

# **2023 Open Source Modelling and Simulation of Energy Systems (OSMSES 2023)**

**Aachen, Germany  
27-29 March 2023**



**IEEE Catalog Number: CFP23BD0-POD  
ISBN: 979-8-3503-1123-5**

**Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP23BD0-POD
ISBN (Print-On-Demand):	979-8-3503-1123-5
ISBN (Online):	979-8-3503-1122-8

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# TABLE OF CONTENTS

The DeMaDs Open Source Modeling Framework for Power System Malfunction Detection.....	1
<i>David Fellner, Thomas I. Strasser, Wolfgang Kastner</i>	
Reduced-Order Synchronous Generator Modelling for Real-Time Simulation Using Shifted Frequency Analysis .....	7
<i>Jan Dinkelbach, Martin Moraga, Antonello Monti</i>	
FlexPlan.jl - An Open-Source Julia Tool for Holistic Transmission and Distribution Grid Planning .....	13
<i>Matteo Rossini, Hakan Ergun, Marco Rossi</i>	
PyAPI-RTS: A Python-API for RSCAD Modeling .....	21
<i>Moritz Weber, Jona Enzinger, Hüseyin K. Çakmak, Uwe Kühnappel, Veit Hagemeyer</i>	
Open Source Simulation Software Pandapower and Pandapipes: Recent Developments .....	28
<i>Roman Bolgaryn, Gourab Banerjee, Steffen Meinecke, Hendrik Maschke, Frank Marten, Mario Richter, Zheng Liu, Pawel Lytaev, Baraa Alfakhouri, Jolando Kisse, Daniel Lohmeier</i>	
Introducing PROOF - A PROcess Orchestration Framework for the Automation of Computational Scientific Workflows and Co-Simulations.....	36
<i>Jianlei Liu, Malte Chlosta, Nicolas Schaber, Jannik Sidler, Richard Lutz, Thorsten Schlachter, Veit Hagemeyer</i>	
Energy Systems Test Case Discovery Enabled by Test Case Profile and Repository.....	42
<i>Petra Raussi, Jirapa Kamsamrong, Alexandros Paspatis, Kai Heussen, Tesfaye Amare Zerihun, Edmund Widl, Filip Prössl Andrén, Jawad H. Kazmi, Thomas I. Strasser, Felipe Castro, Luigi Pellegrino</i>	
Market Integration Analysis of Heat Recovery Under the EMB3Rs Platform: An Industrial Park Case in Greece.....	48
<i>A. Sérgio Faria, Tiago Soares, Giorgos Goumas, Aristotelis Abotzios, José M. Cunha, Mafalda Silva</i>	
DigitalEnergyTestbed: An Open Testbed Prototype for Integrated Energy Systems.....	53
<i>Edmund Widl, Andreas Sporr, Ralf-Roman Schmidt, Thomas Natiesta, Nicolas Marx</i>	
Load and Generation Time Series for German Federal States: Static Vs. Dynamic Regionalization Factors .....	60
<i>Madeleine Sundblad, Tim Fürmann, Anke Weidlich, Mirko Schäfer</i>	
Rapid Development and Execution of Complex Agent-Based Energy System Simulations: The FAME Framework.....	66
<i>Ulrich J. Frey, Christoph Schimeczek, Marc Deissenroth-Uhrig, Benjamin Fuchs, Kristina Nienhaus</i>	

## Author Index