

Who is Chengshan Wang?

Key Laboratory of Smart Grid of Ministry of Education, Tianjin University, Tianjin, China Chengshan Wang (Senior Member, IEEE) received the B.Sc., M.Sc., and Ph.D. degrees in electrical engineering from Tianjin University, Tianjin, China, in 1983, 1985 and 1991, respectively. He became a Full Professor with Tianjin University, in 1996.

How can a DC-DC converter based super-capacitor improve the inertia of DC microgrids?

To improve the equivalent inertia of DC microgrids (DCMGs), a unified control is proposed for the first time for a bi-directional DC-DC converter based super-capacitor (SC) system, whereby power disturbance smoothing and SC terminal voltage regulation can be achieved in a DCMG simultaneously.

Can low-voltage power cells be used as a microgrid?

Series connection of low-voltage power cells has been considered as an alternative microgrid configuration to supply rated voltage power to point of common coupling (PCC) loads. However, in the previous studies, the major focus was on the power regulation of system.

Is a decentralized interleaving PWM approach possible for parallel grid-tied converters?

A simple decentralized interleaving PWM approach is proposed for parallel grid-tied converters, in order to achieve significant reduction of switching current ripples at the point of common couplings (PCC).

Why is droop control used in multi-source multi-load DC microgrids?

[...] Droop control has been well adopted for multi-source multi-load DC microgrids (MGs) due to its inherent modularity and reliability by only using local measurements, especially with the most commonly-used voltage-current droop ($V-I$) mode.

The control method of microgrid operation is also described. ... Wang Chengshan. Microgrid ... we propose an online optimal operation approach for CCHP microgrids based on model predictive control ...

2 Microgrid modeling A typical microgrid consists of several DG units together with ESS and loads. The modeling of the microgrid is described in this section. 2.1 BESS modeling Different modeling approaches have been developed for BESS [11, 12]. Normally, the battery model shall represent the terminal voltage and the internal resistance which ...

Based on constructing different types of distributed generations and energy storage equipments, this paper simulated the dynamical characteristics of MicroGrid with several operating modes ...

[15] Gu W, Wang Z, Wu Z et al. 2016 An online optimal dispatching dispatche for CCHP microgrids based on

model predictive control [J] IEEE Transactions on Smart Grid 1-11 Google Scholar [16] Luo Z, Wang z, Gu W et al. 2015 A Two-Stage energy management strategy for CCHP microgrid considering house characteristics[C] IEEE Power energy society general ...

Cascade control is a type of classical control system that uses multiple controllers in a series to achieve more precise control. The grid-forming power converters, known as voltage source converters, are represented as controllable voltage sources with low-output impedance, much like the grid-tied synchronous generators.

In islanded mode, there is no support from grid and the control of the microgrid becomes much more complex in grid-connected mode of operation, microgrid is coupled to the utility grid through a static transfer switch. 111 The microgrid voltage is imposed by the host utility grid. 112, 113 In grid-connected mode, the microgrid can exchange power with the external grid as to maintain ...

Microgrid Methodologies and Emergent Applications : Wang, Chengshan, Xu, Tao, Liu, Yixin: Amazon : Books ... Addressing the full end-to-end microgrid project lifecycle, the work encompasses planning, design, operation, control, trading and evaluation, with a significant focus on novel business model, regulation and policy considerations ...

Modeling of microgrid is a key aspect and the recent developments in the modeling of microgrid are presented in both grid-connected and autonomous mode. The control techniques of microgrid available in the literature for various modes of operation are also discussed. The microgrid can be viewed as a special case of SoS.

Each microgrid realizes the economic dispatch in the lower level interactive model, where the uncertainties caused by renewable energy integration and loads as well as the coordination of contr ...

EE 653 Power distribution system modeling, optimization and simulation. Microgrids (Part II) Microgrid Modeling and Control. GRA: Zixiao Ma. Advisor: Dr. Zhaoyu Wang. Department of Electrical and Computer Engineering. Iowa State University

Presents the latest research advancements on the technical aspects of microgrid design, control, and operation; ... Multi-microgrids with a Frequency Regulation-Based V2G Technology: Systems Analysis, Modeling, and Control. Meysam Gheisarnejad, Mohammad-Hassan Khooban ... Wenqi Lu, Chengshan Wang, Yu Shen, Wei Hu et al. Pages 85-120. Download ...

Microgrid Methodologies and Applications provides step-by-guide guidance on the implementation of microgrids projects that is informed by current scientific principles, emergent technologies such as modern power electronic interfaces, energy storage systems, multi-vector energy systems, and a close study of recent case studies. Addressing the full end-to-end ...

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Chengshan WANG ... A typical medium voltage and low voltage microgrid is designed for the ...

The top layer control is VSG control, and the lower layer control is droop control inside the AC/DC subnet. 18 The control strategy at the lower level belongs to peer-to-peer control. This means that all distributed power sources in the microgrid have equal control status, and there is no master-slave control relationship between controllers.

[23] Jun Xiao, Xin Li, Wenzhuo Gu, Fangxing Li, Chengshan Wang. Model of distribution system total supply capability considering feeder and substation transformer contingencies. ... Xialin Li, Li Guo, Yunwei Li. A nonlinear-disturbance-observer-based DC-bus voltage control for a hybrid AC/DC microgrid. IEEE Transactions on Power Electronics, 29 ...

Request PDF | On Nov 1, 2014, Chengshan Wang and others published A Nonlinear-Disturbance-Observer-Based DC-Bus Voltage Control for a Hybrid AC/DC Microgrid | Find, read and cite all the research ...

From the above application results, it can be seen that with the hydropower intelligent control terminal put into use, the frequency can be stabilized between 49.952 Hz ~ 50.355 Hz when the microgrid runs islanded, realizing the fast tracking of the load and meeting the requirements of microgrid frequency stability, which is of great significance for improving ...

DOI: 10.1016/j.ijepes.2020.106183 Corpus ID: 219757646; Impedance modeling, dynamic analysis and damping enhancement for DC microgrid with multiple types of loads @article{Liu2020ImpedanceMD, title={Impedance modeling, dynamic analysis and damping enhancement for DC microgrid with multiple types of loads}, author={Ziwen Liu and Jin-quan ...

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Chengshan WANG1 Abstract A day-ahead optimal scheduling method for a grid-connected microgrid based on energy storage (ES) control strategy is proposed in this paper. The proposed method optimally schedules ES devices to minimize the total operating costs while satisfying the load requirements of cold, heat, and electricity in microgrids. By ...

The grid model can be considered as a module in the modeling of grid-connected MGs. The main grid can be modeled using a three-phase voltage source series with a resistive-inductive line. The main objective of developing a very low-order model, specifically a single-order model, for an MG, is its utilization within large-scale power grids, such as ...



Wang Chengshan Microgrid Modeling and Control

???, Wang Chengshan, ????????????????, Wang Chengshan. ... Model order reduction for transient simulation of active distribution networks. IET GENERATION TRANSMISSION & DISTRIBUTION, 2015, 9(5): 457-467. ... A nonlinear-disturbance-observer- based DC-bus voltage control for a hybrid AC/DC microgrid. IEEE ...

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