

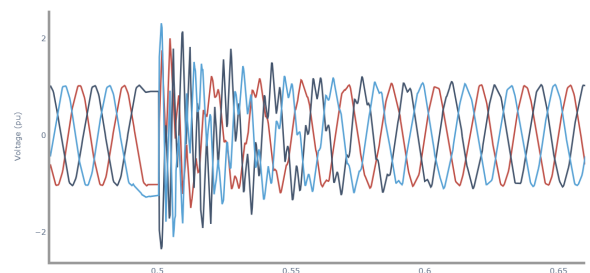
EMT Simulation Studies

Electro Magnetic Transient Studies Help Utilities and Operators Maintain Grid Reliability

Evolving Grid Dynamics

As the power system continues to integrate higher levels of Inverter Based Resources (IBRs), the traditional root mean square (RMS) and positive sequence-based analyses are often unable to fully capture the complex subsynchronous behavior of these devices. EMT studies encompass comprehensive assessments that provide the necessary insights into the actual behavior, helping preserve the stability of the power system. Additionally, an EMT platform is also required to perform classical high-frequency transient studies.

Our EMT studies offer high-fidelity analysis to support the safe integration of IBRs, large loads, high-voltage direct current (HVDC) systems, and other advanced technologies.



Why EPE



Industry-Leading Expertise

EPE brings industry-leading expertise and deep analytical capabilities that support utilities in ensuring reliability of their systems while also safeguarding power system facilities. Our team of experts helps utilities identify risks, opportunities, and solutions as the grid continues to experience unprecedented transformation.



Customized Solutions for a Futuristic Power Grid

Our industry-leading EMT capabilities help utilities and system operators reduce integration risks, comply with regulatory standards, and maintain grid reliability amid evolving challenges.

Our Focus Areas

Using industry-standard tools such as PSCAD and EMTP-RV, we perform detailed EMT studies including:

Renewable Integration Studies

- Model validation tests and model benchmarking studies
- Control interactions and stability assessments
- Subsynchronous screening studies
- Subsynchronous ferroresonance studies
- Grid-forming interaction studies

Large Load Interconnection Studies

- Custom model development for large loads
- Load characteristic evaluations
- System interaction studies (e.g., torsional interactions due to AI training)
- Voltage and frequency ride-through assessment
- Power quality analysis
- Control interaction assessments

Wide-Area Network Studies

- Wide-area network model development (based on PSSE/Power Factory models)
- Dynamic device models integration
- Wide-area simulation studies
- Subsynchronous oscillation
- Control interaction

Insulation Coordination and High-Frequency Transient Studies

- Lightning overvoltage studies
- Switching overvoltage studies
- Temporary overvoltage studies
- Breaker transient recovery voltage (TRV) studies
- Very fast transient (VFT) studies for GIS substations
- Protection impact studies

HVDC and FACTS Devices Studies

- Protection and control design studies
- Dynamic performance studies
- Subsynchronous control interaction screening and detailed studies
- Subsynchronous torsional interaction studies

Your Trusted Energy Partner

EPE supports clients across the energy ecosystem with end-to-end solutions. Our work spans utility engineering, grid integration, regulatory compliance, and advanced analytics—delivered with the expertise needed to navigate the energy landscape. Acting as an extension of your team, EPE brings decades of experience and a shared commitment to building a resilient, reliable, flexible, and affordable energy future.

Let's Engineer Success Together

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