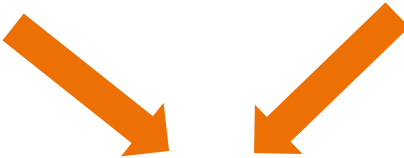


SPEAK ENERGY

WEBINAR EEBUS SOLUTIONS

EEBus Initiative e.V.

EEBUS WHITEPAPER WAS PUBLISHED IN JANUARY 2024.



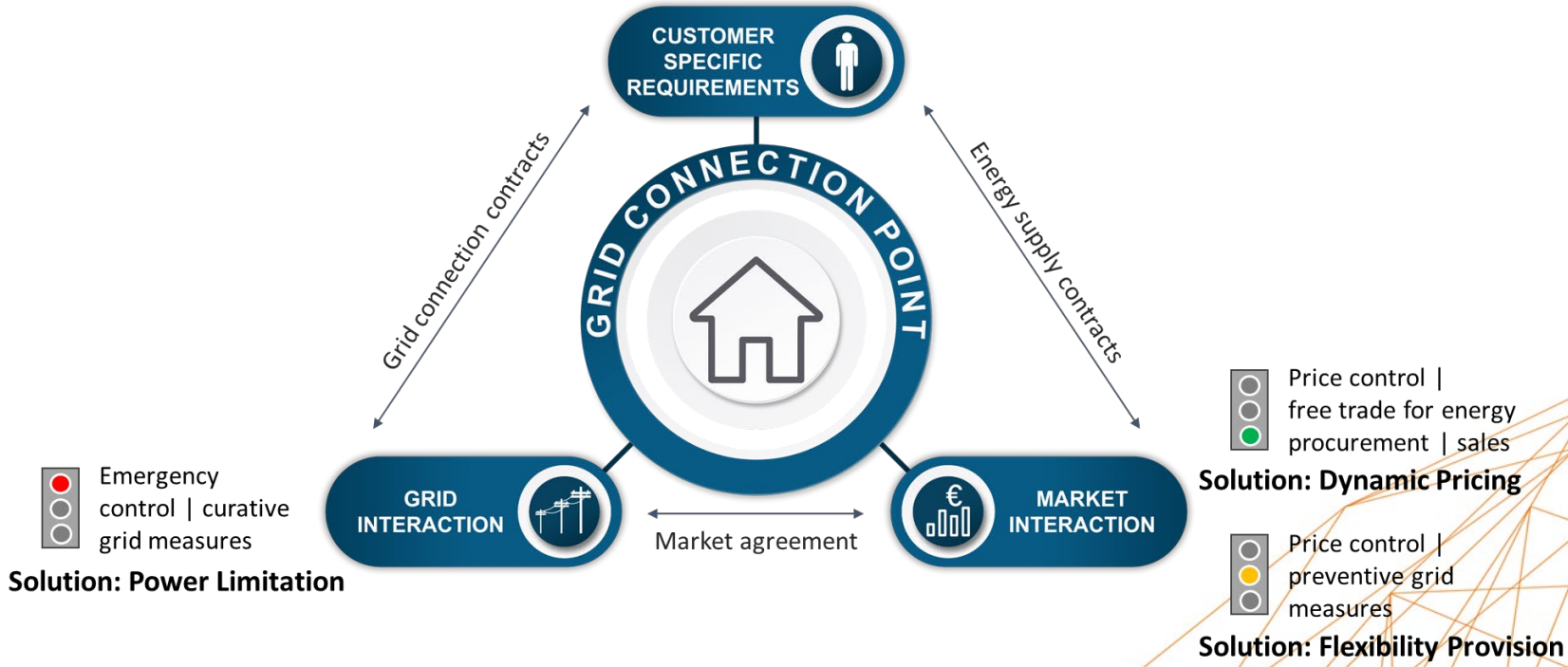
EEBUS Whitepaper - Exploring EEBUS Solutions
English [PDF, 3,4MB]

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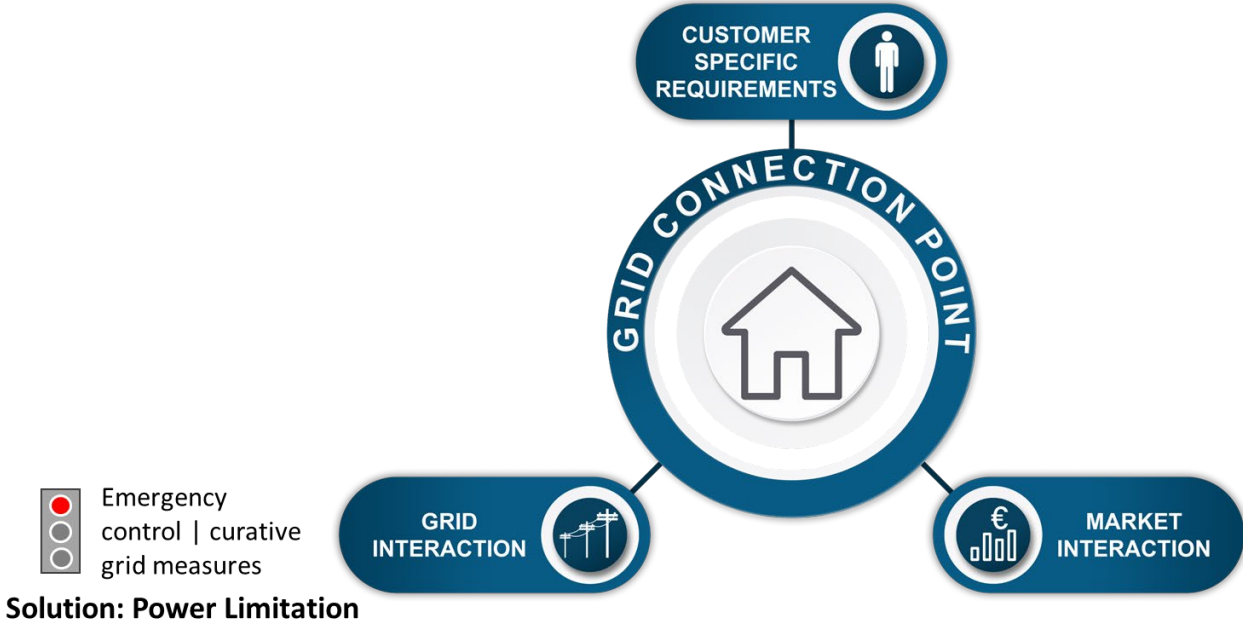
- 01** Introduction
- 02** EEBUS solutions overview
- 03** Standardisation
- 04** About EEBUS


FOUR EEBUS SOLUTIONS TACKLE ENERGY MANAGEMENT RELEVANT CHALLENGES.

Solution: Self-Consumption Optimisation



POWER LIMITATION IS THE SOLUTION FOR EMERGENCY CONTROL.



 Emergency control | curative grid measures

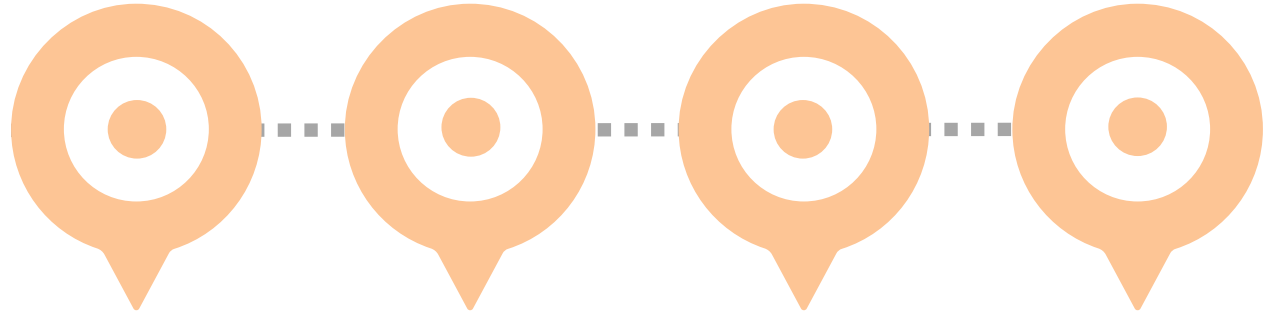
Solution: Power Limitation



THE SOLUTION POWER LIMITATION AVOIDS GRID OVERLOADS.



Protecting the local grid network stability



Limitation of Power Consumption

Distribution Service Operator (DSO) sends a temporary power limit to energy consuming devices.

Limitation of Power Production

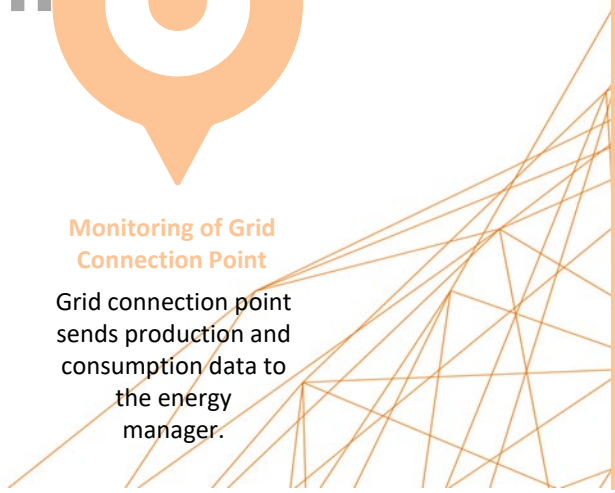
DSO sends a temporary production limit to energy producing devices.

Monitoring of Power Consumption

Power consuming or producing device sends production and consumption data to an energy manager.

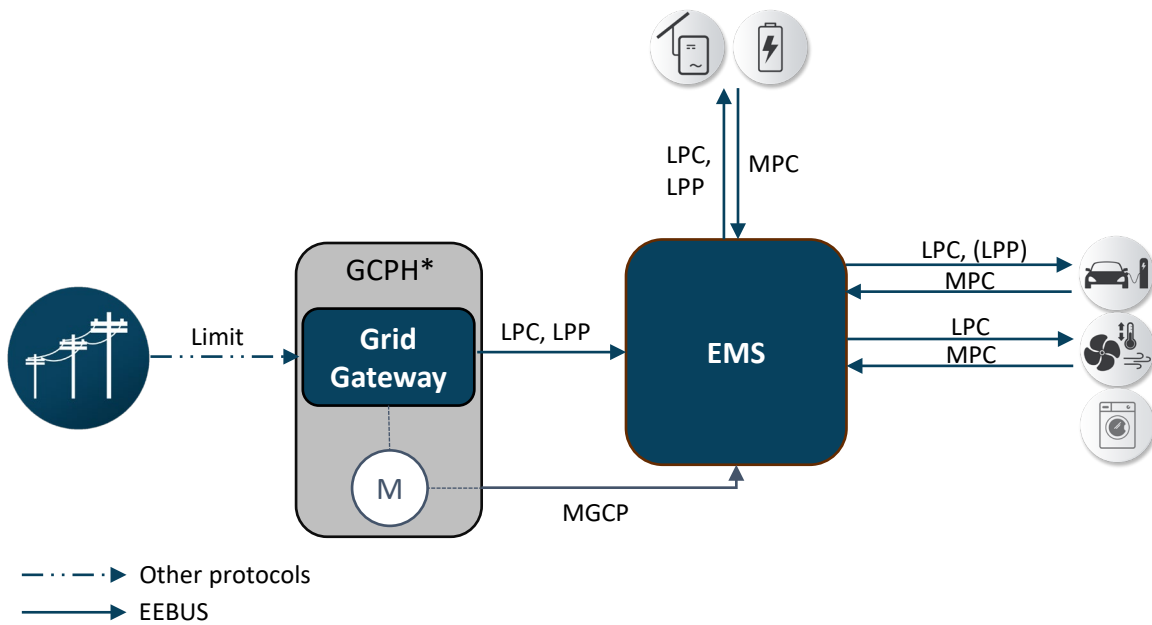
Monitoring of Grid Connection Point

Grid connection point sends production and consumption data to the energy manager.



Solution Power Limitation

ALL USE CASES OF A SOLUTION INTERACT WITH EACH OTHER – POWER LIMITATION.



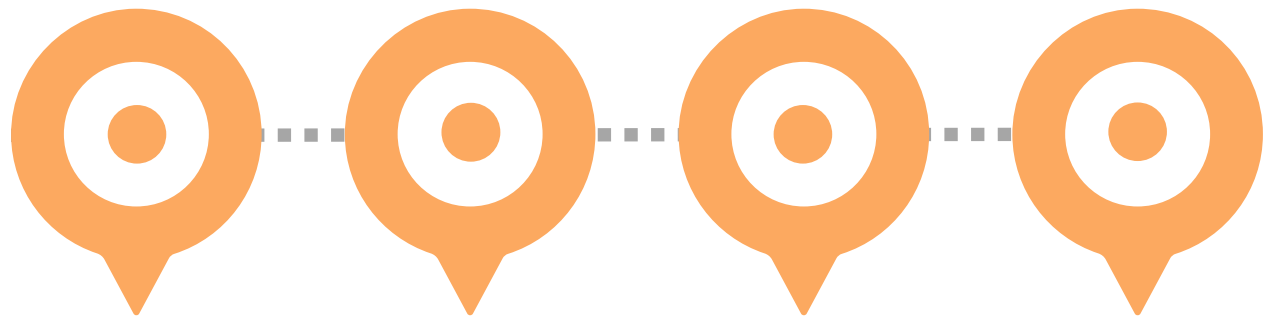
Abbreviations:
 LPC = Limitation of Power Consumption
 LPP = Limitation of Power Production
 MPC = Monitoring of Power Consumption
 MGCP = Monitoring of Grid Connection Point

*Grid Connection Point Hub: group of different (logical or physical) entities like smart meter gateway, grid control unit or gateway, and smart meter.

THE SOLUTION DYNAMIC PRICING HELPS TO DISTRIBUTE ENERGY IN A GRID SUPPORTIVE WAY.



- Saving money by using price incentives
- Shifting loads by offering incentives



**Time of Use
Tariff**
Tariff tables
(incentives) are sent
to the energy
management system.

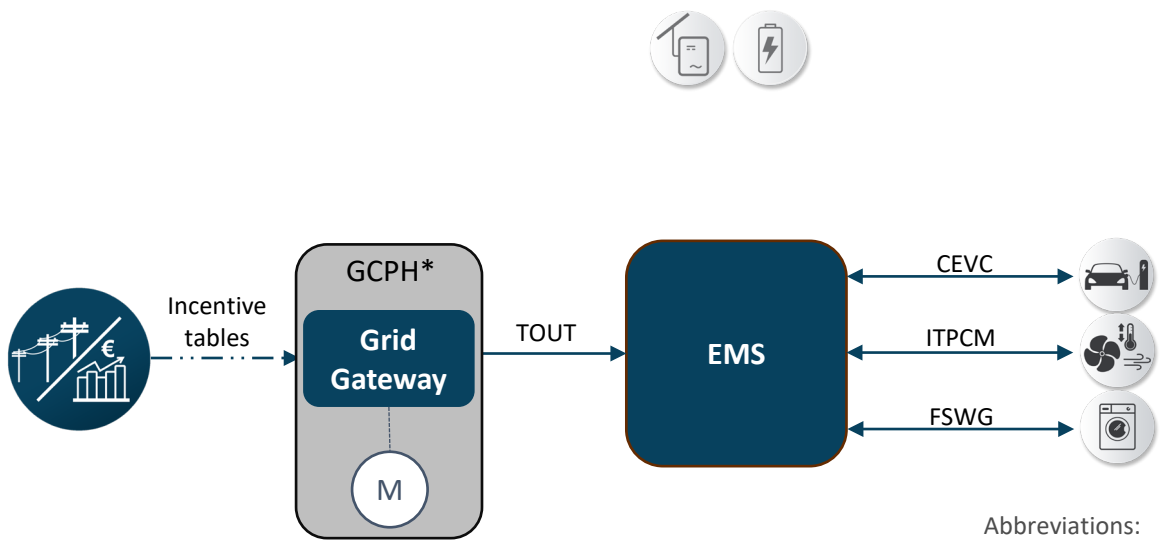
**Coordinated EV
Charging**
Creation of charging
plan based on
incentive tables.

**Incentive-Based Power
Consumption Management**
Creation of power plan
based on incentive
tables.

**Flexible Start for
White Goods**
Consuming device
informs the EMS
about the flexible
power sequence.



ALL USE CASES OF A SOLUTION INTERACT WITH EACH OTHER – DYNAMIC PRICING.



- · - · - · → Other protocols
 —————→ EEBUS

Abbreviations:
 TOUT = Time of Use Tariff
 CEVC = Coordinated EV Charging
 ITPCM = Incentive-Table Based Power Consumption Management
 FSWG = Flexible Start for White Goods

*Grid Connection Point Hub: group of different (logical or physical) entities like smart meter gateway, grid control unit or gateway, and smart meter.

THE GOAL OF THIS SOLUTION IS USING SELF-PRODUCED ENERGY AS MUCH AS POSSIBLE.



Use of self-produced energy to save costs and CO2 emissions



Monitoring of Power Consumption

Power consuming or producing device sends production and consumption data to an energy manager.

Monitoring of Grid Connection Point

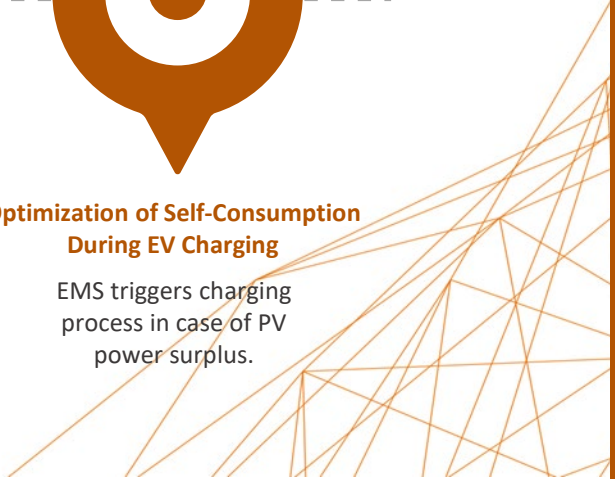
Grid connection point sends production and consumption data to the energy manager.

Control of Battery

Inverter with connected battery receives control signals from the EMS as well as the power value at GCP.

Optimization of Self-Consumption During EV Charging

EMS triggers charging process in case of PV power surplus.





SEVEN USE CASES ARE PART OF THE SOLUTION SELF-CONSUMPTION OPTIMISATION.



Dynamic Bidirectional EV Charging

The capacity of the battery of a bidirectional vehicle can be used with PV power surplus.

Optimization of Self-Consumption by Heat Pump Compressor Flexibility

EMS sends information of PV power surplus to the heat pump.

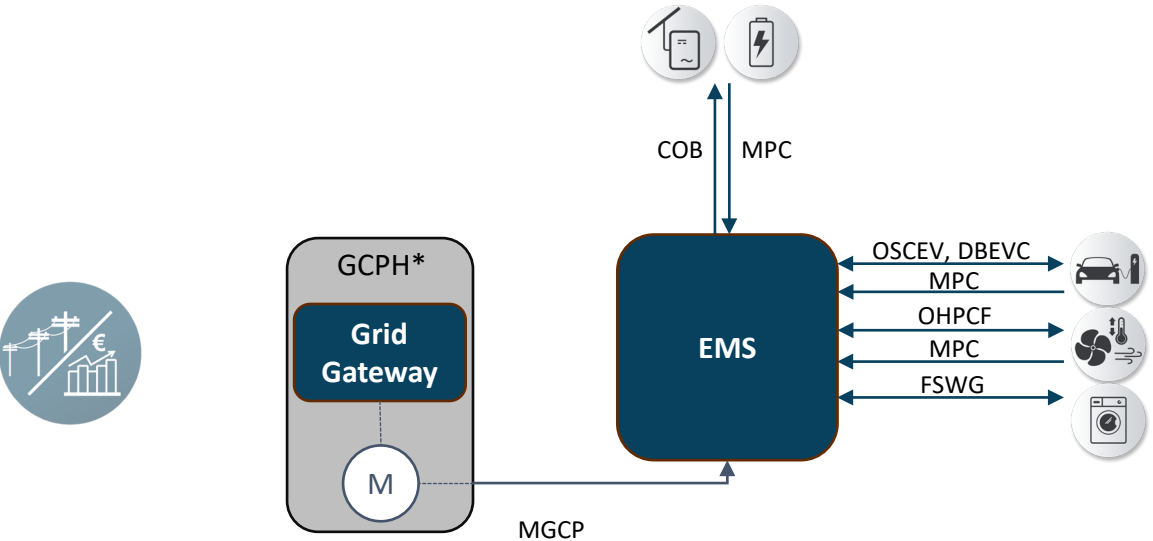
Flexible Start for White Goods

Consuming device informs the EMS about the flexible power sequence.



Solution Optimisation of Self-Consumption

ALL USE CASES OF A SOLUTION INTERACT WITH EACH OTHER.



→ EEBUS

- Abbreviations:
- MPC = Monitoring of Power Consumption
 - MGCP = Monitoring of Grid Connection Point
 - 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

*Grid Connection Point Hub: group of different (logical or physical) entities like smart meter gateway, grid control unit or gateway, and smart meter.

THIS SOLUTION OFFERS A PREVENTIVE MEASURE TO SUPPORT THE GRID STABILITY.



Using flexibilities in households to support the grid stability.



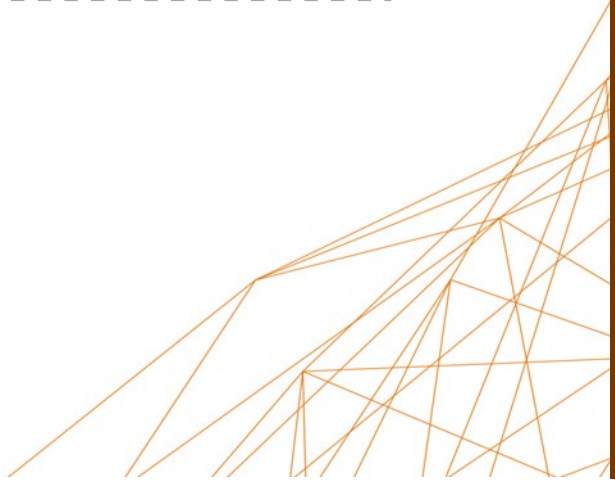
Power Envelope

DSO sends maximum or minimum consumption/production values to an EMS.



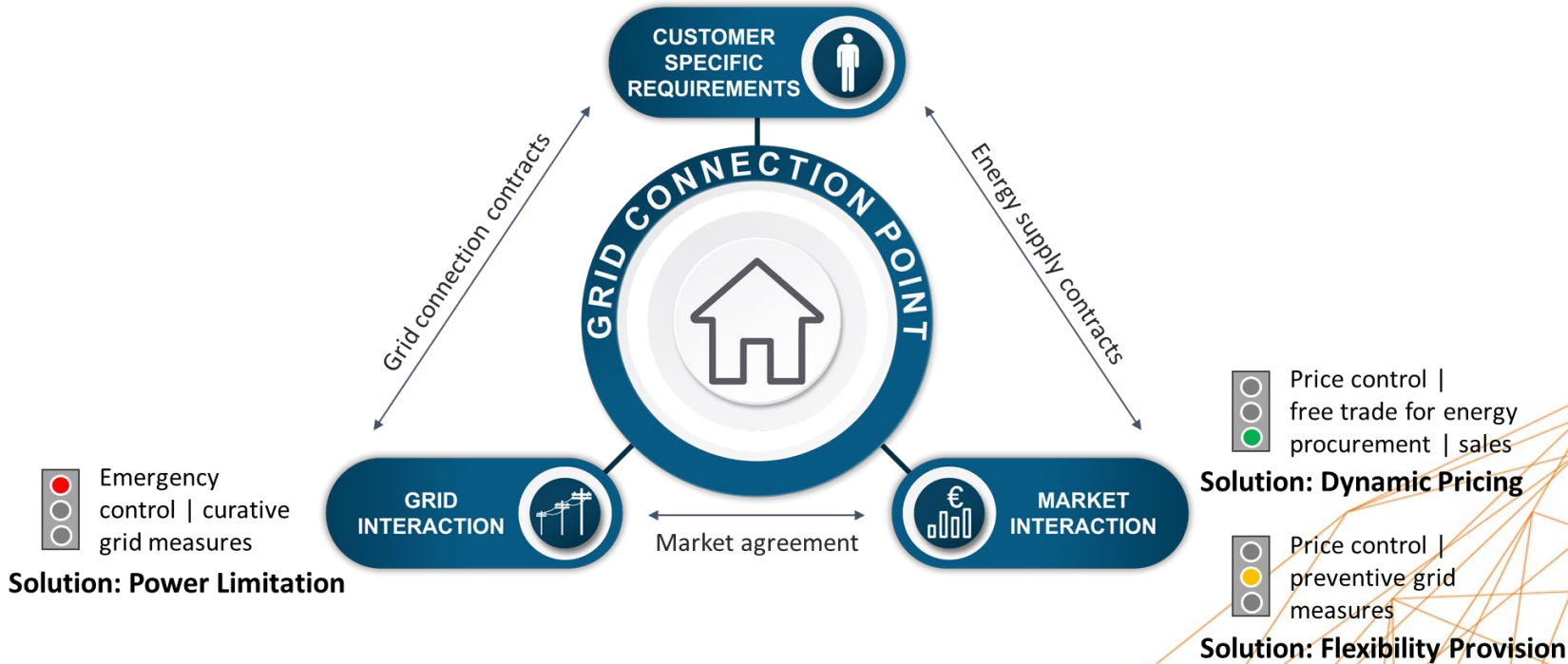
Power Demand Forecast

EMS sends a Power Demand Forecast to the DSO based on received power plans.





THE SHOWN FOUR EEBUS SOLUTIONS CONTRIBUTE TO THE DIGITALISATION OF THE ENERGY TRANSITION.

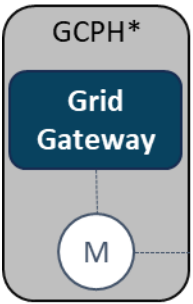
Solution: Self-Consumption Optimisation



MANY USE CASES ARE ALSO PART OF NATIONAL AND INTERNATIONAL STANDARDS.

Ontology: ETSI TS 103 410-1

VDE-AR-E 2829-6  



VDE-AR-E 2829-6
In progress: IEC TR 62746-2



VDE-AR-E 2122-1000 (including VDE 2829-6 use cases)
In progress: IEC 63380
EN 50631 (including VDE 2829-6 use cases)





EEBUS CONTRIBUTES WITH ITS SOLUTIONS TO THE DIGITALISATION OF THE ENERGY TRANSITION – JOIN US.

We work with energy management relevant companies

to standardise

EEBUS Initiative e.V.

We believe that a global standard is necessary to ensure the interoperability of devices for the energy transition.

use cases

based on SPINE and SHIP as communication interface

which can be tested end to end

at the Living Lab Cologne.