



Integrating renewable
energy with ease.

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Case study

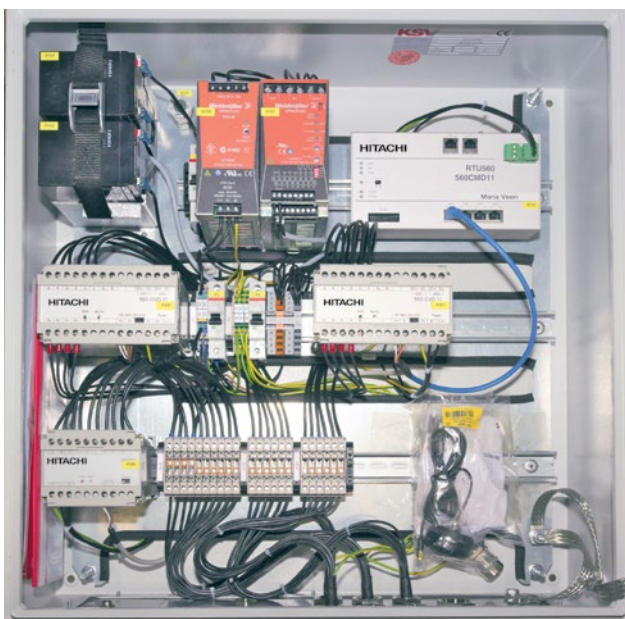
Smart automation harmonizes multiple energy sources for BKW Group

With the mainstream emergence of multiple renewable energy resources, electrical grids in Europe face demanding challenges.

The ever-increasing number of photovoltaic installations, wind turbines and other distributed energy resources place an enormous strain on electrical infrastructure.

Hitachi Energy offers a number of products and solutions for easy integration of distributed generation. One of them are smart automation devices to help stabilize voltage control for grids with integrated distributed energy resources.

BKW Group is one of Switzerland's largest energy companies and, with its partners, supplies electricity to around one million people in both rural and urban areas.

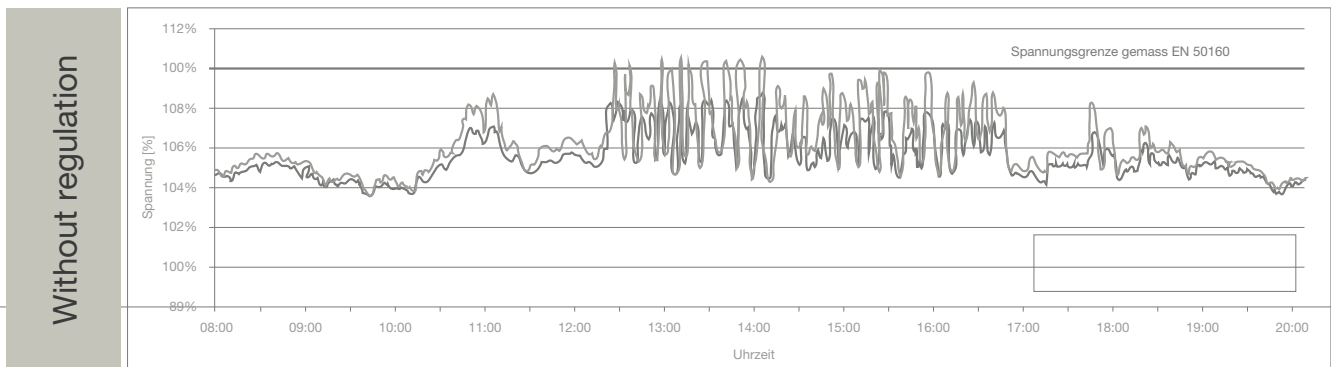


BKW is future-oriented and invests in smart grid technologies to stabilize fluctuating voltage due to the increase of distributed generation.

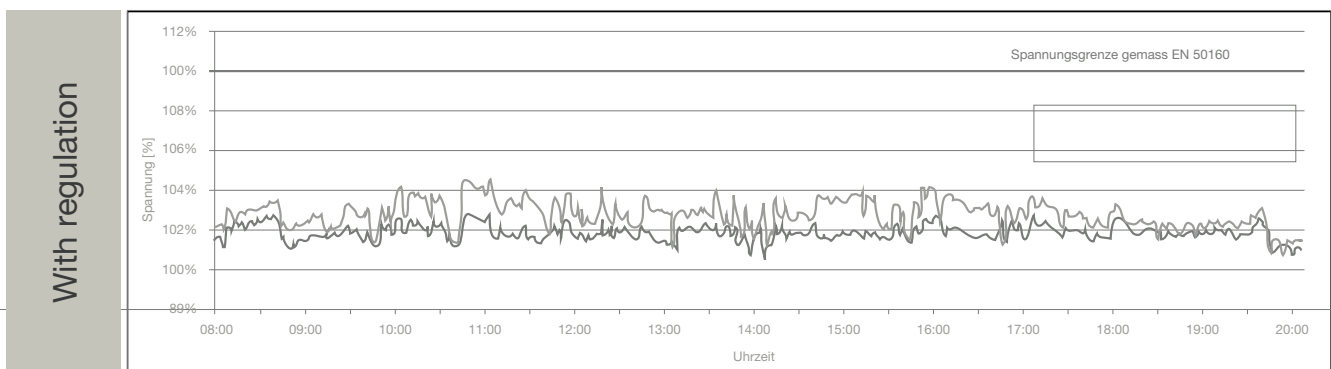
In a rural area near Bern, Switzerland, a new solar plant with 134 kW was installed in BKW's distribution grid. This resulted in a violation of voltage limits within the low-voltage network, where a maximum fluctuation of +/- 10% is allowed to ensure power quality. The existing distribution transformer did not have regulation function or wired communication. Hitachi Energy's remote terminal unit was chosen as control unit to solve the problem in the low-voltage network.

RTU540 with a monitoring function allowed for a controlled adjustment of the line voltage. Regulated within +/- 6% in five steps, the RTU540 offers manual, automatic and remote control modes. For this case, Hitachi Energy and BKW developed a pilot solution with remote access and controls running over a virtual private network (VPN) tunnel via public network starting inside the RTU540.

01 Hitachi Energy designed an economically sound voltage stabilization solution for BKW Group.



02 The monitoring function of RTU540 allows for a controlled adjustment of the line voltage.



03 Voltage profiles without and with regulation

Above and beyond the value of a stabilized voltage for the grid, BKW improved the power quality with distributed energy resources on its network. By using a line voltage regulator, BKW avoided to spend high costs for a new transformer and rewiring the low voltage network with higher rated cables. The installation also provides BKW a secure VPN over the public communications network.

Starting directly inside the RTU540, data is transferred with the highest cyber security standards and enables BKW to remotely monitor and control the voltage and load situation, as well as the temperature of the line voltage regulator. In addition to an economically sound voltage stabilization solution, BKW also benefits from operational savings due to its convenient remote access and controls.



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