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Model Management Module for PSS®E

Simple, effective, database-driven model management, fully integrated into PSS®E

At a glance

The PSS®E Model Management add-on module can vastly increase data quality and efficiency at the department or organizational level by providing:

- An easy-to-use, scalable, database-driven solution with minimal IT overhead
- A single source of truth for the as-built network model with structured, time-bound and annotated projects
- On-demand case builds from customizable combinations of projects, profiles and ratings

The challenge

It is clear that the industry is moving towards centralization of network model data, as the same topological network data is necessary for various study activities (power flow, dynamic stability, short circuit, etc.) conducted across different teams (long-term planning, operations planning, system protection, market analysis, etc.). Within a given organization, this data is likely stored in many files scattered across different machines, drives and folders. This presents an organizational challenge, often causing excessive labor, model inaccuracies, and sub-optimal system performance. Consolidated data systems are less error-prone and can save hundreds of hours per year in duplicated effort; however, they previously involved significant custom implementation and ongoing maintenance.

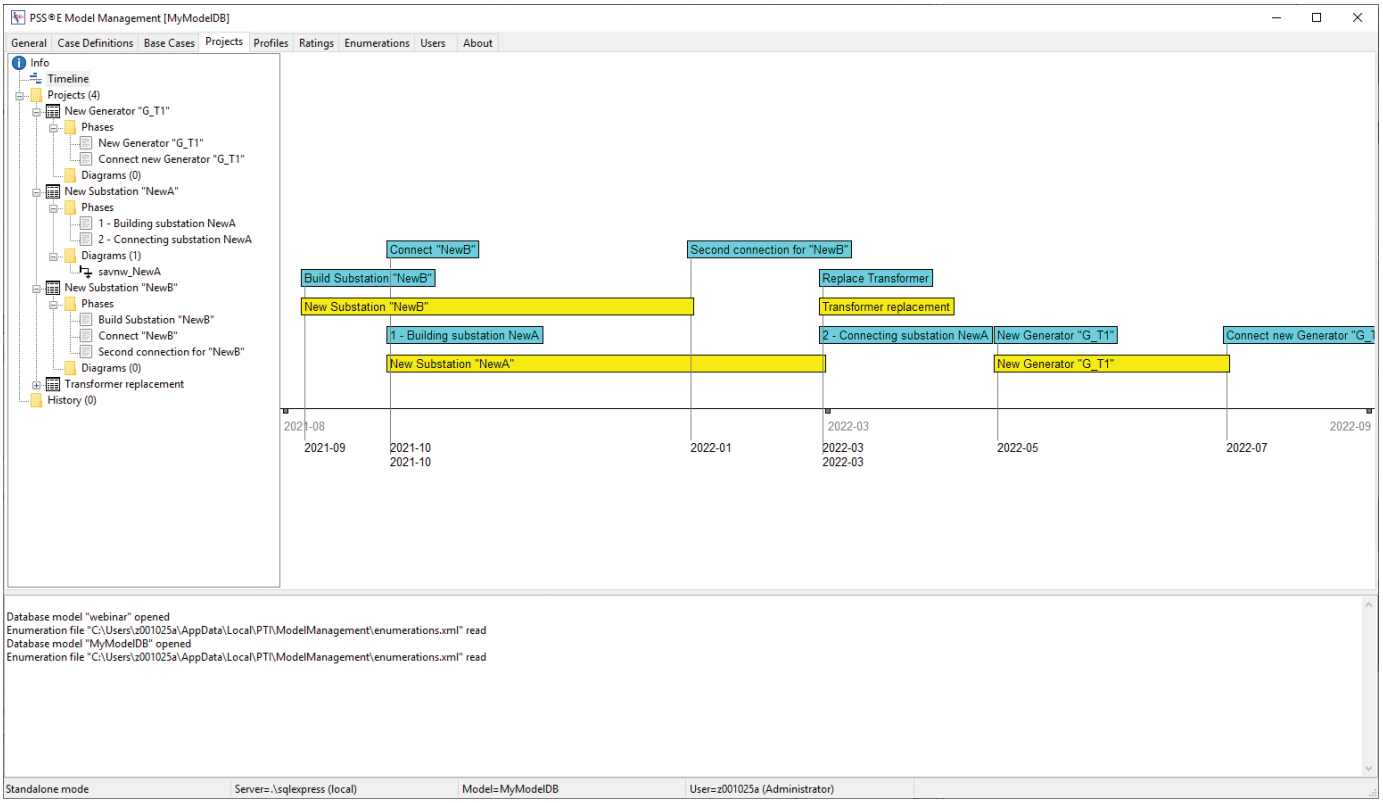
Solution requirements

An important consideration for the development of this module was to ensure PSS®E users are able to focus on their work without being distracted by network, server or database issues. In addition, the solution should allow users to work within the familiar native PSS®E environment, fully leveraging the built-in visualization and editing features of PSS®E.

The solution

PSS®E Model Management provides a simple yet powerful platform that offers the benefits of database-driven model management without requiring additional IT or database know-how. Storing and loading data between PSS®E and the database can be done without regard to file paths. Model editing is performed directly in PSS®E, maximizing convenience and minimizing the learning curve.

PSS®E Model Management is designed to let the engineer leverage the time savings and data accuracy of a database, while allowing them to directly interact with network model data within PSS®E, hiding all database implementation-related details.



The PSS®E Model Management user interface showing the interactive timeline view

Local and Standard edition

The **Local Edition** is included with the PSS®E base license, and enables users to:

- Assemble and use a local, native PSS®E format network model database
- Organize and manage case definitions, base cases, projects, profiles and ratings
- Interactively record model changes in PSS®E
- Build and load customized study cases on-demand
- Import and export data in PSS®E format
- Visualize projects in an interactive timeline view

The **Standard Edition** (fees apply) additionally enables users to:

- Deploy a central network model database for multi-user access
- Assign user roles
- Publish directly to PSS®MOD

How it works

Database setup

PSS®E Model Management has been designed to make it as simple and intuitive as possible to store data to the database (either from selected files or PSS®E memory). The methods provided to populate your database include:

- Store/import base case data (including sequence and dynamics)
- Store/import profile data
- Store/import rating data
- Import project data
- Import diagrams (SLD)
- Create and edit case definitions

The base network topology is captured by storing a master base case. This is the foundation upon which all incremental changes will be built.

Generation, load and device control profiles can be created in PSS®E (for example, by using the generation and load scaling functions), and then easily stored in the database for later reuse.

Ratings can be stored or imported from multiple existing saved cases.

Projects (new transformers, upgraded lines, new generators, etc.) are stored in the database through a smart recording process. You simply start "recording" the project changes in PSS®E, and the resulting actions are automatically stored in the database for future use.

Projects can also be extracted via case comparison and imported in PRJ format.

For added convenience, an unlimited number of Slider diagrams (associated with base cases and projects) can also be stored in the database.

Production deployment

Once the database setup has been completed, your team or organization no longer needs to rely on saved case files and scripts as the de facto system of record for shared study cases.

When PSS®E Model Management is launched, user-defined case definitions are readily available. These case definitions are persistent references to other data elements in the database: base case, projects, profiles and ratings. To obtain a study case from the system, the user simply selects the desired case definition and invokes the "build and load" command.

This on-demand case build approach minimizes hard dependencies, promotes transparency and better accommodates change. For example, when a data correction or addition is made to a planned project, no further action or elaborate coordination is typically needed. Users will automatically receive the new data the next time they load PSS®E from any case definition that includes the updated project. All study cases built from that point onwards are virtually updated.

PSS®E Model Management makes the "single source of truth" concept a practical reality for your team.

Prerequisites and compatibility

PSS®E Model Management works with PSS®E 34 (including full support for detailed substation modeling); a PSS®E 35 compatible version is in development.

PSS®E Model Management is built on Python 3 and wxPython 4; its prerequisite Python components are included in the PSS®E installer.

It requires SQL Server 2017 or higher. SQL Server Express Edition (available at no cost from Microsoft) is fully supported.

Getting started

PSS®E Model Management – Local edition is bundled with PSS®E 34.7 and enabled with a basic PSS®E license. To unlock Standard edition, please contact:

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Published by
Siemens AG

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

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