

The background of the entire page is a photograph of high-voltage power lines stretching across a landscape. A large, detailed lattice tower is the central focus, with several other towers visible in the distance. The sky is a mix of blue and white clouds. In the foreground, there is a green field and a line of trees.

SIEMENS

Ingenuity for life

PSS[®]MOD

**Project modeling and data
management for PSS[®]E**

[siemens.com/pss-mod](https://www.siemens.com/pss-mod)

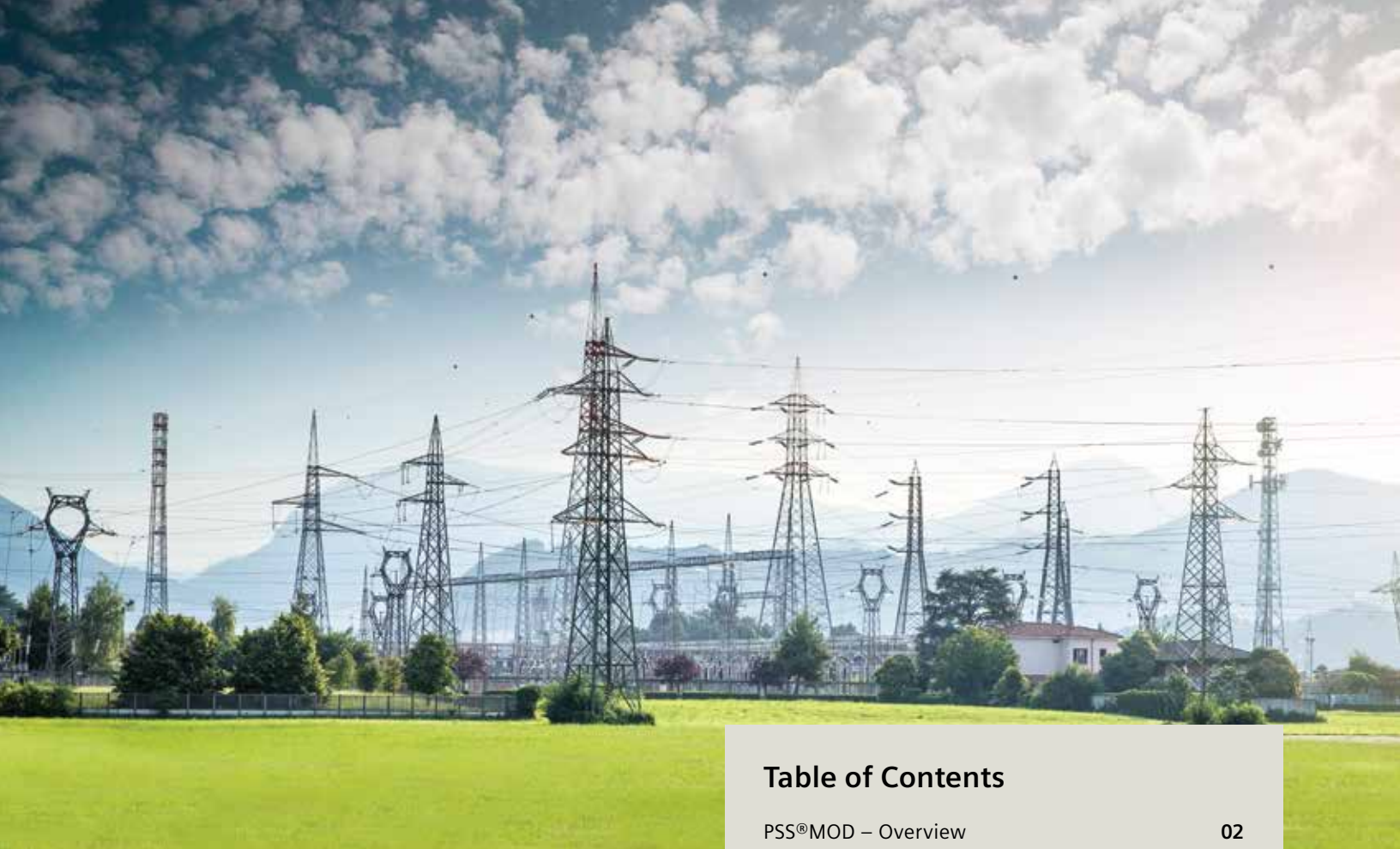


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PSS®MOD – Overview

PSS®MOD (Model on Demand) provides PSS®E users with a comprehensive solution for power system transmission planning model management. The solution is used by Independent System Operators (ISOs), Regional Transmission Operators (RTOs), Planning Authorities with remote members, and transmission companies with local users. PSS®MOD coordinates submission of network model data from local and / or remote users and provides access to complete study cases "on-demand" for any point in time. By revolutionizing the traditional approach to maintaining transmission network models, its secure, web-based application and central data repository allow multiple users to submit, view, validate and audit planning model data including time-bound network changes organized as multi-phase projects.

Where does PSS®MOD Fit?

Transmission planning entities with remote member companies (i.e., ISO / RTO) need to collect transmission planning model data from their members, and assemble regional cases for transmission studies. **While, Transmission planners** – often need a better tool for organizing, visualizing, and sharing models and data, and generating cases to match desired study scenarios at any time. Without the proper tools, the process of model exchange, assembly, and validation is very complex, error prone, and labor intensive. Homegrown solutions are a burden to maintain, and run the risk of becoming obsolete / unsupported.

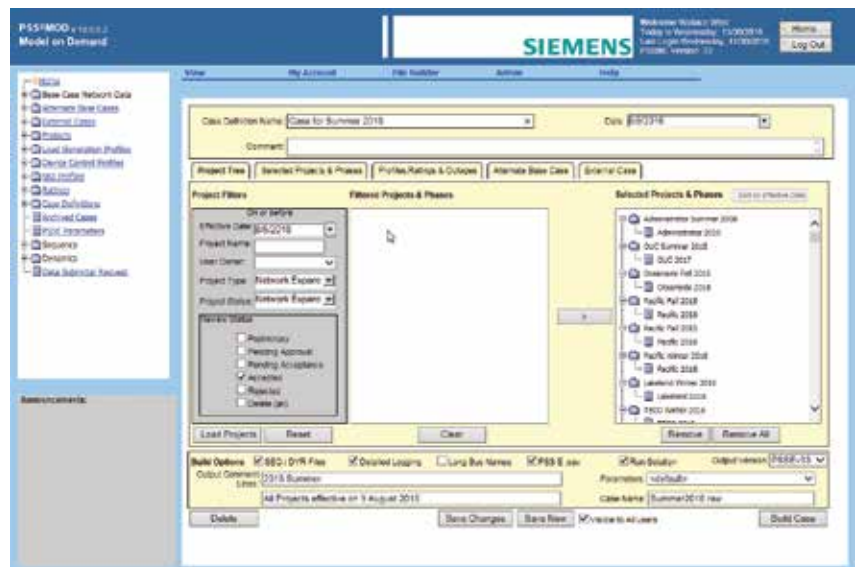
PSS®MOD provides the basis for transmission planning entities and planning engineers to automate and facilitate model management, resulting in the following benefits:

- Reducing data maintenance costs, modeling errors, and inconsistencies
- Building more cases in a shorter amount of time
- Automating / reducing elapsed time required to maintain models, build cases, and perform studies
- Eliminating duplicate data maintenance, i.e., reducing model maintenance time, costs, and resources
- Application lifecycle cost savings derived by migrating from a custom internal application to a fully supported, industry standard product maintained by a major vendor – also hedging against an aging workforce
- North America: providing a solution to meet the NERC-MOD-32 requirement

Standard Features

Network Model Management

- Fully compatible with PSS®E standard data formats
- Data organized into: base case, projects, profiles, ratings
- Base case – the reference model that serves as the basis for subsequent application of project, profile and rating data changes
- Projects – collections of incremental model changes used either to update the base model or to capture planned future network changes as the system is built into the future
- Profiles – operational scenario data to be applied when building a case (especially useful for seasonally variant data) and are categorized into load generation, device control (voltage control), and net scheduled interchange – impacting different parts of the power flow model
- Ratings – unlimited sets of branch MVA ratings can be stored and selectively applied to a study case – it can also be applied as part of a project incremental change
- Case definitions – unlimited scenarios can be generated and stored using selected projects, profiles, ratings, and base cases to represent a study case and exported to PSS®E



Example of case definitions tool in PSS®MOD

PSS®E Compatibility

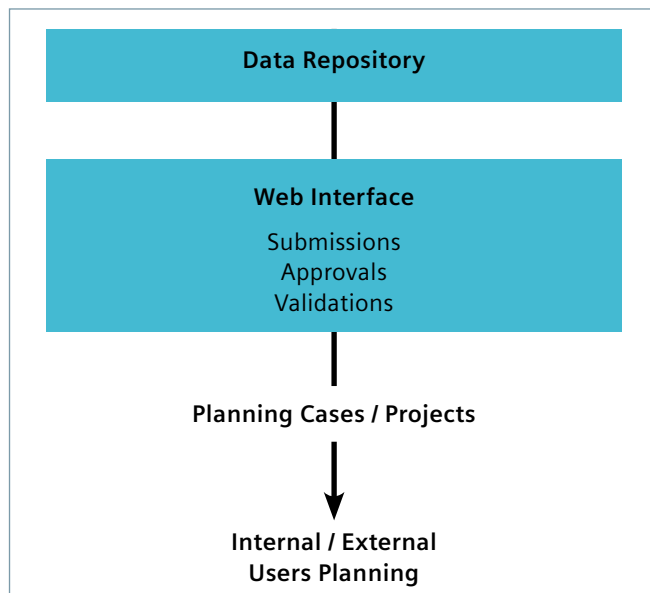
- Import and export network data in RAW and SEQ format
- Import and export dynamic model data in DYN format
- Import profiles (operational state data) from PSS®E RAW
- Import multi-phase project (PRJ) files based on PSS®E format

PSS®E Integration

- PSS®MOD web application can be integrated to run the PSS®E solution on power flow cases generated from a case build
- Custom PSS®E Python™ script can be recorded in PSS®E and stored in PSS®MOD to be invoked after the case build – allowing users to apply the power flow solution based on custom parameters and perform user-customized operations on the power flow case
- PSS®MOD File Builder can optionally integrate with PSS®E to generate projects, profiles and ratings sets from PSS®E .SAV cases and PSS®E .SAV IDEV and Python files

Database

- Multi-user relational database implementation supports SQL Server and Oracle
- Scalable to any transmission network size



PSS®MOD data flow process

PSS®MOD Web

- Web-based application hosted on a Windows-based IIS web server
- Multi-user web interface provides easy access to both local and remote users
- Each user is granted access through the issuance of a user ID and password – then the user is assigned a group definition and an access role
- Data and functionality restricted based on users' group and role permissions
- Tabular views of system data allow users to easily view and filter accessible data
- Excel-based project reports and CSV-based reports of key tabular data are available

System Administration

- Allows different privileges for model administrators and users
- Achieve a vertical review process for power network changes by carefully choosing users and model administrators (assigning them specific user roles)
- Fully customizable project types and statuses to help group data according to specific needs
- Password policy can be customized to enforce varying levels of security including password duration, minimum characters, reuse, etc. – enabling PSS®MOD to be aligned with internal and external security regulations

Data Submittal, Validation, and Review

- Achieve a vertical review process for changes to your power network by setting up users and model administrators (assigning them specific user roles)
- Fully customizable project types and statuses to help group data according to specific needs
- User-submitted data visibility can be restricted based on the submission's project type and review status as well as the user's customized role
- Submitted data is subject to validation which checks for proper data values and validates data against the user's permissible areas, owners, zones and bus ranges
- When data is initially submitted, it begins a structured sequence of review / approval steps that are enforced by the PSS®MOD application – providing a means for designated approvers to review the data prior to it being made publically accessible to PSS®MOD users

- Automatic email notifications are sent to reviewers and submitters at every state in the review process
- PSS®MOD is configurable and allows users, based on their organization needs, to bypass one or both levels of review

Audit Trail

- PSS®MOD maintains extensive logs for various activities within the application
- Changes to the system are tracked by user for all user-submitted data including projects, profiles, ratings, etc. Logging includes both data changes as well as review state changes with review comments
- Additional logging such as user events, base case changing, model configuration, and case builds are available for managing the application
- Users are able to view, filter, and generate simple reports from the log interface

PSS®MOD File Builder

- Convenient Windows-based application installed directly on user's local workstation
- Generates PRJ files based on incremental model changes via comparison of a reference PSS®E base case and a changed case

- Extract load, generation and voltage control profile data from multiple PSS®E "seasonal" base cases
- Extract rating data sets from multiple PSS®E cases
- Convert one or multiple existing IDEV and Python™ change files into PSS®MOD PRJ files
- Integrates with local PSS®E installation to perform functions like reading .SAV files and converting IDEV and Python™ change files

PSS®MOD Administrator

- Windows-based application installed directly on IIS web server
- Used to configure and maintain PSS®MOD model database
- Provides capability to create a new database / schema and store a PSS®E base case in either SQL Server or Oracle
- Provides utility functions for deleting a database / schema as well as updating statistics for database performance
- Provides functionality not available through the web interface including sensitive functions such as storing Python™ scripts to be executed while running the power flow solution after a case build

The screenshot shows the PSS®MOD Model on Demand web application. The top navigation bar includes the Siemens logo and a welcome message for Wallace Frost. The left sidebar contains a tree view of application modules. The main content area features a 'Project Filters' section with dropdown menus for Project Name, Project ID, Min Creation Date, Max Creation Date, Min Effective Date, Max Effective Date, Min Request Date, Max Request Date, Min Modified Date, Max Modified Date, Submitted By, Review Status, Project Type, and Project Status. Below the filters is a 'Project List' table with 18 columns. The table lists various projects with their details, including Name, ID, Submitted By, Review Status, Approval Group, Type, Status, Effective, Created, Modified, Validated, Event, and Comments. At the bottom of the table are buttons for View, Import, Download, Validate, Approve / Submit, Edit, Delete, Reject, Commit, and Reopen.

PSS®MOD projects change log

Product Support

Support

- Application support offered by dedicated in-house Siemens PTI Customer Care team with direct access to subject matter experts
- Premium access to product updates, enhancements and improvements as well as new functionality
- Interactive online forums to facilitate knowledge sharing among the community of professionals
- Extensive knowledge database
- Power packed technical user conferences with regional focus to increase product roadmap awareness, providing opportunities to meet with Siemens PTI experts and fellow users

PSS® Ideas Portal

- Platform for PSS® Product Suite users to submit, track, and vote on product ideas
- To request access to the PSS® Ideas Portal, contact pti-support-energy@siemens.com

Siemens Power Academy

- Beginner to advanced level certified PSS® software training
- Flexible delivery options including e-learning or at a customer site
- Standard and customized training
- For more information on Siemens Power Academy visit usa.siemens.com/pti-education

System Requirements

- Microsoft Windows-compatible desktop, laptop, server or virtual machine
- Windows Server 2008 R2 or Windows Server 2012 R2
- Minimum 2.1 GHz CPU
- Minimum 4 GB RAM
- 1280x720 or higher screen resolution support
- Microsoft .NET Framework 4.5.1 (minimum)
- PSS®E 33.9 or higher (optional for running power flow from PSS®MOD)
- Oracle Client (for Oracle database deployment only)
- Dedicated database server with SQL Server or Oracle
- Microsoft SQL Server 2012 or 2008 R2 (SP1)
- Oracle 12c (12.1.0.2 minimum) or 11g Release 2 (11.2.0.4 minimum)

Sales Contact

- Email: power-technologies.energy@siemens.com

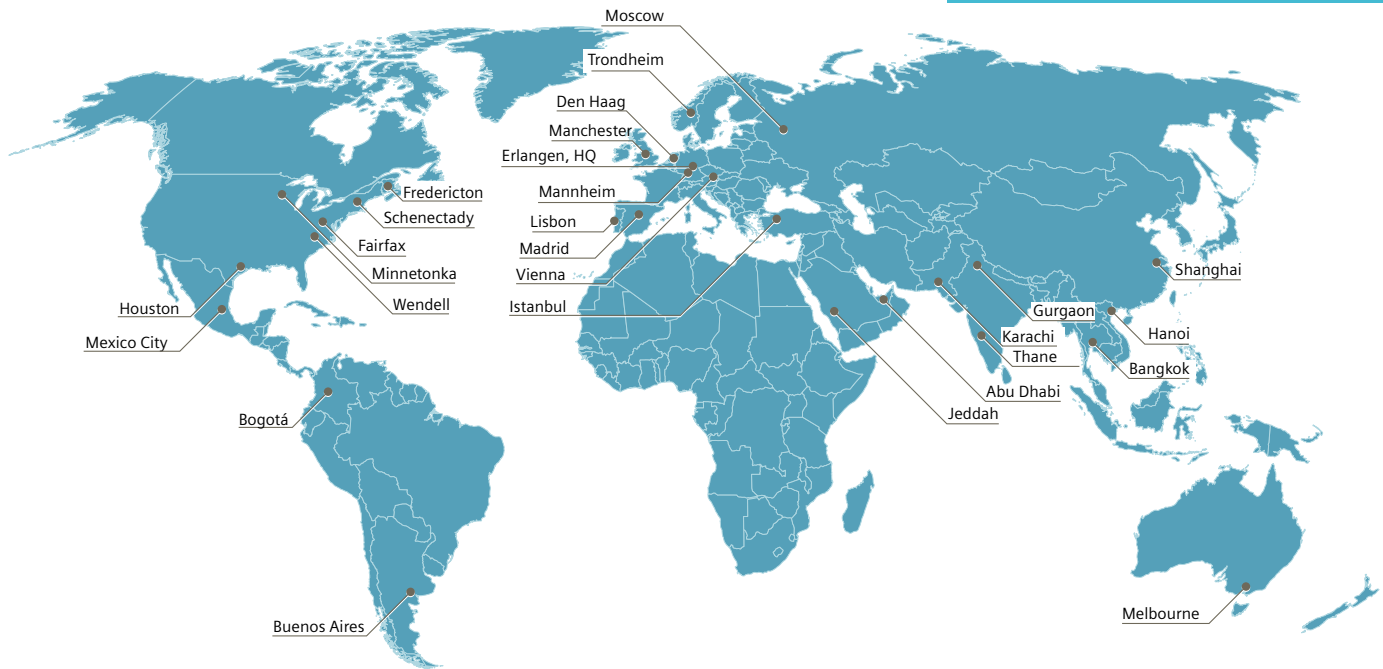
Company Profile

Siemens Power Technologies International

From strategic advisory to technical consulting and state-of the art software solutions: Siemens PTI offers a holistic approach to mastering the technical and economic challenges of today's and future energy systems. Drawing upon more than 60 years of experience and continuous innovations in power system planning, Siemens PTI's renowned experts address the full scope of power system analysis, design and optimization studies. Experiences gained in international studies and the dynamic changes to the industry, directly flows into Siemens PTI's comprehensive suite of power system planning and software tools which reliably support the power and energy industry around the world. Our strategic consultants help optimize business value by providing valuable advice in the fields of business transformation, infrastructure development, as well as market and transaction advisory. Siemens' financial strength and regional competence centers around the world make Siemens PTI an ideal partner to develop individual, innovative solutions which create sustainable value for our customers and turn change into opportunities.

Did you know?

- Siemens PTI founded in 1956
- Headquarter in Erlangen, Germany
- ~30 offices worldwide
- 2,000+ customers
- 3,000+ projects p.a.
- 200+ consultants
- Renowned experts
- Profound experience
- Global leader in power systems planning

**Software Solutions**

Siemens PTI offers a powerful suite of software applications and solutions to efficiently support system planning and operations with their daily simulation and analysis work. The Power System Simulator (PSS®) Product Suite provides a full set of integrated and specialized applications for the simulation, analysis, and modeling of transmission, distribution, and industrial power networks, as well as gas, water, heating, and cooling infrastructures. Easily integrated into any existing IT environment, these powerful and user-friendly tools feature an intuitive graphical user interface, customizable visualization options, automation capabilities, and efficient data management. Data exchange with other systems (e.g., EMS, DMS, AMS, GIS, other planning tools, etc.) is provided through industry standards (i.e., CIM) and native interfaces. Siemens PTI also provides custom software solutions based on its blend of engineering and software architecture expertise, custom software development capabilities, award-winning project management, and existing product functionality.

Energy Business Advisory

Regulatory bodies are increasingly pushing for level playing fields, environmental responsibility and increased transparency. Siemens Energy Business Advisory is a leading provider of strategic consulting services to utility customers across the US. For nearly 40 years as Pace Global, it has participated in over \$100 billion of energy asset transactions around the world and

has managed portfolios at over \$10 billion. By combining rigorous analysis and with deep consulting expertise, Siemens EBA ensures its clients innovative services to support the execution of business transformation, market planning, and risk management. Siemens EBA represents clients in all segments of the energy value chain, including exploration, production, generation, midstream, storage, transportation, distribution, and end-use.

Power System Consulting

Ever changing industry challenges and opportunities along with the rising complexity of modern power systems call for comprehensive, systematic grid planning. Siemens PTI's renowned Power System Consulting experts leverage experiences gained in numerous and diverse projects to derive grid concepts which follow the overall business strategies of utilities and end-customers. Profound power system analysis, both technically and economically, together with leading planning competence provide insight that enable our clients to take well-informed decisions influencing the structure, performance and operation of their systems. Our services address utility as well as industrial or commercial grids and cover the complete range of studies: from steady-state, dynamic and transient analyses to protection and control concepts or power quality aspects. In studies, continuous partnerships, long-term planning or research projects, we tailor our services to individual demands.

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