



EMTP at RTE

A tool for strategic studies

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EMTP and frequency scan studies

Strategic studies for many new equipments

Installed or to be installed

Installation of long shunt-compensated EHV cables

- Transient and resonant overvoltages
- Constraints on circuit breakers
- Protection and control
- Harmonic impedance calculations

Installation of LCC and VSC HVDC links

- Validation of the insulation coordination studies
- Validation of the protection and control system
- Harmonic impedance calculations

Installation vacuum circuit breakers

- Interactions between VCB and transformers
- Already installed on the network

Planned

Onshore and offshore wind farms

- Behavior under voltage dips
- Impact on protection and control systems
- Transient and resonant overvoltages

Series compensation

- TRV voltages on the circuit breakers
- Ferroresonance
- Protection and control

**~ 15 users coordinated
through a user group**

**Many models and functionalities
developed for Rte needs
(parametric studies,...)**

EMTP activities at Rte

2 illustrations

Insertion of long EHV cables

Transient and resonant overvoltages
Constraints on circuit breakers
Protection and control

Studies presented by Rte engineers :
Simon Deschanvres
Yannick Vernay

France-Spain HVDC link

The most powerful VSC link by 2014
MMC converters modeling issues
Developments under work at EPM for offline and
real-time simulation

Developments and preliminary studies
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