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Software solution for the protection calculation and documentation of the protection technology at SWM

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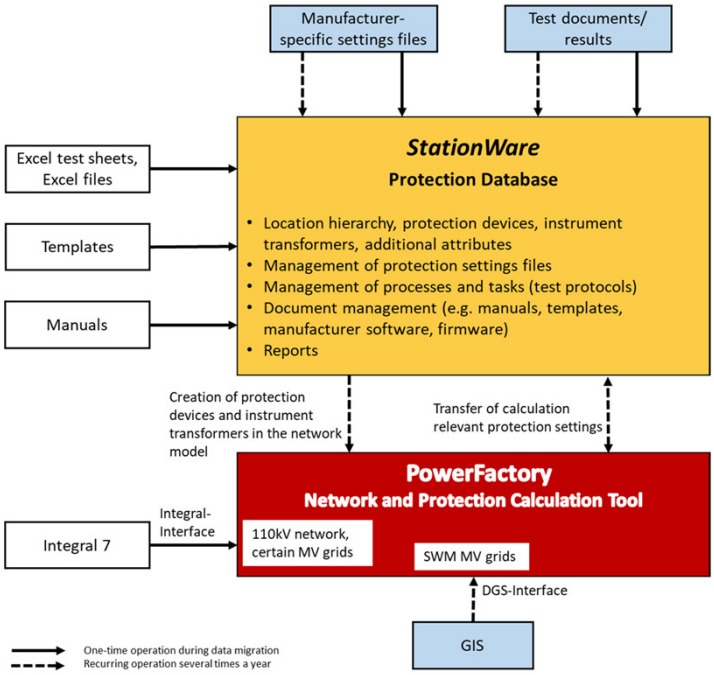
Introduction/Overview

Stadtwerke München (SWM) introduced an integrated software solution to support the dimensioning of their protection systems in the SWM network and to improve the documentation of the protection technology.

The figure below shows the solution that consists of the standard products *PowerFactory* and *StationWare* from DIgSILENT GmbH as well as specially developed interfaces and automation scripts.



System Solution

Network and protection calculation with *PowerFactory*

Creation of an individual network model in three steps:

1. Derivation of the public high-voltage network model
   - "Basic project" from Integral-7-XML import

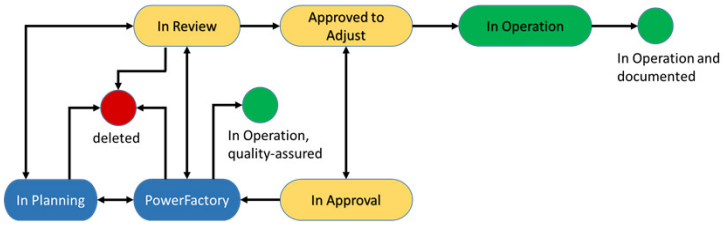
2. Extension of the high-voltage grid model by selected medium-voltage grids
   - Medium-voltage networks are currently imported from the NIS

3. Installation of protection devices and configuration of protection devices and transformers
   - Information on installation location, device type, signal connections and setting values are generated from *StationWare*

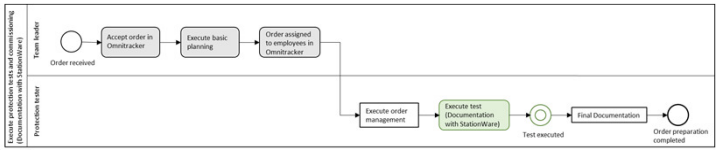
System Solution

Protection documentation with *StationWare*

- Multi-user environment
- User role-based access to database areas and objects
- Management of protection devices and converters and their data in a location hierarchy
- Linking between protection devices and connected converters
- Management of currently applied and historical settings (Siemens, Schneider and ABB devices) by importing manufacturer-specific settings files or from SWM-specific Excel test sheets
- Bidirectional exchange of calculation-relevant data of protection devices and transformers with *PowerFactory*
- Defined workflow for managing the setting values



- Tracking function for traceability of changes in parameters and setting values
- Document management, e.g. test documentation, test templates, manuals, …
- Management of protection tests and commissioning according to defined work steps



- Using scripts to automate processes
- Customer-specific reports

Objectives and Results

- ✓ Visualization of the protective representation on the concrete network
- ✓ Simulation of the starting and tripping behavior of the protective devices
- ✓ Fast, comprehensive variation calculations to optimize the protection coordination
- ✓ Review and evaluation of protection concepts
- ✓ Structured and central administration of all data for protection technology - paperless, sustainable, easily traceable
- ✓ Optimized and supported workflows with defined responsibilities and authorizations