PORTFOLIO

Power System Consulting

Transforming energy systems for a better tomorrow

siemens.ca/powersystemconsulting

SIEMENS

Grid planning and optimization

Steady-state system studies

Practice-proven concepts that optimize system performance with respect to technical and economical requirements.

- Power flow and short circuit calculations
- Contingency analysis
- PV/PQ analysis
- Neutral grounding concepts and configurations
- Grounding system analysis and design
- Sensitivity analysis
- Construction of reduced equivalent network
- Optimal power flow
- Reliability analysis
- Techno-economic analysis

Dynamics, stability, and control

Modeling, analysis, and optimization of the dynamic system performance for stable and secure system operation.

- Dynamic system modeling and validation, including user-defined models
- Small signal, transient, and voltage stability analyses
- Sub-synchronous resonance studies
- Positioning of controllers and optimization of control strategies and parameters
- Motor starting analysis
- Power electronics modeling and analysis, including converters, FACTS, and HVDC

Protection and automation

Sound protection and automation concepts, coordination of devices to ensure system safety and stability.

- Protection concept design
- Dimensioning of instrument transformers
- Protection coordination and relay parameterization
- Concepts and configuration of equipment for communication, automation, control
- Protection security assessment
- EMT simulations and RTDS-based hardware-in-the-loop testing
- Arc flash analysis

Electromagnetic transients

Modeling and analysis of transient aspects to minimize the risk of damage and to increase system resilience.

- Modeling and analysis of transient phenomena like lightning strikes, switching operations, overvoltages
- Insulation coordination and overvoltage protection
- Simulation of fast and very fast transient surges
- TRV studies and mitigation
- Transformer energization and ferro-resonance studies
- Capacitor bank switching
- Time-domain analysis of system resonances

Power quality related system studies

Measurements, model development, performance assessment, and design for reliable system performance.

- Harmonic analysis
- Power quality analytics service for performance monitoring and outage prevention
- Measurement, evaluation, and analysis of power-quality-related phenomena
- Filter design and performance validation
- Analysis of interference between power systems and pipelines, railways, communication lines

## PSC experience – power system studies software and other tools

- ☑ PSS/E
- ☑ PSS/SINCAL
- ☑ PSS/CAPE
- ☑ PSS/DE
- ☑ DSATools
- ☑ ETAP
- ☑ CYME
- ☑ PSCAD
- ☑ EMTP-RV
- ☑ ATP-EMTP
- ☑ PowerFactory
- ☑ CDEGS
- ☑ CYMCAP
- ☑ CYMDYST
- ☑ Matlab
- ☑ Mathcad
- ☑ gnuplot
- ☑ Python
- ☑ Fortran
- ☑ VBA
- ☑ C/C++

We optimize the economic efficiency of energy systems at maximum reliability and safety. These are our foundations.
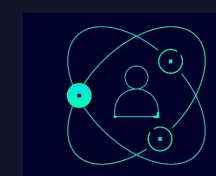
Customer value
Ensure profitability of investments with strategic planning based on individual KPIs.
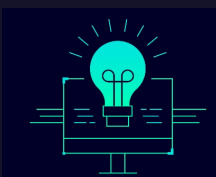
Innovative solutions
Knowledge base for digitalization, processes, business models, and technical optimization of increasingly complex energy systems.

Leading expertise
Technical and methodological expertise, backed by active engagement in national and international committee work.
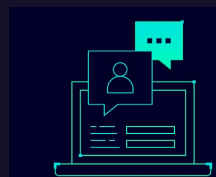
Independent consulting
Vendor-agnostic consultancy services for independent decision-making and use of software tools according to our customers' requirements.

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