

## POWERFACTORY

# Introductory Course: Time Domain Simulation

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## March 09<sup>th</sup> 2021

Online training course

This training gives the participants an introduction to the handling of the time domain simulation functions in *PowerFactory*. It includes the following topics:

- Definition of result variables and simulation events
- Visualisation of simulation results
- Simulation scan
- Fast Fourier Transform (FFT)
- Definition of dynamic controllers

The various hand-on exercises with detailed instructions ensure that participants will gain a sound introduction to the use of time domain simulations in *PowerFactory*.

### WHO SHOULD ATTEND:

The training course is intended for

- Utility engineers
- Power system operators
- Project developers
- Manufacturers
- Consultants
- Electrical engineers in general

This training is highly recommended as a preparatory course for users interested in attending one of the following courses:

- Power System Stability
- Electromagnetic Transient Analysis
- HVDC & FACTS

### PRICE PER PARTICIPANT:

- 558.00€\* (with valid maintenance contract)
- 635.00€\* (without valid maintenance contract)
- 190.00€\* (with valid student identification)

\*Prices are exclusive of VAT

## Training schedule

Central European Time (UTC +01:00)

### DAY 1

#### 9:00 Time Domain Simulations in *PowerFactory*

Calculation methods: balanced/unbalanced RMS simulation, EMT simulation. Handling of the time domain simulation. Visualisation of simulation results. Exporting simulation results (\*.csv, \*COMTRADE format, etc.).

#### 9:45 Exercise: RMS Simulation

Running RMS simulations in a test network. Calculation of initial conditions, definition of result variables and simulation events. Graphical visualisation of results.

#### 10:30 Coffee break

#### 11:00 Exercise: RMS Simulation (cont.)

#### 11:30 Exercise: Simulation scan

Execute a simulation with different simulation scan modules and configurations: fault-ride through, loss of synchronism, voltage scan, variable scan module.

#### 12:30 Lunch break

#### 13:30 Exercise: EMT Simulation

Running EMT simulations in a test network. Calculation of initial conditions, definition of result variables and simulation events. Graphical visualisation of results.

#### 14:00 Exercise: Fast Fourier Transform (FFT)

Getting the harmonic content. FFT configuration options.

#### 14:30 Dynamic controllers

How to assign dynamic controllers to a synchronous machine (AVR, speed controller). Use plots to compare the results for different parameter sets.

#### 15:45 Dynamic Models in *PowerFactory*

System modelling in *PowerFactory*: the general approach. The composite plant model and the controller models (DSL elements). Use of templates from the global library (e.g. for non-conventional generation).

#### 16:30 Exercise: Add a Dynamic Model from the Global Templates Library

Handling. How to add a dynamic model from the global templates library and how to configure/changes its parameters

#### 17:00 End of the training course