

# Abstract

## a) Synopsis



In the present project DG DemoNetz-Validierung the voltage control concepts developed in the former projects DG DemoNetz-Konzept and BAVIS will be implemented in reality in the analysed grid sections in Vorarlberg and Salzburg by using test platforms. This will allow validating the simulation results from the projects DG DemoNetz-Konzept and BAVIS in a field test.

## b) Abstract

The given EU framework conditions are fostering the implementation of decentralised generation of electricity already today. This development will be even strengthened in the near future.

In the rural distribution network structures, typical for Austria, the increase of voltage through the feeding in of decentralised energy generation plants has turned out to be the most important system limitation when integrating the generation units<sup>1</sup>. This is of major importance since the network providers are responsible for keeping the voltage within defined limits without having direct access to energy production units (due to the legal unbundling of electricity generation, trading and distribution).

In the predecessor projects DG DemoNetz-Konzept and BAVIS voltage control concepts were developed in numerical simulation environments, based on real network data, as well as their economic and technical efficiency was evaluated compared to a reference scenario. Based on this experience, DG DemoNetz-Validierung will analyse, if the promising results from the simulations are also valid under real network conditions and if the developed concepts are effective.

The project is divided into three phases: In phase 1 the data coming from the predecessor projects are updated and measurements for validation planning and for the generation of parameters for the control concepts, respectively, are performed. In parallel, a detailed planning of the validation phase is made. In the 2nd phase the platform for validating the voltage control concepts and the necessary communication solution is adapted and tested and will be implemented in both considered grid areas. In the 3rd phase the voltage concepts and the communication platform will be analysed and validated in both networks during field test.

Beside the technical analysis and validation another validation of the economic results of the projects DG DemoNetz Konzept and BAVIS is performed. Then the concepts will be combined in both considered areas. Performing the testing in two independent grid areas

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<sup>1</sup> Compare to results of the project „EE+PQ“, 1.Ausschreibung Energiesysteme der Zukunft, Nr. 807719.

allows the evaluation of transferability and scalability into and to other grid sections. In this step another validation of the simulation results from the referenced former projects is done. In addition, a comparison of the regional, measurement value based voltage control approaches, implemented in this project, is foreseen with centralised „Online-State-Estimation“ voltage control approaches<sup>2</sup>.

The detailed results of the project are:

- Development of a technical solution (ICT & ET) that complies with the requirements of the developed control concepts.
- Examination of the general applicability of the results.
- Compilation of an operational concept
- Analysis of the long-term cost savings, compared to traditional network planning concepts

The main project target is to integrate a maximum of decentralised generation units based on renewable energy resources into the electric distribution network without reinforcement of the network.

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<sup>2</sup> As already implemented in the proposed project ZUQDE (Zentrale U / Q – Regelung mit dezentralen Erzeugern) and in the EU-project FENIX.