

DER Impact Evaluation



Tackle generation interconnection studies in a few mouse clicks.

The acceleration of distributed energy resources (DER) deployment imposes new challenges to electric distribution utilities. Handling the volume of interconnection applications and assessing the effects of each new installation on the distribution system require dedicated resources and tools. The CYME DER Impact Evaluation module enable engineers to perform generation interconnection system impact studies within minutes rather than hours through the automation of a series of repetitive, time-consuming and error-prone verifications.

Whenever a DER application fails the streamlined interconnection process, an engineer is required to carry further technical analysis to determine if any adverse effects exist and, in such case, decide on the appropriate mitigations. This task can take several hours, if not days, to accomplish since plenty of verifications on an array of load and generation scenarios are involved.

With the objective of speeding up the interconnection process, the CYME DER Impact Evaluation module automatically performs a comprehensive system impact study that integrates several criteria-based verifications and multiple scenarios in order to flag abnormal conditions.

The module brings an immediate productivity gain by reducing to a minimum 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 (e.g. peak and minimum load) with minimum and maximum DER contributions (e.g. 0 and 100%), all defined as simulation parameters. Controlled load flow analyses are then executed on each scenario to assess the impacts on the system in terms of steady-state voltage, transient voltage variations (flicker), thermal overloads and reverse power flow.

A comprehensive set of color-coded summary and detailed reports permits a quick identification of the issues and an easy appreciation of their severity. Taking care of all the hassles, the CYME DER Impact Evaluation module lets engineers focus on what really matters.



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Establish your analysis methodology using the different simulation parameters and let the software handle the rest.

Scenarios

Scenarios are created as the combination of diverse system loading conditions with minimum and maximum DER contributions.

- Definition of loading conditions using load scaling factors and/or load models
- Inclusion of one or many DER installations in the analysis scope
- Automatic detection or manual selection of point of common coupling (PCC)
- Adjustment of DER minimum and maximum contribution as a percentage of generator rated power, inverter rating or active generation

Verifications

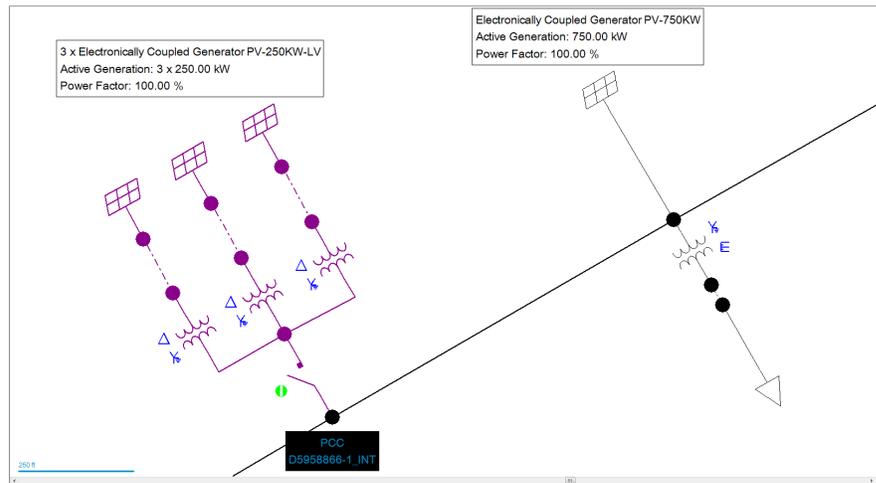
Verifications stemming from a set of criteria with adjustable thresholds are performed on each scenario.

- Steady-state voltage based on user-defined over- and under-voltage limits applicable globally or by voltage range (LV, MV, HV)
- Voltage variations caused by sudden generation fluctuations (max to min, min to max) based on user-defined limits set by voltage level and at the PCC
- Thermal loading of monitored devices based on user-defined limits set by device type
- Reverse power flow through monitored devices (e.g. voltage regulator, on-load tap changers, etc.)
- Generation ramping from minimum to maximum contribution by user-defined increment
- Power factor ramping from minimum to maximum value by user-defined increment

Results

Analysis results are returned in the form of a series of reports clearly highlighting violations using a simple and intuitive color coding.

- A summary report provides an overview of the most severe interconnection impacts for each scenario
- A steady state report details the system minimum and maximum steady-state voltages, including voltage regulators tap position and switchable capacitor bank status
- A voltage variation report presents results for both a rapid increase and decrease in generation



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