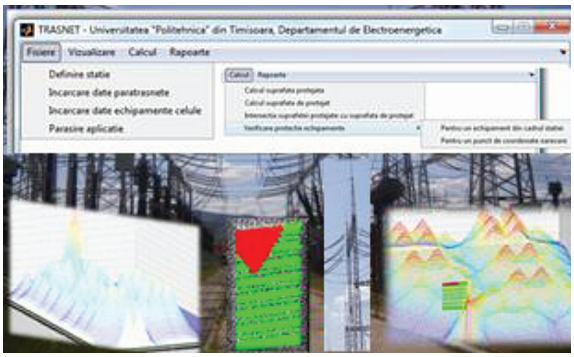
Electrical substation lightning protection. Case study: 400 kV Mintia Substation, Romanian Power Grid Company Transelectrica

Goal of the project:
Numerical testing of the lightning and overvoltage protection schemes within electrical substations; improving the protection schemes (case study – the 400 kV Mintia substation).

Short description of the project:
1st part refers to the lightning and overvoltage protection theoretical background. Also, the developed software tool is presented. 2nd part focuses on the existing overvoltage and lightning protection equipment testing. Finally, the conclusions and recommendations are synthesized for the 400 kV Mintia substation.



Project implemented by:
Romanian Power Grid Company Transelectrica, Timisoara Subsidiary

Main activities:
•On-site situation confirmation and update;
•Dimension and location establishment for all the equipment (circuit breakers, disconnectors, insulators, conductors, surge arresters, current and voltage transformers) and protection elements (surge and lightning arresters, passive conductors);
•Software tool development and testing;
•400 kV Mintia substation case study;
•Conclusions and recommendations on-site testing.

Implementation period:
October 2012 – June 2013

Results:
Software tool being able to be applied for the case of any electrical substation; application for the 400 kV Mintia substation.

Fields of interest:
Power system, electrical substation, overvoltage protection, lightning protection

Financed through/by:
Romanian Power Grid Company Transelectrica

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Research centre:
Research Centre for Power Systems Analysis and Optimization

Applicability and transferability of the results:
The research work has been conducted for the 400 kV Mintia substation, Romanian Power Grid Company Transelectrica. The developed software tool and methodology is able to be applied in case of any electrical substation (Transelectrica, ENEL – Banat, Dobrogea, Muntenia, Electrica – Muntenia Nord, Transilvania Nord, Transilvania Sud, EON Romania, CEZ Romania.

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