

# Contents

<b>1</b>	<b>Introduction to Smart Grid Functionalities</b> . . . . .	<b>1</b>
	Francisco Gonzalez-Longatt and José Luis Rueda Torres	
<b>2</b>	<b>Python Scripting for DIgSILENT PowerFactory: Leveraging the Python API for Scenario Manipulation and Analysis of Large Datasets</b> . . . . .	<b>19</b>
	Claudio David López and José Luis Rueda Torres	
<b>3</b>	<b>Smart Network Planning—Pareto Optimal Phase Balancing for LV Networks via Monte-Carlo Simulations</b> . . . . .	<b>49</b>
	Benoît Bletterie, Roman Bolgarny and Serdar Kadam	
<b>4</b>	<b>Co-simulation with DIgSILENT PowerFactory and MATLAB: Optimal Integration of Plug-in Electric Vehicles in Distribution Networks</b> . . . . .	<b>67</b>
	J. Garcia-Villalobos, I. Zamora, M. Marinelli, P. Eguia and J. I. San Martin	
<b>5</b>	<b>Probabilistic Load-Flow Using Analysis Using DPL Scripting Language</b> . . . . .	<b>93</b>
	Francisco Gonzalez-Longatt, S. Alhejaj, A. Marano-Marcolini and José Luis Rueda Torres	
<b>6</b>	<b>Dynamic Stability Improvement of Islanded Power Plant by Smart Power Management System: Implementation of PMS Logic</b> . . . . .	<b>125</b>
	Hamid Khoshkhoo and Ali Parizad	
<b>7</b>	<b>Determining Wide-Area Signals and Locations of Regulating Devices to Damp Inter-Area Oscillations Through Eigenvalue Sensitivity Analysis Using DIgSILENT Programming Language</b> . . . . .	<b>153</b>
	Horacio Silva-Saravia, Yajun Wang and Héctor Pulgar-Painemal	

<b>8</b>	<b>Dynamic Stability Improvement of Islanded Power Plant by Smart Power Management System—Principles, Descriptions and Scenarios . . . . .</b>	<b>181</b>
	Ali Parizad and Hamid Khoshkhoo	
<b>9</b>	<b>Wide-Area Measurement, Monitoring and Control: PMU-Based Distributed Wide-Area Damping Control Design Based on Heuristic Optimisation Using DIgSILENT PowerFactory . . . . .</b>	<b>211</b>
	Amin Mohammadpour Shotorbani, Sajad Madadi and Behnam Mohammadi-Ivatloo	
<b>10</b>	<b>Optimal PMU Placement Framework Under Observability Redundancy and Contingency—An Evolutionary Algorithm Using DIgSILENT Programming Language Module . . . . .</b>	<b>241</b>
	Mohsen Zare, Rasoul Azizipanah-Abarghooee, Mostafa Malekpour and Vladimir Terzija	
<b>11</b>	<b>Implementation of Slow Coherency Based Controlled Islanding Using DIgSILENT PowerFactory and MATLAB . . . . .</b>	<b>279</b>
	I. Tyuryukanov, M. Naglič, M. Popov and M. A. M. M. van der Meijden	
<b>12</b>	<b>Peer-to-Peer (P2P) MATLAB–PowerFactory Communication: Optimal Placement and Setting of Power System Stabilizer . . . . .</b>	<b>301</b>
	Andrei Stăvîă and Francisco Gonzalez-Longatt	
<b>13</b>	<b>Implementation of the Single Machine Equivalent (SIME) Method for Transient Stability Assessment in DIgSILENT PowerFactory . . . . .</b>	<b>319</b>
	Jaime Cepeda, Paúl Salazar, Diego Echeverría and Hugo Arcos	
<b>14</b>	<b>Generic DSL-Based Modeling and Control of Wind Turbine Type 4 for EMT Simulations in DIgSILENT PowerFactory . . . . .</b>	<b>355</b>
	Abdul W. Korai, Elyas Rakhshani, José Luis Rueda Torres and István Erlich	

Advanced Smart Grid Functionalities Based on  
PowerFactory

Gonzalez-Longatt, F.; Rueda Torres, J.L. (Eds.)

2018, XIV, 371 p. 268 illus., 225 illus. in color. With  
online files/update., Hardcover

ISBN: 978-3-319-50531-2