Special Issue List in Section

Intelligent Decentralized Energy Management in Microgrids
Guest Editor: Prof. Dr. Anastasios Dounis
Deadline: **30 July 2021**

Demand Response Optimization Techniques for Smart Power Grids
Guest Editors: Prof. Dr. Seon-Ju Ahn, Prof. Dr. Hyun-Koo Kang
Deadline: **31 July 2021**

Advances in Power System Stability and Control
Guest Editors: Prof. Dr. Seon-Ju Ahn, Prof. Dr. Hyun-Koo Kang
Deadline: **31 July 2021**

Smart Grids and Flexible Energy Systems
Guest Editor: Prof. Dr. Hannu Laaksonen, Dr. Omid Palizban
Deadline: **20 August 2021**

Energy Management Systems for Optimal Operation of Electrical Micro/Nanogrids
Guest Editor: Dr. Maria Carmela Di Piazza
Deadline: **20 September 2021**

Monitoring, Control and Data Acquisition of Smart Grids
Guest Editor: Dr. Miguel Ángel Olivan
Deadline: **30 September 2021**

Cyber Security in Smart Grids
Guest Editor: Dr. Jesús Lázaro
Deadline: **30 September 2021**

Advances in Energy Internet
Guest Editor: Prof. Dr. Junwei Cao
Deadline: **31 October 2021**

Emerging Network Architectures for Smart Grids
Guest Editor: Dr. Reza Tourani
Deadline: **31 October 2021**

IoT for Smart Grids
Guest Editor: Dr. Ravi Reddy Manumachu
Deadline: **31 October 2021**

Advances in Synchronized Measurements Technologies in Smart Grids
Guest Editors: Prof. Dr. Igor Kuzle, Dr. Igor Ivanković, Dr. Ninoslav Holjevac, Mr. Matej Krpan
Deadline: **10 November 2021**

Micro Grid Protection 2021
Guest Editor: Prof. Dr. Chul Hwan Kim
Deadline: **25 November 2021**

Distribution Grids Modernization II
Guest Editors: Prof. Dr. Pedro M. S. Carvalho, Dr. Hugo Morais
Deadline: **30 November 2021**

Reliability, Security and Resiliency of Smart Grids
Guest Editors: Prof. Dr. Mahshid R. Naeini, Prof. Dr. Yi-Ping Fang
Deadline: **30 November 2021**

Feature Papers in Smart Grids and Microgrids
Guest Editors: Prof. Dr. José Matas, Prof. Dr. Saeed Golestan, Prof. Dr. Helena Martin
Deadline: **31 December 2021**

Smart Power Management of Renewable Power System
Guest Editor: Dr. Suhail Hussain
Deadline: **31 December 2021**

For more information about our Special Issues, please visit:
https://www.mdpi.com/journal/energies/sections/grids

MDPI is a member of

Follow Us

facebook.com/MDPIOpenAccessPublishing
twitter.com/MDPIOpenAccess / @energies_Mdpi
linkedin.com/company/mdpi
plus.google.com/+MdpiOA
weibo.com/mdpicn
blog.mdpi.com

MDPI
St. Alban-Anlage 66
CH-4052 Basel
Switzerland
Tel: +41 61 683 77 34
Fax: +41 61 302 89 18

www.mdpi.com **mdpi.com/journal/energies**

Basel, July 2021

IMPACT FACTOR 3.004
CITESCORE 4.7 SCOPUS

energies

an Open Access Journal by MDPI

Section

Smart Grids and Microgrids

energies

IMPACT FACTOR 3.004

CITESCORE 4.7 SCOPUS

an Open Access Journal by MDPI

Section Editor-in-Chief

Prof. Dr. José Matas

Electric Engineering Department, Barcelona East School of Engineering (EEBE), Polytechnic University of Catalonia (UPC), Barcelona, Spain

Section Information:

The research and development of smart grids and microgrids in the last decades is the way how some countries have modernized their transmission and distribution networks in order to respond to the challenges and problems that the grid has to face, such as the increasing demand or the higher penetration levels of renewable energy resources while keeping high quality standards in an efficient, reliable, safe, economical and robust manner.

The operation and management of such complex system require the use and mix of different technologies of different fields, from advanced communications and information technology to smart metering and monitoring equipment. The need for gathering information from suppliers and consumers is critical to determine the state of the grid and to optimize the operation and management of the system regarding load shedding, storage administration, and strategies to face faults and grid contingencies.

This section is intended to present new contributions, studies and reviews in the area of smart grids and microgrids related to generation, transmission and distribution, storage management, dynamic load leveling, grid smart operation and automated control, self-healing ability, communications, smart metering, IoT integration, smart grid modelling, economic and policy implications, interaction with electricity market, security, and electric vehicle integration.

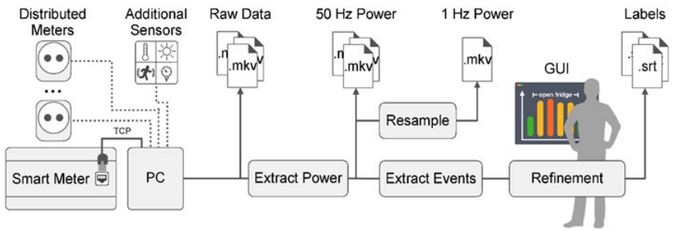
Featured Papers

DOI: 10.3390/en14010075

A Framework to Generate and Label Datasets for Non-Intrusive Load Monitoring

Authors: Benjamin Völker, Marc Pfeifer, Philipp M. Scholl and Bernd Becker

Abstract: In order to reduce the electricity consumption in our homes, a first step is to make the user aware of it. Raising such awareness, however, demands to pinpoint users of specific appliances that unnecessarily consume electricity. A retrofittable and scalable way to provide appliance-specific consumption is provided by Non-Intrusive Load Monitoring methods. These methods use a single electricity meter to record the aggregated consumption of all appliances and disaggregate it into the consumption of each individual appliance using advanced algorithms usually utilizing machine-learning approaches. Since these approaches are often supervised, labelled ground-truth data need to be collected in advance. Labeling on-phases of devices is already a tedious process, but, if further information about internal device states is required (e.g., intensity of an HVAC), manual post-processing quickly becomes infeasible. We propose a novel data collection and labeling framework for Non-Intrusive Load Monitoring. The framework is comprised of the hardware and software required to record and (semi-automatically) label the data. The hardware setup includes a smart-meter device to record aggregated consumption data and multiple socket meters to record appliance level data. Labeling is performed in a semi-automatic post-processing step guided by a graphical user interface, which reduced the labeling effort by 72% compared to a manual approach. We evaluated our framework and present the FIRED dataset. The dataset features uninterrupted, time synced aggregated, and individual device voltage and current waveforms with distinct state transition labels for a total of 101 days.



DOI: 10.3390/en13174543

The Spectrum of Proactive, Resilient Multi-Microgrid Scheduling: A Systematic Literature Review

Authors: Michael H. Spiegel, Eric M. S. P. Veith and Thomas I. Strasser

Abstract: Multi-microgrids address the need for a resilient, sustainable, and cost-effective electricity supply by providing a coordinated operation of individual networks. Due to local generation, dynamic network topologies, and islanding capabilities of hosted microgrids or groups thereof, various new fault mitigation and optimization options emerge. However, with the great flexibility, new challenges such as complex failure modes that need to be considered for a resilient operation, appear. This work systematically reviews scheduling approaches which significantly influence the feasibility of mitigation options before a failure is encountered. An in-depth analysis of identified key contributions covers aspects such as the mathematical apparatus, failure models and validation to highlight the current methodical spectrum and to identify future perspectives. Despite the common optimization-based framework, a broad variety of scheduling approaches is revealed. However, none of the key contributions provides practical insights beyond lab validation and considerable effort is required until the approaches can show their full potential in practical implementations. It is expected that the great level of detail guides further research in improving and validating existing scheduling concepts as well as it, in the long run, aids engineers to choose the most suitable options regarding increasingly resilient power systems.