

PSS®SINCAL network planning software

Planning and calculation of power supply networks

Calculation modules for planning electric networks:

- ▶ Load flow calculation for analysis and restructuring of existing networks
- ▶ Short-circuit calculation for assessment of power distribution for every fault
- ▶ Low-voltage network dimensioning for review of shutdown conditions (combination of load-flow and short-circuit calculation)
- ▶ Multiple fault calculation for assessment of the network's stationary current and voltage distribution
- ▶ Interactive protection simulation to investigate protection behavior from the point in time of fault occurrence to final fault explanation

Protection devices:

- ▶ Overcurrent-time protection
 - Interrupters
 - Bimetal
 - Contactors
 - Circuit breakers
 - Low-voltage power switches
- ▶ Definite time relay
 - British standard behavior
 - All types of power switches with converters
 - Freely user-definable relays with predefined block structures
- ▶ Distance protection relay
 - Motor startup

Special applications

Special fields

- ▶ Compensation systems
 - Concept development and planning of low-voltage and medium-voltage compensation systems in unregulated and regulated design types
 - Reactive power and detuning rate assessment (by client or on order to a fiwa)group partner company)
- ▶ Generator protection facilities and exciter facilities
- ▶ Voltage regulation in supply net

Electric trace-heating systems

- ▶ Cost assessment
- ▶ Concept development
- ▶ Layout and project engineering for electric trace heater systems in industrial equipment
- ▶ Product heaters and frost protection heaters, e.g. for pipelines, containers, silos, apparatus, pumps, emergency sprayers, roof gutters, water pits
- ▶ Introduction of heater lines, self-limiting strip heaters, heater mats, heat radiators, cartridge heater bodies
- ▶ Documentation creation



Electric Energy Engineering

Tailor made solutions for customer-oriented electric planning

- ▶ Low-voltage systems
- ▶ Medium-voltage systems
- ▶ High-voltage systems
- ▶ Load systems
- ▶ Secure power supplies
- ▶ PSS®SINCAL network planning software
- ▶ Special applications
- ▶ Electric trace-heating systems

Low-voltage systems

Transformers / l.v. main distribution systems / distribution systems

- ▶ Concept development for switching systems, including delivery of the electrical engineering data
- ▶ Technical specifications, tender and bid processing, clarification of technical questions
- ▶ Installation contracting, installation supervision and commissioning
- ▶ Documentation creation
- ▶ Protection concepts (overcurrent/short-circuit protection, retention of selectivity, proof of short-circuit strength)
- ▶ Automatic meter reading acquisition and visualization

Medium-voltage systems

< 52 kV switching systems

- ▶ Hardening of existing systems (retrofit measures)
 - Connection to switching control systems
 - Replacement of conventional protection devices with digital protection devices and field control devices
 - Meter reading acquisition for remote metering
 - Conversion planning for transition from pneumatic controllers to electric controllers
 - Integration planning for expansions and interlocks to other systems
 - Installation supervision
 - Documentation creation

- ▶ Additionally for new systems
 - Design concept development, including engineering data
 - Creation of technical specifications, tender and bid processing, clarification of technical questions



High-voltage systems

> 72.5 kV switching systems

- ▶ Creation of technical specifications and tender according to the customer's basic structure parameters
- ▶ Bid processing
- ▶ Integration planning into the plant's electric infrastructure
- ▶ Documentation and updating of plant network overview plans

Load systems

Motor distributions

- ▶ Technical specification, tender and bid processing
- ▶ Depending on customer requirements, design planning for
 - fixed installation engineering
 - assembly engineering (modular design)
 - drawer unit engineering (MCC distributors)
- ▶ Remote control and monitoring function in conventional technology or with intelligent motor modules, e.g. Simocode
- ▶ Hardening of existing motor distributions
- ▶ Creation and updating of documentation

Secure power supplies

Emergency power and control voltage nets

- ▶ Concept design and planning of
 - uninterruptible power supplies for control voltage supply systems (UPS systems)
 - automatic emergency power switchover facilities
 - alternate power source systems (emergency aggregates)
 - secure direct current power supply systems, including battery for secondary equipment
- ▶ Technical specification, tender and bid processing
- ▶ Documentation processing