

### Test Facility 5 . High Voltage Laboratory (HVL)

High Voltage Laboratory consist of a stands for testing of technical parameters of electrical equipment - HV AC test up to 332 kV<sub>rms</sub>; HV impulse test up to 750 kV<sub>m</sub>; HV DC test up to 125 kV; High current test up to 25 kA<sub>rms</sub>; Measurement of Power Quality; Study of partial discharges; resistivity, capacitance and tan  $\delta$  of electrical insulation; electrical breakdown of solid, liquid and gaseous insulations; monitoring of condition of electrical insulation in service.

Stands for Real time simulation of synchronous generator interconnection to electrical network whit power factor regulation and for transition process's testing of DER interconnection to electrical network are available.

#### Proposed services:

- Technology for assessment of generators and power transformers insulation.
- Diagnostics and assessment of electrical insulation of 6 kV power cables and motors.
- Efficiency estimation of introduction of Variable Frequency Drives and DER for low and medium voltage networks.
- Estimation and analysis of power quality of networks - effect of wind generation and PV plants on steady-state voltage stability;
- Voltage stability analysis of LV and MV networks with distributed generation.
- Research on the methods, technical changes and new expertise in the field of neutral grounding.
- Investigation of reliability and electromagnetic field compatibility of relay protection.
- Development and optimization of full automatic control systems for small DER



#### Current researchers

Prof. Dr. Petar Nakov – [pnakov@tu-sofia.bg](mailto:pnakov@tu-sofia.bg)

Prof. Dr. Angel Tcolov - [abc@tu-sofia.bg](mailto:abc@tu-sofia.bg)

Prof. Dr. Valentin Kolev - [vkolev@tu-sofia.bg](mailto:vkolev@tu-sofia.bg)