

The Integrated System Model/Distributed Engineering Workstation (ISM/DEW) software suite comes with proven analytical tools that will solve your largest system problem or the smallest. ISM/DEW can be licensed to include all applications, or just the ones your business requires. Many ISM/DEW smart grid applications cannot be found anywhere else. All of EDD's major applications have been verified in journal publications, and validated in numerous field tests conducted by national labs and multiple utilities. The ISM/DEW models and applications are reused from planning to operations, to real-time analysis and control, satisfying key smart grid challenges identified by the Electric Power Research Institute.

Power Flow Analysis

Solves both IEEE standard distribution and transmission system circuits. Solves downtown meshed networks for major cities in less than a second. Proven on systems with more than 1,000,000 multi-phase nodes and 1000's of loops. Works with interfaces to National Renewable Energy Lab and Clean Power Research historical and forecasted solar generation data. Real-time solutions with distributed computations are supported.

Impedance/Admittance Calculations

Calculates line and cable impedances and admittances as a function of construction, temperature, and frequency.

Load Estimation

Combines start of circuit measurements, interior

circuit measurements, kWhr measurements, load research statistics, single large customer (kW, kVar, kVA) load measurements, special load measurements, and load growth factors (either for entire circuit or individual load) to estimate kW and kVar loading for every customer as a function of the time.



Arc Flash Analysis

IEEE standard equations are used to analyze for arc flash protection levels.

Automated DER Interconnection Studies

A series of power flow and fault analysis calculations are automatically run to assess the impact of new and existing DER generation, and to meet the requirements of IEEE 1547.

Automated Schematic Creation

Automatically create customizable and synchronized orthogonal and/or geographical schematics from which analysis may be performed.

Automated Time Series Analysis

Time series analysis of SCADA, customer load, and other measurements are supported with convenient to use playback functionality.

Capacitor Design

Calculates size and location of capacitors needed to satisfy power factor and voltage magnitude specifications.

Comparison of Alternative Projects

Alternative plans for a system of circuits can be analyzed to automatically compare peaks, costs, efficiencies and reliabilities over time varying load curves.

Contingency/Restoration Analysis

Automatically runs first and second contingencies on user specified component types and employs reconfiguration for restoration to determine operations that may be used to restore customers, including customer counts of initial outages, restored, and outages waiting repair.

DER Adoption Analysis

As reported in 2011 T&D World and IEEE publications, analyzes by customer class the effects on primary and secondary systems of the growth of solar/wind generation, electric vehicles, and energy storage technologies, analyzing systems with 1000's of DER's.

DG Control Analysis

Evaluate use of distributed generators to eliminate system overloads or low voltages.

Distribution Transformer Loading Analysis

For user selected time periods (such as a whole year), calculates the percent time each transformer operates within specified load intervals. For example: transformer is loaded less

than 25% of rating for 90% of time, with loading between 25% and 50% of rating for 10% of time.

Fault Analysis

Calculates fault currents for radial and looped systems; works for multiple substations looped together; analyzes fault currents from distributed resource generators.

Flicker Analyses

Flicker Analysis calculates voltage dip percentages resulting from any number of loads cycling and compares with standard flicker or user specified curves. Automatically calculates sizes for various load types that result in flicker.

Harmonic Power Flow Analysis

Automatically creates a separate graphical model for each harmonic to be analyzed. Any number of harmonic sources may be analyzed concurrently.

Integrated Design

The output of one design study (i.e. modifications a design application makes to the circuit model) may be used as the input to the next design study. For example, the output of phase balancing can be used as the input to capacitor design.

Load Forecasting

Both short term and long term load forecasts may be performed. Weather forecasts may be used to estimate future loading, where future loads are based upon weather-dependent load scaling factors, historical load measurements, and load research statistic parameters.

Load Research Statistics Analysis

Calculates five statistical parameters for each customer class, where the statistical parameters may be functions of weather conditions.

Management of Special Loads

Custom loads and load measurements may be defined and managed.

Measurement Matching

Loads may be scaled to cause both start of circuit and simultaneously existing interior circuit measurements to be matched. Uniform scaling of 3-phase loads may be used; individual load measurements and large customer load measurements can be fixed.

Optimum Sizing of Secondary Equipment

Calculates size of distribution transformers and secondary system conductors for supplying mixed customer load classes with minimum capital investment and operating costs.

Outage Analysis

From actual field data, allows analysis of sectionalizing problems that are resulting in lower reliabilities. Can be used to predict where additional sectionalizing devices are needed or

where coordination is lacking. Displays actual outage statistics on circuit model for visual analysis.

Phase Balancing Design

Predicts the best phase move, the next best move, etc. Can be performed at both start of circuit and tie switches.

Phase Prediction

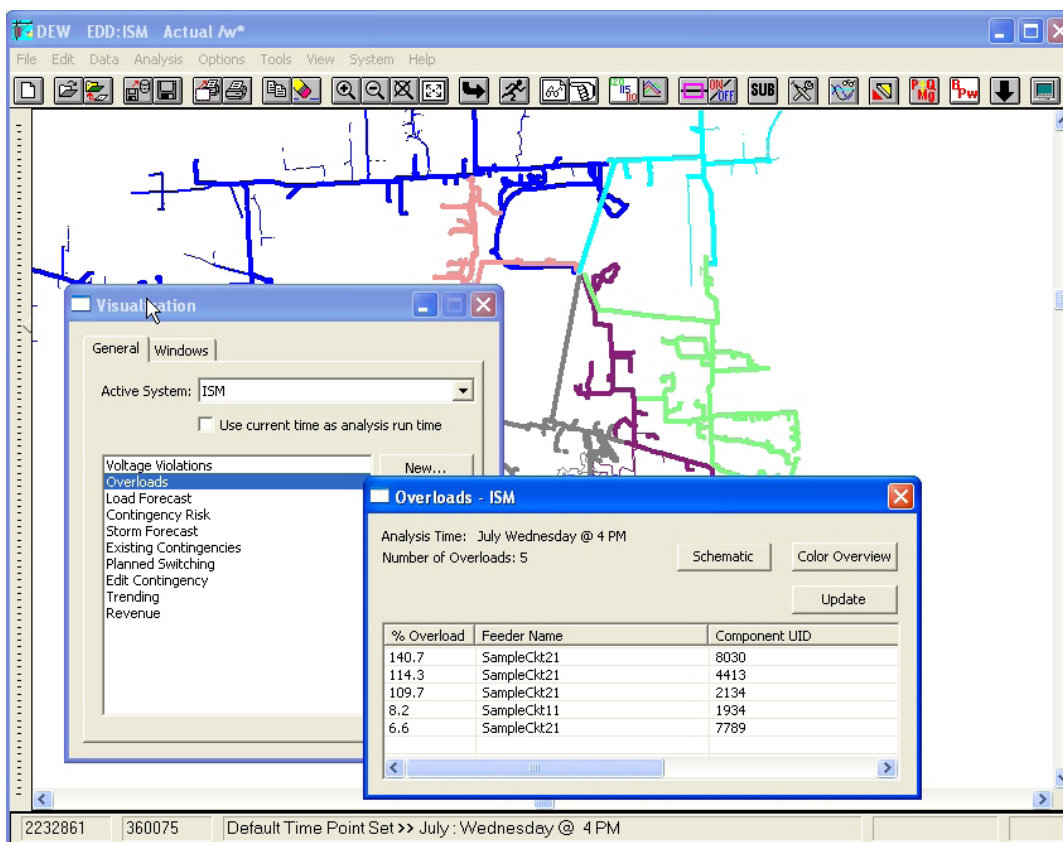
Uses customer kWhr and circuit SCADA measurements to predict phasing of laterals.

Project Planning Tool

Any type of circuit addition, deletion, or modification can be stored as a step in a project, where each step is planned for a specified month in the future. A project may be built to any step in the plan and analysis performed on the resulting circuits.

Protection/Coordination Design

Automatically locates protection and coordination problems within a circuit. Automatically searches



the database to find list of devices that will coordinate, displays zones of protection, and can update circuit protective devices from within application.

Real Time Applications

Real-time failure detection, state estimation, storm outage prediction, optimum efficiency control, maximum capacity control, fault isolation, reconfiguration for restoration, and fault location are provided with cooperating corporate and secure computations. Storm Outage Prediction may help to cut hours off of a major storm response. Architectural diagrams and use cases are available upon request.

Reconfiguration for Restoration and/or Minimum Loss

For one or more failed components (e.g., loss of a substation transformer and/or line section) isolates failed areas and calculates power restoration switching operations, based on load priority of lost services. May be used to calculate the minimum loss switching configuration, placing the system in the best position for responding to the next failure.

Reliability Analysis

Used to predict changes in reliability as a result of

circuit modifications or to evaluate improvements in reliability due to the addition of distributed resource generation. Two Dew applications are Monte Carlo simulation of looped systems and Reliability Analysis of radial feeders.

Revenue Flow

Based on customer usage and classes, calculates monthly and annual revenue flows for user specified components.

Statistical Analysis of Lightning Data

Calculates lightning density within specified corridor around every line in Dew model; may be used to predict outages due to lightning.

Switch Management

Switching configurations (status of all switches at a given point in time) may be stored and subsequently retrieved to restore configuration, enabling a single mouse click to operate any number of switches. Enables measurement simulation in alternate switch configurations.

Time Varying DG Fault Current Analysis

Calculates time varying fault currents due to Distributed resource Generators and predicts if the additional fault currents will affect fuse protection.

With more than 15 years of experience, EDD partners with companies at the forefront of the electric and power industries to improve operational performance, plan for future requirements and implement next generation designs. Contact us today to get help designing your smart grid solution.

