DISTRIBUCE

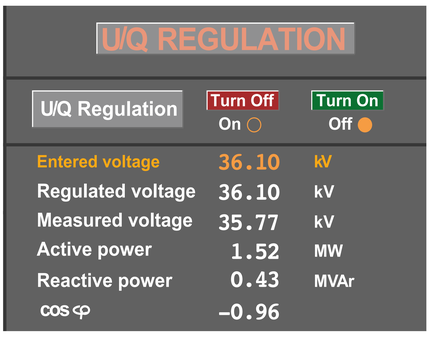
VOLTAGE STABILISATION

Objective

Improvement of the integration of decentralized sources into the distribution grid.

Principle

If the power source supplies reactive power, the DS voltage increases, and if the source draws reactive power the DS voltage goes down.

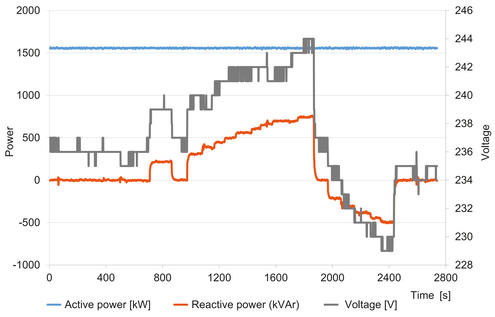


U/Q regulation panel in the dispatch control system

Description

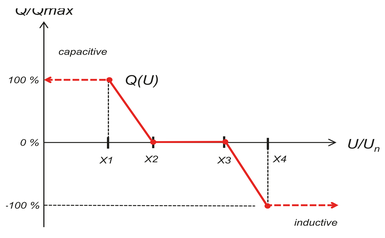
Medium-voltage level

Testing the option of U/Q regulation at the 1.6 MW CHP unit in the town of Vrchlabí. The control system of the source draws the required voltage from the dispatch system and compares this value with the voltage measured at the DS connection point. By supplying or drawing the reactive power the system minimizes the difference between voltage values.



Voltage curve of the reactive and active power during testing

Low-voltage level



Function Q(U)

New regulation options of reactive power for inverter and photovoltaic power plants with Q(U) autonomous function are being tested in line with CSN EN 50438 Ed. 2 in the town of Vrchlabí.

Testing performed in the town of Hranice u Aše focuses on the implementation of OLTC (On Load Tab Changer) distribution transformer, which allows regulation of the voltage on the low-voltage side of the transformer and to reduce voltage fluctuations caused by changing production of wind power plants in the area.

OLTC transformer

Evaluation

Integration of decentralized sources into the voltage regulation system using reactive power at medium and low-voltage level allows better connectivity of power plants without expensive investments. In certain cases installation of OLTC transformers for voltage stabilization may also be beneficial.