



## SUMMARY OF ELECTROMAGNETIC TRANSIENTS ASSESSMENTS OF TRANSMISSION SYSTEMS

Electromagnetic transients assessments of transmission systems provide detailed technical information appropriate for transmission system equipment design and specifications pertaining to a wide-variety of phenomena related to transmission system voltage levels. The following is a brief listing of the phenomena typically analyzed for transmission system projects:

- Switching/transient overvoltages
- Very fast transients and fast-front transient overvoltages
- Temporary overvoltages (including ferroresonance overvoltages)
- Transient recovery voltages
- Phase-to-phase overvoltages
- Lightning overvoltages
- Capacitor bank switching transients
- Harmonic overvoltages (including frequency scans)
- X/R ratios and system impacts
- Steady-state overvoltage concerns (including power quality considerations)

These phenomena typically impact the following equipment specifications:

- Circuit breakers
- Opening/closing resistors
- Grading capacitors
- TRV control capacitors
- Surge arresters
- Shunt/series reactors
- Shunt/series capacitors
- Transformers and PARs
- Instrument transformers and relaying
- Transmission lines and cables
- GIS/AIS substation equipment
- Ferroresonance suppression devices
- Generators
- FACTS controllers

**MEPPI has performed a wide variety of detailed studies. More information on specific analysis types is available upon request.**

