

Interfacing with external applications

PSS®SINCAL

Open database structure

One of the most important characteristics of PSS®SINCAL is the complete transparency of the data. With standard methods you can access input data and calculation results at any time, even when PSS®SINCAL is not being used. This transparency is achieved by storing all data in a relational database (real or virtual).

Currently the following database systems are supported: Microsoft® Access®, Microsoft® SQL Server®, Microsoft® SQL Server® Express, Oracle® versions 8i, 9i, 10g and 11g.

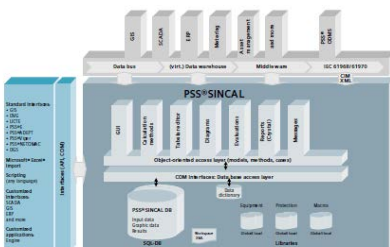


Figure 1: PSS®SINCAL architecture

Databases as central storage media

Unlike other network planning systems, PSS®SINCAL uses the database as the central storage medium for all of your data.

The database allows the definition of individual evaluations and visualizations in PSS®SINCAL. In addition, different scenarios with input data and results data can be accommodated. The complete PSS®SINCAL database – all relations, their attributes, units, limit values, selection values, etc. – is documented comprehensively. This documentation is available in the PSS®SINCAL online help at any time.

Relational databases make it easy to connect to a geographic information system (GIS). PSS®SINCAL provides an easy solution for such connections. There are solutions from our partners available, which can be individually customized to meet your specific needs.

Libraries are also databases

PSS®SINCAL provides libraries for network equipment, like protection devices or cables. These libraries use the relational databases and can be augmented to accommodate the modeler's individual requirements.

Extensive libraries are included in the base product. You can also create your own libraries, which are optimally adapted to your needs. The libraries can be accessed directly via the

PSS®SINCAL user interface, or with alternative database access tools and aids you might have available.

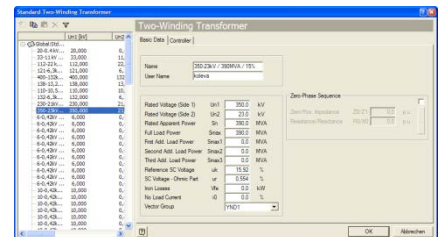


Figure 2: Standard element library

Extensive import and export abilities

PSS®SINCAL can import network data and graphics from other programs e.g.:

- import:
 - Microsoft® Excel® import/export: CIM/XML (div. profiles), PSS®E, UCTE ASCII-Files, DGS exchange format, DVG exchange format, CYMDIST, DINIS, network states, network diagrams, protection device settings
- import/export:
 - graphics (div. file formats), graphics to Google® Earth® (see Figure 3)

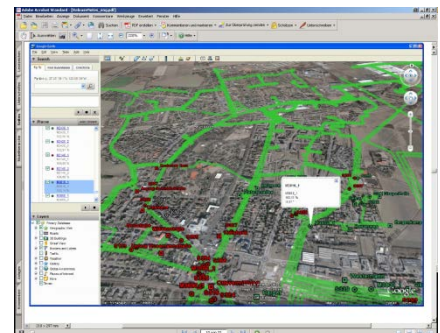


Figure 3: Export results to Google® Earth®

Importing Microsoft® Excel® files into PSS®SINCAL allows to import the network data of all PSS®SINCAL network elements from an Excel® workbook, including full graphics. For setting import parameters PSS®SINCAL has a special dialog box that enables you to assign data in Excel® files to PSS®SINCAL network elements with ease. These are stored in a file and can be used for importing again later.

Importing PSS®Engine files

PSS®Engine HUB files can be imported in V10, V14 and V15 format. HUB files are ASCII files that contain all the significant data of the network, including the graphics. This format is also partially supported directly by GIS systems.

Importing PSS®E files

Networks in PSS®E formats V27, V29, V30, V31, V32 and V33 can be imported into PSS®SINCAL. When importing, all input data from the PSS®E file are converted for use in PSS®SINCAL (*.raw, *.seq, *.dvr). PSS®SINCAL can import information on graphics as well as network data.

Importing graphics

A wide range of bitmap or vector graphics can be imported as backgrounds into PSS®SINCAL. Backgrounds can be displayed to scale under the actual network. Using such a geographical network design allows for easy drawing and placing network elements to scale.

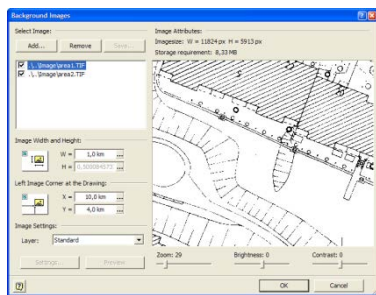


Figure 4: Importing background images

Exchange with CIM/XML

CIM is integrated into PSS®SINCAL on the basis of IEC 61970-301. This standard describes the model for physical objects in the energy management system and their relationships to one another. PSS®SINCAL currently supports the CIM versions 10, 11, 12, 14 and 16. The following profiles are available: CIM standard, CIM for planning, ENTSO-E CIM profile (CGMES), CIM for dynamics (draft).

Interfacing with external applications

Scripts to execute various program functions can be used with PSS®SINCAL. PSS®SINCAL automation functions are based on conventional Microsoft® Windows® applications standards. This means that important program functions can be accessed via COM interfaces. Such functions can be handled with script languages (e.g. Microsoft® Windows® scripting host, Microsoft® Windows® Visual Basic®, C++, Python™) or even own applications.

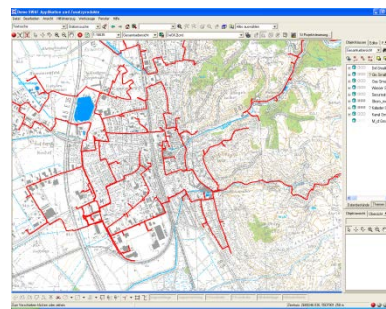


Figure 5: Interface to GIS-system

Integrating the calculation methods into external applications

This type of automation is primarily used for integrated solutions in GIS, NIS or SCADA systems. The PSS®SINCAL calculations are started directly from the respective source system. All the data maintenance and processing and the visualization of the results is done directly in the source system.

This automation solution integrates the calculation methods directly into the source system. They are connected by COM interfaces, where the calculation methods can be used either as an external server (with separate processes) or as an in-process server (within the same process).

Meter data integration

Special COM interfaces for direct import into the calculation process without storage of actual load data in the data base are available for operation planning purposes.

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