

**Goal of the project:**

Verification of the conditions imposed on the impact of future photovoltaic power plants in normal operating conditions, over the distribution network operator in terms of maximum transfer capacity of network elements, respectively the voltage variation in the connection bus.

**Short description of the project:**

Information regarding the distribution network topology and power flow in the characteristic load days were processed using a dedicated software in order to analyse the power flow in normal operating conditions.

**Project implemented by:**

Department of Power Engineering, Faculty of Electrical and Power Engineering.

**Implementation period:**

June 2012- September 2012

**Main activities:**

Building database on the characteristics of medium voltage networks (20 kV) and high voltage (110 kV) involved their elements, their equivalent parameters and specific load conditions; simulating the normal operating conditions for the network areas affected by the future photovoltaic power plant, for characteristic loads; analysis in terms of requirements, drawing conclusions or recommendations on appropriate action for breach of restrictions.

**Results:**

Covaci photovoltaic power plant operation at maximum capacity does not lead to voltage variations in the network buses

below the limits of  $\pm 5\%$ , only pursuant to one of the following: construction of an individual 20 kV OHL or replacing the conductors in some sections of the 20 kV OHL with larger diameter wires. Both Covaci and Peciu Nou photovoltaic power plant operation don't cause the overlay of allowed limits for any of the network elements where will be connected.

**Fields of interest:**

Distribution electrical networks, photovoltaic power plants, distributed generation, normal operating conditions.

**Financed through/by:**

Research-developing and consulting contract no. 66/13.06.2012.

**Research team:**

Assoc. Prof. Dr. Eng. Adrian Pană – director,  
Dr. Eng. Felicia Coroiu,  
Assist. Dr. Eng. Alexandru Băloi,  
Dr. Eng. Florin Molnar-Matei.

**Research centre:**

Research Centre for Power Systems Analysis and Optimization

**Aplicability and transferability of the results:**

The results of the study regarding the impact of build and operation of the two photovoltaic power plants over the distribution operator's network (Enel Distribuție Banat) were transferred to SC Cons Electricarea Instal SRL Timisoara, general designer for both objectives.

**Contact information:**

E-mail: [adrian.pana@et.upt.ro](mailto:adrian.pana@et.upt.ro)