



PSS®CAPE Protection Simulation Software

Highly detailed protection simulation for transmission and distribution networks

Siemens PSS®CAPE software supports the system protection function within electric power utilities. PSS®CAPE is used by major utilities in more than 50 countries on six continents worldwide due to its extensive library of more than 6,500 highly detailed relay models and extensive selection of modular protection tools that help engineers manage voluminous and complex network data, uncover potential problems, and examine alternative solutions.

Simulating short circuits and showing the responses of protective devices is the heart of PSS®CAPE. It is as simple as using a mouse to click and drag elements on a one-line diagram, and to open breakers, apply faults, and simulate protective system responses. Conducting automated fault studies and wide area coordination reviews, developing incisive custom reports, and identifying fault locations, all become practical, efficient activities that add value to your organization.

Highly detailed for accurate results

PSS®CAPE handles networks of any size, large or small. PSS®CAPE users have systems ranging from under 100 buses to 10,000 buses – including protection

systems with 20,000 to 50,000 relays. PSS®CAPE's ability to handle rich detail enables customers to create accurate protection models to realistically predict likely misoperations. PSS®CAPE comes with a library of relays, distribution reclosers, and fuses, all ready to use out of the box.

Get the most from your data

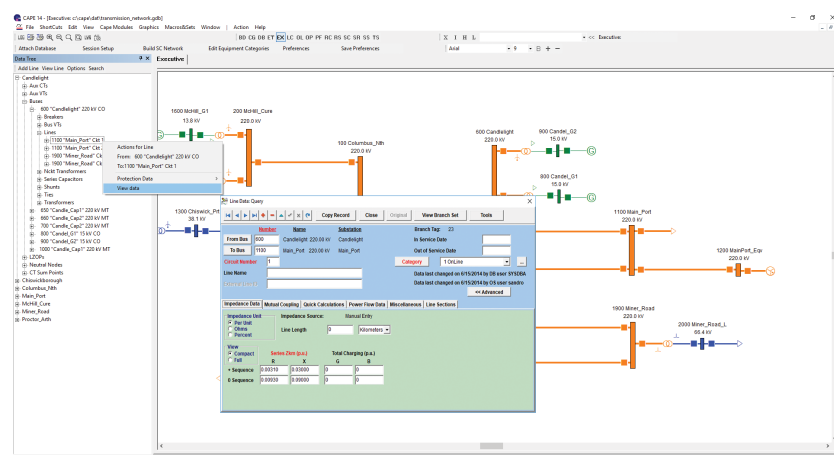
PSS®CAPE is built upon a true relational database, which is included with the software. The underlying DBMS is fully ODBC- and SQL-compliant; therefore, the PSS®CAPE database may be accessed with programs like Oracle and Microsoft

Access. All of the modules use the same PSS®CAPE database data, so any data item is entered once and may be used many times.

PSS®CAPE Pro-Standard package features:

PSS®CAPE Database Editor is used to build and maintain the database of integrated network and system protection models. Special features for easy transformer model building; relay, recloser, and fuse model import; data merging, and quick entry of protection data.

Short Circuit calculates any type of fault on any size system. Supports standard and customized reporting, automated fault studies, fault location analysis, and user-defined fault conditions.



PSS®CAPE and its modules offer multiple ways to access your data

One-Line Diagram is used for building and maintaining a system one-line diagram and display of data, short circuit, and protection simulation results. Direct access for opening breakers and applying faults.

Coordination Graphics displays overcurrent and distance protective device characteristics. Supports interactive contingency and fault application, graphical relay resetting, and resetting of relay and distribution recloser taps and test points.

Relay Setting represents a company's relay setting procedures as user-written macros that perform fault studies, compute raw relay settings, and select actual taps. A library of "starter macros" is included.

Relay Checking provides automated stepped-event simulation of the protection system in response to a variety of fault scenarios. This unique capability allows users to perform wide area evaluations of protection to uncover miscoordinations.

System Simulator performs single-scenario studies interactively with the one-line diagram.

Line Constants computes the self positive-sequence impedance and the self and mutual zero sequence impedances of overhead transmission lines based on conductor and tower data.

Order Production generates data-driven reports on paper of relay settings based on taps and test points for specific locations.

Optional PSS®CAPE functions

Power Flow offers both Newton and Fast Decoupled solution methods. Control algorithms support tap and phase-shifting transformers, voltage control by reactive generation, switched capacitor bank operation, and area interchange control.

Short Circuit Reduction offers two types of network reduction; useful for providing reduced models for EMTP calculations, for other "non-PSS®CAPE" programs, and for sharing data with a utility's neighbors.

Settings Transfer Utilities can export settings for any group of relays to one or more Neutral Interface files; settings can be taken to the field and safely viewed and modified by the test engineer, reviewed, annotated, and saved.

Breaker Duty automates the evaluation of breaker interrupting duty following approved procedures of either the IEC or ANSI standards. Streamlines the evaluation of new and existing breakers.

PSS®CAPE Bridge Module provides two-way data exchange of network and protection data with asset management systems.

PSS®CAPE-TS Link integrates the highly detailed protection data from PSS®CAPE with the PSS®E time-domain transient stability program.

Compliance Module is a collection of tools that support protection reliability studies and analysis of not only small areas of your network but the network

in its entirety. For customers in North America that must comply with NERC PRC standard, the tools provide compliance support for PRC-027, PRC-023, PRC-026, PRC-019, PRC-024, PRC-025 standards. The Compliance Module automatically gathers the necessary data, performs the computations, and produces comprehensive summaries and detailed results that allow users to easily identify weak protection spots for prioritizing mitigation actions and document compliance. For non-North American utilities, the Compliance Module automatically evaluates protection coordination in large network areas, evaluates the behavior of transmission and generation protection upon overload conditions, the coordination of generator controls and its protection, as well as many other protection reliability checks.

PSS®CAPE community

PSS®CAPE users are part of an active network of protection engineering expertise, worldwide. Annual User Group Meetings in North America and periodically in Europe provide content-rich opportunities to make connections in person.

Ready to get started?

Siemens makes the transition easy for you. With the purchase of PSS®CAPE, our team of experts will help convert your existing electronic data from most popular formats. In addition, we offer custom training to get your team started quickly and confidently.

Published by
Siemens AG

Smart Infrastructure
Digital Grid
Humboldtstrasse 59
90459 Nuremberg
Germany

For more information, please contact
E-mail: psscapes.energy@siemens.com

Article No. SIDG-T10017-00-7600--pss-cape-general-two-page
© Siemens 2021

For the U.S. published by
Siemens Industry, Inc.

100 Technology Drive
Alpharetta, GA 30005
United States

For more information, please contact
E-mail: psscapes.energy@siemens.com

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

The technical data presented in this document is based on an actual case or on as-designed parameters, and therefore should not be relied upon for any specific application and does not constitute a performance guarantee for any projects. Actual results are dependent on variable conditions. Accordingly, Siemens does not make representations, warranties, or assurances as to the accuracy, currency or completeness of the content contained herein. If requested, we will provide specific technical data or specifications with respect to any customer's particular applications. Our company is constantly involved in engineering and development. For that reason, we reserve the right to modify, at any time, the technology and product specifications contained herein.