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Solutions for System Integration of Renewable Energy and Storage.

Abstract:

Integration of renewable energy sources namely solar, wind and storage (e.g. electric vehicles) is addressed in the presentation. Two different scenarios are discussed: renewable energy at convenient location and also local energy production and integration into smart cities with storage. Several examples of integration with LV DC grids and needed power electronic interfaces and systems with high efficiency will be shown. Development of power electronics technology for DC grids and challenges, solutions for Electric mobility (charging with renewable energy, inductive charging) related to smart cities are suggested. DC systems and (micro) grids for integration of Renewable Energy Sources and Energy Storage in applications such as smart (green) cities; electric mobility; utilization, reliability and controllability of DC grids are briefly discussed. HV/MV DC Transmission Networks for large scale implementation of Renewable Energy Sources (solar, wind, wave), optimization and controllability of HVDC transmission grids are addressed too.

Biography:

Pavol Bauer is currently a full Professor with the Department of Electrical Sustainable Energy of Delft University of Technology and head of DC Systems, Energy Conversion and Storage group. He received Masters in Electrical Engineering at the Technical University of Kosice ('85) and Ph.D. from Delft University of Technology ('95). From 2002 to 2003 he was working partially at KEMA (DNV GL, Arnhem) on different projects related to power electronics applications in power systems. He published over 72 journal and almost 300 conference papers in his field (with H factor Google scholar 30, Web of science 17), he is an author or co-author of 8 books, holds 4 international patents and organized several tutorials at the international conferences. He has worked on many projects for industry concerning wind and wave energy, power electronic applications for power systems such as Smarttrafo; HVDC systems, projects for smart cities such as PV charging of electric vehicles, PV and storage integration, contactless charging; and he participated in several Leonardo da Vinci and H2020 EU projects as project partner (ELINA, INETELE, E-Pragmatic) and coordinator (PEMCWebLab.com-Edipe, SustEner, Eranet DCMICRO). He is a Senior Member of the IEEE ('97), former chairman of Benelux IEEE Joint Industry Applications Society, Power Electronics and Power Engineering Society chapter, member of the Power Electronics and Motion Control (PEMC) council, member of the Executive Committee of European Power Electronics Association (EPE) and also member of international steering committee at numerous conferences.