

**WANTED:
Interested
Grid Operators**

PROJECT IDEA ENAsecureCharge

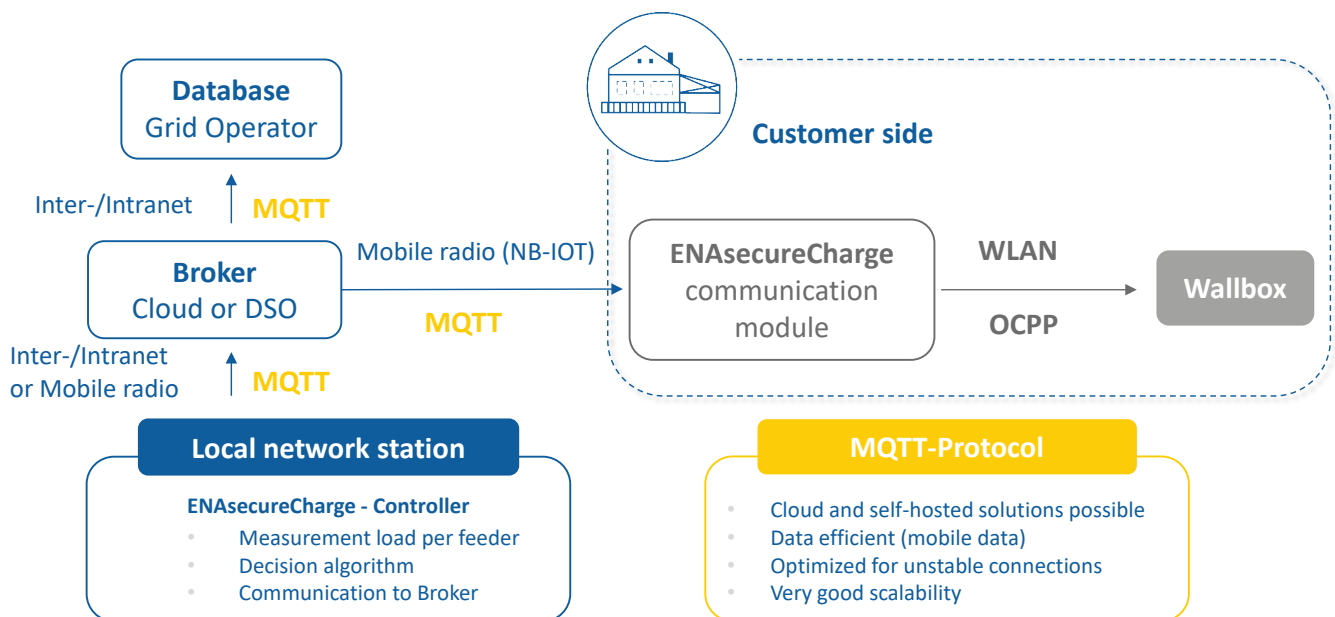
Grid-serving charging of electric vehicles

Motivation

Electric vehicles are becoming increasingly popular, causing rising loads on the low-voltage grid. Instead of carrying out a costly grid expansion, it makes sense to curtail locally occurring load peaks by controlling the charging process by reducing the charging power for a short time.

To this end, the distribution network operators in Germany have been granted the right to intervene in a controlling manner for charging powers of above 12 kVA. In addition,

network operators can offer reduced grid charges, in case of adjustable electric vehicle charging power. In the long term, this control is planned by means of communication via the German smart meter gateway, but it is not yet possible to predict when this functionality will become available in real world applications. Consequently, there is a need for a short-term solution, which will be developed within the scope of this project.



Concept

A system is to be developed that implements the control of charging processes by the network operator down to individual low voltage cables. The approach aims at a practical solution, with a fast development and implementation cycle. For this purpose, OCPP-capable charging stations are coupled with a local communication module owned by the network operator. The communication module is connected to the supplying local transformer via mobile data, using

the MQTT protocol. In the event of a network overload, the local intelligent transformer sends an encrypted control signal to reduce the charging power to the associated charging stations. The event is logged in the network operator's database. The ENAsecureCharge concept is characterized in particular as follows:

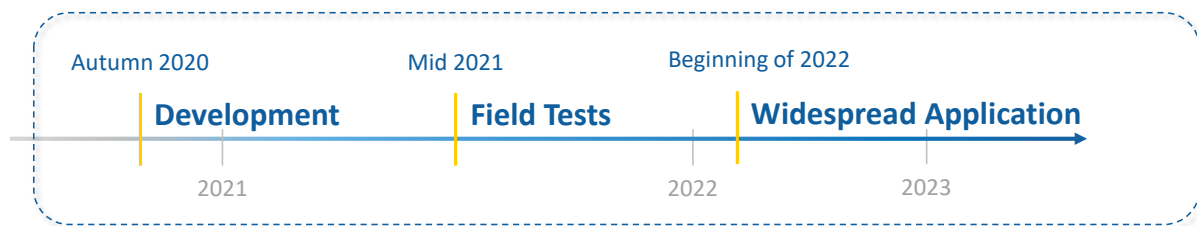
- Unidirectional communication with the charging station ensures that no sensitive data (such

as charging status) is retrieved and thus data protection requirements are easily met.

- An independent communication system ensures that there is no dependency on or interference with the customer's system (WLAN).
- By using the mobile network, a mature and reliable technology is used which, in contrast to alternatives such as 450 MHz, LoRaWAN or Powerline, allows fast and cost-effective implementation

To increase customer acceptance, a prioritization function is provided which, by pressing a button on the communication module, stops the reduction of charging power for a certain period of time. Studies show that this function is only used in emergencies and therefore does not restrict the functionality of the overall system. Although, the prioritization function can still be overwritten by the grid operator as an ultima ratio in case of an imminent grid failure.

We would be happy to also incorporate your ideas and suggestions.



■ Possibilities of Participation

For the implementation of the project we are looking for interested grid operators who:

- Are looking for a practicable solution for the grid-serving control of charging processes
- Would like to have a direct influence on the project design

■ Contact Information

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