

Bentley
Advancing Infrastructure



OpenUtilities Analysis (Powered by Siemens' PSS®SINCAL)

Power Systems Planning and Analysis for Grid Modernization

Key trends occurring in power utilities are already causing disruption and challenges to the industry. The increase in more agile, decentralized, and distributed energy resources, such as solar panels, wind farms, community solar, electric cars, and more, have a huge impact on the infrastructure. Modeling the grid for decentralized energy requires a new and reliable system to effectively manage complexity and modernize assets to support distributed energy resources (DER). Utilities need to address the question of how to maintain reliability and resilience within the grid, considering how DER interconnections affect network performance, and without disrupting current operations.

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Power planning engineers need the capacity to work in an environment that integrates power systems analysis capabilities with geographic information system (GIS) capabilities. The Siemens/Bentley collaboration creates a complete solution, enabling power planning engineers to work directly within the GIS for rapid assessments and validations tailored to power planning workflows for the modern grid accommodating DER in a constantly changing environment. The solution operates within a connected data environment, a common platform that uniquely converges engineering disciplines, asset types, and lifecycle processes.

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Perform simulations to evaluate DER integration

Extensive growth of DER on the power system has fundamentally changed the operation and planning of the power grid. OpenUtilities Analysis addresses DER integration challenges. The OpenUtilities Analysis framework enables planning engineers to perform simulations to investigate DER integration and provide solutions in terms of capacity, connections, compliance, load, and even security. Using network models, DER loading can be added and calculations can be run to determine success in each workflow. This results in cost savings from automated assessments and creates complete and qualitative documentation.

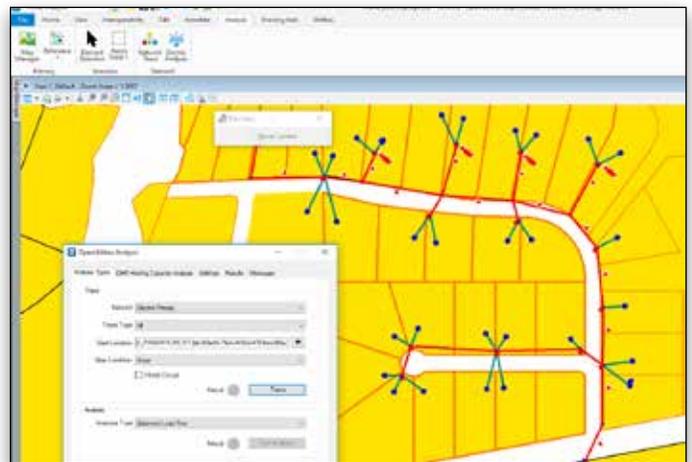


Figure 1: OpenUtilities simulates and analyzes power system networks to optimize grid performance and reliability.

DER Calculation Methods for Electrical Networks

Calculation methods used for DER planning, designing, and managing operations in electricity transmission and distribution networks can be quite complex and time intensive. OpenUtilities Analysis reduces the amount of manual work required at each step of the analysis. Relying on a simplified or detailed model of the installation, the module allows the creation of various study cases by combining system loading conditions with minimum and maximum DER contributions all defined as simulation parameters. Controlled load flow analyses are then executed on each scenario to assess the impacts on the system.

GIS Agnostic

OpenUtilities Analysis enables interoperability with Esri ArcGIS and GE Smallworld to adapt to different data formats. By being GIS independent, OpenUtilities Analysis provides abundant flexibility, improves productivity, and expands data analysis capabilities.

Connected Data Environment

OpenUtilities Analysis leverages the connected data environment, a cloud-provisioned open framework for collaboration and asset information management throughout the lifecycle of utilities infrastructure. Ensure accuracy and availability of documents and data at every stage of the asset lifecycle, allowing faster project start-up, streamlining of workflows, adherence to standards, reduction of risk, more informed decisions, and increased asset performance.

System Requirements

Operating System

Microsoft Windows (64-bit),
Virtualized Environments, Citrix
XenApp 7.xx (64-bit)

Bentley does not support its
software running on Microsoft
operating systems versions that
Microsoft has "retired".

Minimum Processor Profile

Intel or AMD processor 3.0 GHz
or greater

Memory

4 GB minimum, 16 GB
or more recommended

Hard Disk

20 GB free disk space minimum

Video

Graphics card supported by
DirectX 9.0c or better

Databases

Oracle Server and Client,
Microsoft SQL Server and Client

Analysis Requirements

Siemens PSS® SINCAL (64-bit)

Network Requirements

Bandwidth, 500 Mbit/s minimum,
1 Gbit/s or higher recommended

Find out about Bentley
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OpenUtilities Analysis (Powered by Siemens' PSS®SINCAL) At-A-Glance

Siemens' PSS®SINCAL Integration

- Off the shelf solution that provides an electric network data model
- Configurable to local and company standards
- Multiple sets of characteristics can be configured to support multiple standards
- Fully configurable and customizable with .NET languages and VBA
- Simple user interface

Basic Calculations

- Static load flow
- Time-series (balanced and unbalanced)
- Short circuit

GIS Capabilities

- Supports a wide range of geospatial coordinate systems
- Buffers and overlays
- Joins
- Thematic resymbolization
- Dynamic labeling
- Query builder (search by)

Integration of GIS and Spatial Databases

- Interoperability with various GIS data stores supports network information within a common data environment
- Supports ESRI, GE Smallworld, etc.
- Oracle Spatial/Locator and SQL Server Spatial compliant

Engineering-precision Edits

- MicroStation® (Power Platform) for a precision engineering environment
- Raster management
- Display priority and transparency
- Smart, quick drawing and editing of utility network data

Support for 3D Reality Models

- Displays reality meshes created by ContextCapture
- Snap, measure, render, and interact with the model to help improve design
- Edit 3D reality models with MicroStation mesh elements

Reporting

- WYSIWYG plot generation with user-defined templates and legends
- Publishing to intelligent PDF, PostScript, and other output formats
- Tabular views and graphical views

Interoperability

- Support for Bing Maps
- MapInfo (TAB, MID/MIF), SHP files, Oracle Spatial and Graph, CSV, GML, ESRI File Geodatabase, SQL Server Spatial, and ODBC sources
- Publish iModels with RDBMS properties
- Web feature service client - read (query) access

The Siemens / Bentley Advantage for Intelligent T&D within DER

OpenUtilities Analysis Powered by Siemens' PSS®SINCAL accelerates the digitalization of power utilities and industrial power facilities. A single unified application combines Bentley's exceptional technology in infrastructure design and engineering with Siemens' for the economical, reliable, and intelligent transmission and distribution of electrical power. The solution will aid utilities to reduce costs, improve reliability, and build-in resilience in response to global marketplace changes.

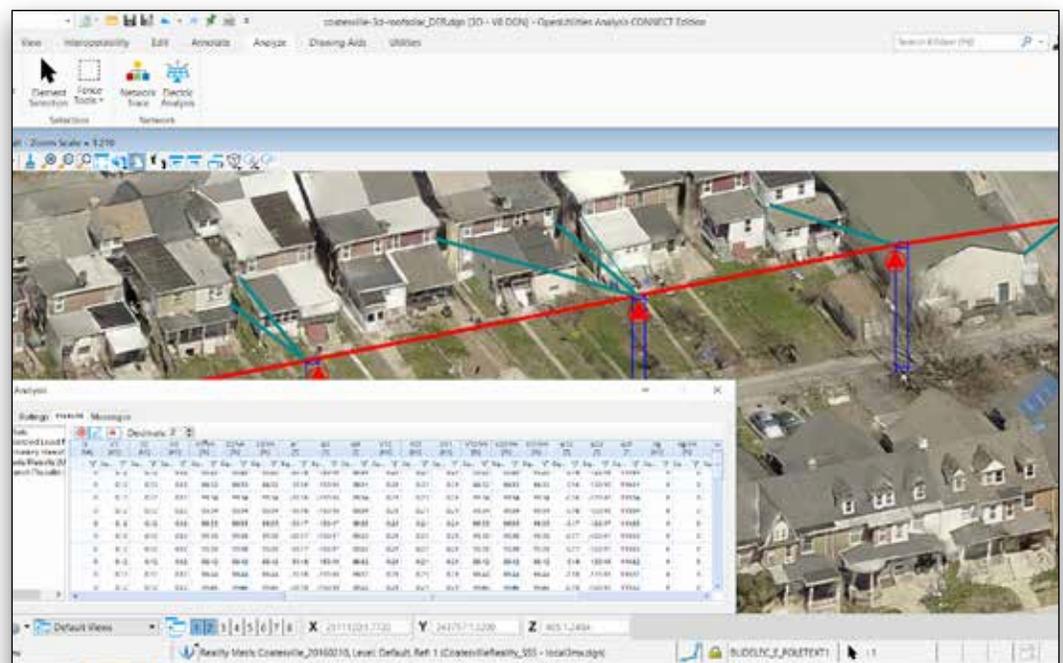


Figure 2. Network simulation with 3D reality model.