

2019 1st International Conference on Energy Transition in the Mediterranean Area (SyNERGY MED 2019)

**Cagliari, Italy
28-30 May 2019**



**IEEE Catalog Number: CFP19T26-POD
ISBN: 978-1-7281-3088-0**

**Copyright © 2019 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:	CFP19T26-POD
ISBN (Print-On-Demand):	978-1-7281-3088-0
ISBN (Online):	978-1-7281-3087-3

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

VIRTUAL INERTIA IN A MICROGRID WITH RENEWABLE GENERATION AND A BATTERY ENERGY STORAGE SYSTEM IN ISLANDING TRANSITION	1
<i>James Amankwah Adu ; Juan D. Rios Penaloza ; Fabio Napolitano ; Fabio Tossani</i>	
THE POSEIDON PROJECT: MICROGRID IN PORT AREAS TO IMPROVE ENERGY EFFICIENCY BY THE INTEGRATION OF RES, FLEXIBLE LOADS AND SMART MOBILITY	6
<i>Susanna Mocci ; Mario Porru ; Alessandro Serpi ; Gian Giuseppe Soma</i>	
ANALYSIS OF SARDINIA-ITALY ENERGY FLOWS WITH FUTURE TRANSMISSION INVESTMENTS FOR INCREASING THE INTEGRATION OF RES	11
<i>Paolo Corona ; Emilio Ghiani ; Javier Contreras</i>	
CRITICAL ASSESSMENT OF POTENTIAL BARRIERS FOR INTEGRATING THE EMERGING TECHNOLOGIES IN THE PAN-EUROPEAN NETWORK CONSIDERING THE FUTURE EU GRID SCENARIOS	17
<i>Giorgio Graditi ; Roberto Ciavarella ; Marialaura Di Somma ; Melios Hadjikypris ; Ataollah Moghim Khavari ; Maria Valenti</i>	
OPTIMAL PLACEMENT OF SECTIONALIZING SWITCHES FOR RADIAL DISTRIBUTION GRIDS	23
<i>Marco Pau ; Ferdinanda Ponci ; Antonello Monti</i>	
SOCIAL AND ECONOMIC IMPACT OF A WASTE-TO-ENERGY STRATEGY APPLIED TO THE WINEMAKING CHAIN: A CASE STUDY IN THE ITALIAN COUNTRYSIDE	29
<i>Mario Lamagna ; Marco Carlucci ; Daniele Groppi ; Davide Astiaso Garcia</i>	
A METHODOLOGY FOR ENERGY PLANNING IN SMALL MEDITERRANEAN ISLANDS, THE CASE OF THE GOZO REGION	35
<i>Cassar Diane ; Massa Erika ; Rikos Evangelos ; Perakis Christoforos ; Pfeifer Antun ; Groppi Daniele ; Krajacic Goran ; Astiaso Garcia Davide</i>	
PANTERA-A PAN EUROPEAN TECHNOLOGY ENERGY RESEARCH APPROACH TOWARDS SYNERGIES FACILITATION ON SMART GRIDS	41
<i>C.N. Papadimitriou ; Venizelos Efthymiou ; M. Shalaby ; Shafi K Khadem ; G. E. Georghiou</i>	
PROBABILISTIC HARMONIC ANALYSIS FOR WAVEFORM DISTORTION ASSESSMENT OF LOW VOLTAGE DISTRIBUTION SYSTEMS WITH PLUG-IN HYBRID ELECTRIC VEHICLES	47
<i>Pierluigi Caramia ; Daniela Proto ; Angela Russo ; Pietro Varilone</i>	
PORTFOLIO STRATEGIES FOR RENEWABLE ENERGY SHARE MAXIMIZATION	53
<i>Stefano Zedda</i>	
A GAN-BASED BATTERY ENERGY STORAGE SYSTEM FOR THREE-PHASE RESIDENTIAL APPLICATION WITH SERIES-STACKED DEVICES AND THREE-LEVEL NEUTRAL POINT CLAMPED TOPOLOGY	57
<i>Milad Moradpour ; Pooya Ghani ; Paolo Pirino ; Gianluca Gatto</i>	
LIBRA: A CLOUD-BASED PLATFORM FOR PRODUCTION AND LOAD AGGREGATION	63
<i>Giulia Troglia ; Stefano Bianchi ; Gianni Viano</i>	
DECENTRALIZED VOLTAGE OPTIMIZATION BASED ON NETWORK PARTITIONING IN DISTRIBUTION SYSTEMS WITH DGS	69
<i>Anna Rita Di Fazio ; Mario Russo ; Michele De Santis</i>	
SYSTEM IMPLEMENTATION AND PRELIMINARY RESULTS OF A COMMUNITY BATTERY ENERGY STORAGE SYSTEM	75
<i>Andreas Armenakis ; Nikolas Chatzigeorgiou ; Stavros Afxenti ; Konstantina Panagiotou ; Venizelos Efthymiou ; George E. Georghiou</i>	
NON-INTRUSIVE LOADS MONITORING TECHNIQUES FOR HOUSE ENERGY MANAGEMENT	81
<i>Barbara Cannas ; Beatrice Canetto ; Sara Carcangiu ; Alessandra Fanni ; Luca Fresi ; Mirco Marceddu ; Carlo Muscas ; Paolo Porcu ; Giuliana Sias</i>	
UPDATED TYPICAL DAILY LOAD PROFILES FOR LV DISTRIBUTION NETWORKS CUSTOMERS	87
<i>Fabrizio Pilo ; Giuditta Pisano ; Matteo Troncia</i>	
SCHEDULED PROFILE AT TSO/DSO INTERFACE FOR REDUCING BALANCING COSTS	93
<i>Nicola Natale ; Fabrizio Pilo ; Giuditta Pisano ; Gian Giuseppe Soma</i>	
RE-SYNCHRONIZATION CONTROL STRATEGY FOR MASTER-SLAVE CONTROLLED MICROGRIDS	99
<i>Alessia Cagnano ; Enrico De Tuglie ; Andrea Cervi ; Riccardo Stecca ; Roberto Turri ; Andrea Vian</i>	

ENHANCED FREQUENCY RESPONSE OF INVERTER DOMINATED LOW INERTIA POWER SYSTEMS	105
<i>Melios Hadjikypris ; Venizelos Efthymiou ; George E. Georghiou</i>	
PROVISION OF FREQUENCY REGULATION SERVICE AND PEAK DEMAND REDUCTION BY DISTRIBUTED BATTERY STORAGE	111
<i>C. Yianni ; V. Efthymiou ; V. Venizelou ; G. E. Georghiou</i>	
ARCHITECTURAL DESIGN OF DECENTRALIZED DEMAND RESPONSE WITH INTEGRATED PEER-TO-PEER TECHNOLOGY	117
<i>Venizelos Venizelou ; Ian Cole ; Venizelos Efthymiou ; George E. Georghiou</i>	
A MULTIPURPOSE ICT PLATFORM FOR SUPPORTING ENERGY TRANSITION: FIRST RESULTS IN FLEXIBILITY PROFILING	122
<i>Ugo Stecchi ; Javier Gomez ; Lourdes Gallego ; Francesca Santori ; Juan Rico</i>	
ELECTRIC VEHICLE LOAD FORECASTING: A COMPARISON BETWEEN TIME SERIES AND MACHINE LEARNING APPROACHES	128
<i>Lubos Buzna ; Pasquale De Falco ; Shahab Khormali ; Daniela Proto ; Milan Straka</i>	
CONCURRENT CONTROL OF MV AND LV NETWORKS FOR ANCILLARY SERVICES PROVISION	133
<i>Marco Agostini ; Fabio Bignucolo ; Massimiliano Coppo ; Jan Marc Schwidtal ; Roberto Turri</i>	
AN ECOSYSTEMIC APPROACH FOR ENERGY TRANSITION IN THE MEDITERRANEAN REGION	139
<i>Cynthia Echave ; Danilo Ceh ; Alexia Boulanger ; Jennifer Shaw-Taberlet</i>	
RENEWABLE ENERGY COMMUNITY WEBGIS AS A CAPITALISATION TOOL FOR THE MEDITERRANEAN REGION	144
<i>Alexia Boulanger ; Marianna Franchino ; Paola Zitella ; Danilo Ceh ; Cynthia Echave ; Jennifer Shaw-Taberlet</i>	
METAHEURISTICS-BASED INPUT SELECTION FOR NEURAL NETWORKS: APPLICATION IN SHORT-TERM LOAD FORECASTING	150
<i>Ioannis P. Panapakidis ; Aggelos S. Bouhouras ; Georgios C. Christoforidis</i>	
ADDRESSING DEMAND RESPONSE INTEROPERABILITY CHALLENGES FOR SMALL PROSUMERS — THE DRIMPAC PROJECT CONCEPT	156
<i>D. Tzovaras ; A. Papanikolaou ; G. Pitsiladis ; I. G. Damousis ; G. Georghiou</i>	
SIZING OF ELECTRICAL AND THERMAL STORAGE SYSTEMS IN THE NEARLY ZERO ENERGY BUILDING ENVIRONMENT - A COMPARATIVE ASSESSMENT	162
<i>Vladimir Gjorgievski ; Angelos I. Nousedilis ; Eleftherios O. Kontis ; Georgios C. Kryonidis ; Georgios A. Barzegkar-Ntovom ; Snezana Cundeva ; Georgios C. Christoforidis ; Grigoris K. Papagiannis</i>	
SOC-BASED BESS CONTROL LOGIC FOR DYNAMIC FREQUENCY REGULATION IN MICROGRIDS WITH RENEWABLES	168
<i>G. Graditi ; R. Ciavarella ; M. Di Somma ; G. Guidi ; M. Valenti</i>	
PERFORMANCE ASSESSMENT OF ELECTRICAL STORAGE ON PROSUMERS VIA PILOT CASE STUDIES	174
<i>Georgios A. Barzegkar-Ntovom ; Eleftherios O. Kontis ; Georgios C. Kryonidis ; Angelos I. Nousedilis ; Grigoris K. Papagiannis ; Georgios C. Christoforidis</i>	
SPLIT-PHASE: A SUSTAINABLE TECHNICAL SOLUTION FOR LOW ENVIRONMENTAL IMPACT POWER TRANSMISSION LINES	180
<i>Alberto Donini ; Roberto Spezje ; Rosario Cortina ; Luciano Zuccolo ; Roberto Turri</i>	
EVALUATION OF DIFFERENT PV POWER FORECASTING SYSTEMS ON GRID-CONNECTED PV PLANTS IN THE MEDITERRANEAN AREA	185
<i>Elena Collino ; Dario Ronzio ; Riccardo Bonanno ; George Partasides</i>	
CHARACTERIZING THE SOLAR IRRADIATION BY MEANS OF SPECTRAL MEASUREMENTS FOR MODELING CPV PRODUCTION	191
<i>Dario A. Ronzio ; Elena Collino</i>	
MODELLING AND OPTIMIZATION APPROACH OF RESIDENTIAL ENERGY HUB: THE GHOTEM PROJECT	197
<i>Andrea Vian ; Fabio Bignucolo ; Michele De Carli</i>	
VALIDATION OF THE DYNAMIC MODEL OF THE PRINCE LAB CHP THROUGH REAL-TIME MEASUREMENTS	203
<i>Andrea Vian ; Andrea Cervi ; Riccardo Stecca ; Alessia Cagnano ; Enrico De Tuglie</i>	
PAGLIA-ORBA-FOCUS ON INNOVATIVE CSP SYSTEM INTEGRATED IN HIGHLY FLEXIBLE TECHNOLOGICAL SMART GRID	209
<i>C. Cristofari ; B. Lecœuvre ; G.A. Faggianelli ; J.L. Canaletti</i>	

TECHNICAL ASSESSMENT OF COUPLED PV AND BATTERY SYSTEMS - A CASE STUDY FROM THE MEDITERRANEAN REGION.....	213
<i>S. Afxentis ; N. Chatzigeorgiou ; V. Efthymiou ; I. Papageorgiou ; A. Armenakis ; G. Papagiannis ; G. Christoforidis ; J. Sancho ; H. Rodrigues ; C. Casimiro ; N. Poize ; T. Pristovnik ; S. Mocci ; A. Rubiu ; G.E. Georghiou</i>	
IMPROVING ENERGY EFFICIENCY IN SMART-HOUSES BY OPTIMIZING ELECTRICAL LOADS MANAGEMENT	219
<i>Cristiano L. Cabrita ; Jânio M. Monteiro ; Pedro J. S. Cardoso</i>	
THE PODCAST PROJECT: AN APPLICATION OF VOLT/VAR OPTIMIZATION TO THE ELECTRIC DISTRIBUTION NETWORK OF SANREMO (ITALY)	225
<i>M. Crosa ; F. D'agostino ; S. Massucco ; P. Pongiglione ; M. Saviozzi ; F. Silvestro</i>	
EXPLORING THE POTENTIAL OF METAHEURISTICS-BASED CLUSTERING IN LOAD PROFILING APPLICATIONS.....	231
<i>Ioannis P. Panapakidis ; Georgios C. Christoforidis</i>	
AN INTEGRATED PROFIT MAXIMIZATION MODEL FOR RETAILERS IN DEREGULATED ENERGY MARKETS	237
<i>Ioannis P. Panapakidis ; Nikolaos E. Koltsaklis ; Georgios C. Christoforidis ; Constantinos E. Parisses</i>	
PHASOR DATA CONCENTRATOR FUNCTIONALITIES TO SUPPORT A MULTI-AGENT CONTROL SYSTEM IN ACTIVE DISTRIBUTION NETWORKS.....	243
<i>Paolo Castello ; Susanna Mocci ; Simona Ruggeri ; Sara Sulis</i>	
ANALYSIS OF 'INCREASE SELF-CONSUMPTION' BATTERY ENERGY STORAGE SYSTEM USE - A RESIDENTIAL CASE STUDY IN CYPRUS.....	248
<i>Nikolas Chatzigeorgiou ; Stavros Afxentis ; Konstantina Panagiotou ; George E. Georghiou</i>	
MONITORING AND ANALYSIS OF RECENT AND ONGOING R&I PROJECTS ON SMART GRIDS AND VECTORS INTEGRATION AT EUROPEAN AND GLOBAL LEVEL	254
<i>Iva Gianinoni</i>	
Author Index	