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Market-ready smart and super grid technologies for international cross-border interconnections

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A heterogeneous mix of recently installed and significant base of renewable energy resources in some countries combined with conventional power generation results in national and cross-border network instabilities. In fact, electricity from renewable energy resources is by nature intermittent and not steadily available locally and temporarily. This leads to a reduced functionality or life cycle of effected assets that shall be avoided. A decisive factor for network stability is the permanent balance between generation and load. The balance can be reached in an effective way if both energy generation and load sides are bundled to clusters on national, regional or even international levels. Examples of such clusters are virtual power plants or integrated markets. In addition, cultural differences in users' behavior (e.g. electrical heating) or different time zones can be used to balance generation and loads if appropriately integrated. In order to fulfill this integration successfully, novel ready-to-market distribution and transmission technologies play a crucial role as networks will be expanded and modernized towards smart grids in an intelligent, i.e., effective way to keep necessary investments under control, and to maintain public acceptance. Some examples of smart grid technologies will be outlined in the present paper/presentation, namely: HVDC technologies including a DC breaker for DC grid applications, developed by Alstom and its partners in the frame of the European FP7-Program; Phase shifting and voltage control technologies, such as wide-area monitoring in possible combination with thyristor and transistor controlled dynamic VAR compensation (SVC/StatComs); and appropriate network management systems, i.e., market management systems that help manage the financial and physical flows of electricity, transmission and distribution management systems, as well as demand response management and energy market systems.

Biography

Wolfgang Krewel has received his MSc degree in Electrical Engineering from Aachen University of Technology (RWTH Aachen), Germany and his PhD from the Ecole Nationale Supérieure des Télécommunications (ENST), Paris. He started his industrial career in 1993 with Ascom in Switzerland. After further management positions at Bouygues and ABB in Switzerland, France and South-America, he joined Alstom Grid in March 2008, where he is presently the Director, Strategy & Marketing for the Region Central and Eastern Europe and Russia. With more than 20 years of professional experience in both the ICT and the energy business, he contributes today to the international vision of Smart Grids.

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