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# Tutorial on Analysis of Electromagnetic Transients with VSC converters

## CIGRE SESSION 47

09.00 – 12.00, August 30<sup>rd</sup>, 2018

Palais des Congrès room # 242B

### Objectives of the workshop

Driven by an increasing demand for bulk power transmission schemes, the number of HVDC interconnectors based on Voltage Source Converter (VSC) technology rises continuously. During the operation of converters different transient phenomena can occur. They can be initiated by faults on the AC or DC sides, energization of transformers or various events that involve the VSC converters. During such transients, the behavior of the converters is driven by the HVDC control and protections but also by the design of converter stations.

The B4-70 Working Group (Guide for Electromagnetic Transient Studies involving VSC converters) aims at providing comprehensive, documented and validated description of these transients. Description of EMT studies performed in the life cycle of VSC converters is also part of the objectives of the WG.

The tutorial is a dissemination event to present the contribution of the WG members and open technical discussions on the topics addressed by the WG.

### Intended audience

People involved in HVDC/FACTS installation and operation among CIGRE B4 SC.

### Organization

This workshop is organized by CIGRE WG B4-70 in cooperation with CIGRE SC B4.

Participation is free of charge, no registration.

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Time	Topics & Speakers
<b>09.00</b>	<b>INTRODUCTION</b>  <i>M. Rashwan, President, TransGrid Solutions Inc, Canada Chairman of CIGRE SC B4 "DC and Power Electronics"</i>
<b>09.15</b>	<b>DESCRIPTION OF HVDC VSC POINT-TO-POINT SYSTEMS</b>  <i>S. Elimban, Senior engineer, RTDS, Canada</i>
<b>09.40</b>	<b>EMT STUDIES OVER THE LIFE CYCLE OF VSC SYSTEMS</b>  <i>T. Priebe, Senior Engineer, SIEMENS, Germany</i>
<b>10.05</b>	<b>TRANSIENTS DURING NORMAL OPERATION</b>  <i>S. Denetière, Senior Principal Engineer, RTE, France</i>
<b>10.30</b>	<b>GRID SIDE TRANSIENT ANALYSIS</b>  <i>S. Beckler, Engineer, TransnetBW GmbH, Germany</i>
<b>10.55</b>	<b>DC SIDE TRANSIENTS ANALYSIS</b>  <i>P. Rault, Senior Engineer, RTE, France CIGRE B4-70 WG secretary</i>
<b>11.20</b>	<b>INTERACTION STUDIES</b>  <i>Eduardo Prieto Araujo, Lecturer (Assistant professor), CITCEA-UPC, Spain</i>
<b>11.45</b>	<b>CONCLUSION</b>  <i>S. Denetière, Senior Principal Engineer, RTE, France CIGRE B4-70 WG convener</i>