

ETAP / Operation Technology, Inc.

Operation Technology, Inc. (OTI) is a full spectrum analytical engineering firm specializing in the planning, design, analysis, operation, training, and computer simulation of power systems. OTI is also the developer of the ETAP enterprise solution for the simulation and analysis of electrical power systems using offline as well as real-time data.

According to Tanuj Khandelwal, electrical engineer/product manager, when ETAP was first released in 1986 it set the standard for power system analysis and design software.

Khandelwal says over 30,000 power engineers in more than 5,000 electrical firms worldwide use ETAP to design, simulate and operate many types of electrical systems, including wind farms.

OTI enhanced ETAP Real-Time to provide wind farm operators with online (real-time) monitoring, simulation, control, and supervisory control capabilities.

"ETAP uses real-time data and system topology coupled with advanced state estimation techniques to determine power flows and voltages throughout the system, especially in areas without metering equipment," says Khandelwal. "Our most recent release is ETAP 5.5, which includes a new Wind Turbine Generator module."

The Wind Turbine Generator module enables power engineers to analyze and monitor any number of wind turbines, in a highly flexible graphic interface optimized for both simulation and analysis. Users can also set up unique libraries of generator and wind characteristics specific to sites; and can place simulated disturbances to view the impact on the wind farm to model alternative turbine placement, the installation of protective devices, and other corrective actions.

Khandelwal says OTI recognized the increasing demand for clean, efficient energy so they enhanced ETAP with extensive Wind Turbine Machine Models that would allow wind farm designers to accurately model and simulate power system operation and ensure reliable system operation.

"We focus directly on the power side of wind farm generation," says Khandelwal. "Specifically, power monitoring, simulation, and analysis.

"We don't just see ETAP as a product that grows along with the wind industry," he continues. "We see ETAP as a platform that will help the wind power industry grow by giving wind farm operators the information they need to improve their power generation process, reliability, and future designs."



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Power Engineers use ETAP to:

- Model wind turbine generators.
- Model turbine and controller characteristics for dynamic stability analysis.
- Calculate megawatts (MW) and reactive power generation based on wind speed and turbine characteristics.