

## DECENTRALIZED ELECTRICAL POWER GENERATORS IN THE LOW VOLTAGE GRID – DEVELOPMENT OF A TECHNICAL AND ECONOMICAL INTEGRATION STRATEGY

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*Keywords:* distributed energy; economical integration; energy management; integration strategies; LV-grid, point of common coupling; ancillary services

### ABSTRACT

Currently decentralized electrical generation units (DG units) are connected to the network in Europe with an increasing number and generation capacity. Currently the operator of a DG unit or the availability of fluctuation primary energy determines the power and time of the generation fed into the grid. The distribution system operators (DSO) is „blind“ towards the current power of the DG units in his grid because of the lack of observability and controllability of these generators in the low voltage level. Therefore a new strategy for the integration of DG units into grid operation will be required. This strategy will include energy management with controllable generators as well as controllable loads.

In the concept presented in this work the point of common coupling (PCC), which acts as the technical as well as legal interface between grid operator on the one side and operator of the generator on the other side, will be extended by a communication interface. This allows a technically efficient design of an energy management system and avoids fundamental organizational changes to the current grid regime. The design of such a bidirectional energy management interface as a new implementation of the PCC is presented finally.