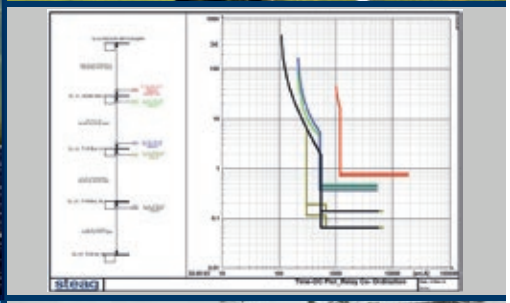
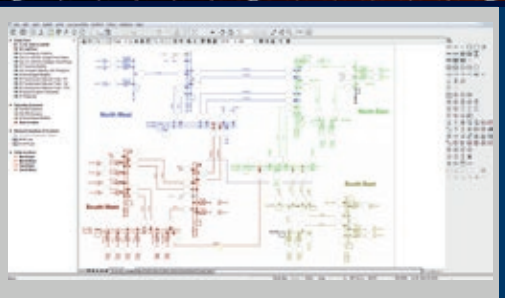
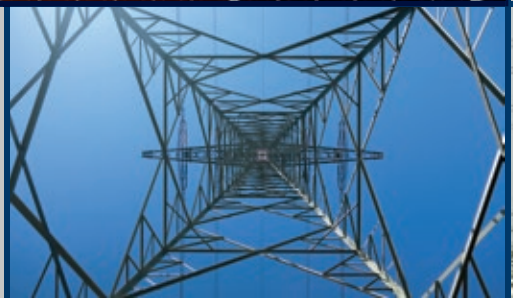
Fact Sheet

Consulting and Training Services







STEAG offers consultancy services for modeling, simulation, and analysis of electrical power systems and power plants.

Consulting

Services offered for Transmission and Distribution systems, Renewables (Solar PV / Wind), Industrial Systems, and Railways.

Transmission and Distribution

- Grid Simulator
- Feasibility studies
- Analysis and assessment of the steady-state and dynamic system stability, taking the voltage, rotor angle, and frequency stability into account
- Reliability of supply as part of system security; consequences for the plant configuration
- Propagation of Harmonics
- Optimization of system operation (e.g. Tie open point, optimal power restoration)
- Analysis of grid oscillations
- SVC, FACTS and HVDC systems (LCC/VSC)
- Electromagnetic Transients (Transformer Energisation, TRV, Lightning Studies)
- Grid and Network Expansion Plans
  GIS/ SCADA Integration Projects

Renewables

- Grid Code Analysis
  - Grid connection and grid impact analysis of wind parks, photovoltaic (PV) plants and all other kind of power park modules
  - Steady-state load flow calculations considering factors such as voltage-dependent reactive power capability limits and PV farm controllers
  - Short-circuit calculation with the option to include dynamic voltage support according to k-factor settings of PV systems
  - Dynamic time domain simulations (RMS, EMT) for the analysis of LVRT/HVRT capability and power frequency, V-Q response
  - Power quality and harmonic analysis and flicker assessment
- Microgrid Simulation
- Load Flow time series analysis
- Electromagnetic Transients (Transformer Inrush, Switching events)

Industrial System (Oil and Gas, Mining) / Generation

- Design of protection concepts for industrial networks
- Relay Co-ordination
- Preparation and review of plant designs and necessary expansions
- Integration of large drives and strongly fluctuating consumption
- Ensuring required grid quality and reliability of supply
- Arc flash calculation based on the applicable standards

Railways

- Steady-state and dynamic analysis of coupled AC/DC systems with different nominal frequencies and phase technologies
- Railway traction simulation
- Design and analysis of 400 Hz standby power and on-board systems

Training

STEAG also offers customized training on the functionalities of DIgSILENT PowerFactory software to help users in modelling, simulation, and analysis of power systems using PowerFactory software.

Selected Project References

- Grid Compliance Studies for i) 65 MW NOOR Laayoune Solar PV Project, Morocco. ii) 55 MW NOORo IV Solar Project at Ouarzazate, Morocco. iii) 15 MW NOOR Boujdour Solar PV Project, Morocco
- Grid code compliance studies for Solaire direct 250 MW PV plant, Kadapa, AP, India
- Grid code compliance studies for 500 MW IBRI II PV plant, Oman
- Involvement in pilot study for Andaman & Nicobar island (Micro Grid) for Powergrid, India
- POC studies for distribution network of Calcutta Electricity Supply Corporation (CESC)
- POC studies for design of AC Harmonic filters for a typical HVDC link for PowerGrid
- Short circuit calculation, voltage drop study during motor starting, Protection Co-ordination, earthing calculation & load flow studies for various thermal power projects such as 2X800 MW – Raichur Power Corporation Limited, 2X350 MW – Meenakshi Energy Private Limited, 2X250 MW- Barauni thermal power station BSEB, 2X660 MW – Maheshkhali (Bangladesh), 2X600MW Tenughat Thermal Power Station (TVNL), 2X65 MW Gujarat Nalco Alkalies & Chemical Limited (GNAL)
- Training on DIgSILENT PowerFactory software to
  - ABB India Limited, Vadodara
  - ABB Global Industries and Services Pvt. Ltd., Chennai
  - WS Atkins Pvt Ltd., Bangalore
  - Accenture Solutions Pvt. Ltd., Bangalore
  - Siemens Gamesa Renewable Energy, Bangalore

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