

## DOBROGEA ELECTRICAL DISTRIBUTION NETWORK ANALYSIS AND OPTIMIZATION

### Goal of the project

Distribution network real technical losses evaluation for Enel Dobrogea Distribution System Operator. Power flow computing for various operating condition of the Southern and South-Eastern part of the Romanian Power System (peak and minimum type operating conditions) has been performed.

### Short description of the project

The study was conducted for Enel Dobrogea Distribution System Operator. An algorithm is proposed by the authors being able to compute the load dependent and non-dependent technical losses. The analysis has been performed for the Southern and South-Eastern part of the Romanian Power System. Quantitative and qualitative on-field measurements are provided and discussed, followed by the technical losses computing based on the provided algorithm. Different necessary scenarios for the distribution network operator have been taken into consideration highlighting the optimal operating conditions. The wind farms operating in that area have been considered. Their influence (considering various operating conditions) over the real technical losses' value has been analyzed.

### Project implemented by

- Enel Distribuție Dobrogea
- Servelect Cluj-Napoca

### Implementation period

2014-2015

### Main activities

- on-field power flow monitoring in case of several overhead lines;
- algorithm development for technical losses evaluation;
- electrical distribution network modelling;
- optimal power flow considering different scenarios;
- wind farm modelling;
- comparison and analysis based on the these approaches.

### Results

- algorithm used for technical losses evaluation;
- electrical distribution network simulation model;
- technical losses' reduction methods.

### Research Centre

Research Centre for Power Systems Analysis and Optimization



### Applicability and transferability of the results

The algorithm used for technical losses evaluation is able to be applied in case of any distribution network operator. Also, based on the achieved experience, other (or similar) technical losses reduction methods could be highlighted in case of other distribution operators.

### Fields of interest

- distribution network analysis;
- technical losses computing;
- loss reduction methods;
- distribution system operators.

### Financed through/by

Servelect Cluj-Napoca, total value: 9.796 RON

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