

MICRO-HYDRO POWER PLANTS INTEGRATION IN THE ROMANIAN POWER SYSTEM. CASE STUDY FOR CARAS-SEVERIN AREA

Goal of the project

Power system analysis and optimization for the micro-hydro power plants integration in the Caras-Severin area of the Romanian Power System (Enel Banat Distribution Operator).

Short description of the project

The renewable energy sources represent an important issue for the Romanian and EU energy policy and sustainable development strategy. The projects refer to micro-hydro power plants integration in the Caras-Severin area of the Romanian Power System (Enel Banat Distribution Operator). The analysis has been performed for the North-Western, Western, Central and South-Western part of the System. Various operating condition, with the consumption forecast for 2014, 2018 and 2023, were considered, taking into account all the renewable energy sources (wind, solar, biomass, hydro). The medium voltage network for the interest area was modelled in detail.

Project implemented by

- Enel Distribuție Banat
- Termoforest Toplet

Implementation period

2014-2015

Main activities

- power system data base validation;
- Enel Banat distribution network modeling and operating condition analysis;
- power consumption and renewable energy generation forecast;
- power flow computing for various operating condition of the North-Western, Western, Central and South-Western part of the Romanian Power System (peak and minimum type operating conditions, 2014, 2018, 2023);
- contingency analysis, in the presence / absence of the renewable energy sources.



Results

- power flow corresponding to 2013 year and forecasted 2018 and 2023 years;
- power flow corresponding to the medium voltage electrical network (Enel Banat Timisoara area);
- voltage value without / with the new producers;
- quick / slow maximum voltage variation value for critical buses;
- transformer loading without / with the new producers;
- power flow through the power system elements and loading level;
- integration solution validation and system reinforcement recommendations (if necessary).

Applicability and transferability of the results

Knowledge transfer to other photovoltaic power plants developers and designers. Electrical distribution network operator (Enel, CEZ, EON, Electrica in Romania).

Fields of interest

- photovoltaic energy sources;
- other renewable energy sources;
- renewable sources' integration in the power systems;
- distribution network operators.

Research Centre

Research Centre for Power Systems Analysis and Optimization

Financed through/by

Termoforest Toplet, total value: 9.300 RON

Research team

Stefan Kilyeni, Constantin Barbulescu, Attila Simo, Annamaria Kilyeni

Contact information

Prof. Ștefan KILYENI, PhD
Department of Power Engineering
Address: Bd. Vasile Pârvan, No. 2, RO300223, Timisoara
Phone: (+40) 256 403 430
Mobile: (+40) 745 180 818
E-mail: stefan.kilyeni@upt.ro
Web: www.et.upt.ro