

2017 International Conference on ENERGY and ENVIRONMENT (CIEM 2017)

**Bucharest, Romania
19-20 October 2017**



**IEEE Catalog Number: CFP17L60-POD
ISBN: 978-1-5386-3944-3**

**Copyright © 2017 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:	CFP17L60-POD
ISBN (Print-On-Demand):	978-1-5386-3944-3
ISBN (Online):	978-1-5386-3943-6

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

Power Systems

Paper Number	Paper Title	Page number
#58	“Advanced Control of a Modular Multilevel High Voltage Direct Current Converter”	1
#61	“Modeling Quadrature Booster in Power System State Estimation in Rectangular Coordinate System”	6
#92	“The Behavior of High Voltage Insulators during the Up-and-Down Procedure”	11
#109	“Energy Storage for Reaching 100% CO2 Free and 100% RES – Preliminary Case Study for Romania”	16
#18	“Power System Harmonics and Interharmonics Analysis Using Synchronous Reference Frames and Frequency Adaptive Moving Average Windows”	21
#56	“Improving Predictive Maintenance for HVDC Transmission Systems through Analytic Hierarchy Process”	26
#12	“Measurement Campaign and Experimental Results of an Islanded Microgrid”	31
#132	“Integration of Photovoltaics in a Sustainable Irrigation System for Agricultural Purposes”	36
#21	“Algorithm for Optimal Configuration of Electric Networks”	41
#37	“Embedded Monitoring and Management Software Unit for Distributed Generation System in Electric Networks”	45
#13	“Optimum Location and Size of Capacitor Banks to Reduce Losses in Power Distribution Networks using Genetic Algorithm”	49
#75	“The Training Model of 110 kV Step-down Substation in 1/10 Scale”	54
#17	“Price Based Unit Commitment for Bidding Strategies in Turkish Market Under Unit and System Constraints”	59

#88	"Efficiency Assessment of the Methods of Power Loss Distribution Between Electricity Market Participants"	64
#131	"Load Curves Modelling using Algebraic Polynomials"	69
#99	"Distributed Synthetic Inertia Control in Power Systems"	74
#107	"Design and Simulation of PI-Type Control for the Buck Boost Converter"	79
#27	"Improvement of Differential Protection Performance by External Faults Associated with a Current Transformer Saturation"	83
#63	"The Interphase Power Controller. Static and Dynamic aspects"	87
#45	"Conceiving and Designing a Helmholtz Type Coil to Simulate the Magnetic Field Orientation in the Terrestrial Atmosphere" - not presented	

Environmental Impact

Paper Number	Paper Title	Page number
#8	"A Procedure to Develop Elevation-Area-Capacity Curves of Reservoirs from Depth Sounding Surveys"	92
#101	"Determination of Oxygenation Performances of Aeration Equipment"	97
#115	"Water Flow Structure Optimization Between the Screenings and Grit Removals in a Wastewater Plant"	101
#32	"The Energy Method to Protect the Environment from Waste in the Leather Industry"	105
#84	"An Integrated Assessment of Energy Recovery Options from Municipal Solid Waste"	110
#123	"Total and Suspended Solids Removal Evaluation in Effluent from Anaerobic Bioreactor and Effluent from Cyclic Ozonation-Biotreatment in Dyeing Industry Wastewater"	115

Treatment”

#133	“Local Environmental Impact of Wood Combustion in Agro-Tourism Structures”	120
#125	“Ambient Air Pollution Due to Combustion of Olive Cake as a Source of Energy” - not presented	
#77	“Serious Gaming: Environmental Impact through Math”	124
#70	“Acoustic Measurements for Two Configurations of Acoustic Casings with Applications on Ambient Noise Pollution”	129
#76	“Life Cycle Environmental Assessment of the Production of Rare Earth Elements from Gold Processing”	134
#82	“Pollution Assessment of Historically Contaminated Soils with Petroleum Products”	138
#87	“Evaluation of the Efficiency of Combining the Electrochemical Remediation and Soil Flushing Methods in the Soil Contamination with Diesel”	143
#97	“Research on Thermal Comfort and Indoor Air Pollution in a Passenger Car”	148
#124	“Oil in Water Dispersion: Effects of Dispersed Phase Viscosity and Agitation Speed in the Stirred Tank Reactor”	153

Energy Efficiency

Paper Number	Paper Title	Page number
#74	“New Technology in Comfort Cooling Applications: Experimental Study on Paraffin in Water Emulsion”	157
#100	“Study of Thermal Energy Storage using Phase Change Materials”	162
#35	“Aspects Regarding Fouling of the Heat Exchanger Coils and	167

Filters on the Performance of Packaged Air to Air HVAC System"

#137	"Energy Efficient Single Detached Dwellings beyond Ontario Building Code"	172
#10	"Energy Saving Investigation of Heat and Energy Recovery Ventilation Units"	177
#102	"Heat Losses in District Heating Network in Dynamic Regimes"	182
#20	"Energy Efficiency Study of the Paper Making Drying Process"	187
#11	"Study the Effects of no Nominal Conditions on the Performance of High Efficiency Induction Motor"	192
#26	"Improving Energy Efficiency for Public Lighting of Pedestrian Crossings"	197
#49	"Experimental Validation Data for CFD of Heat Transfer Processes in a New Thermosyphon Heat Exchanger"	202
#50	"Increasing Energy Efficiency of the Gases Production Process in Bakery Ovens"	207
#78	"Top-Down Model for the Calculation of Energy Savings"	211

Hydro Power Engineering

Paper Number	Paper Title	Page number
#130	"Floating Vertical Axis Wind Turbine - OWLWIND Project"	216
#44	"Power Prediction Method Applicable to Horizontal Axis Hydrokinetic Turbines"	221
#39	"Discharge Measurement in Low Head Hydro Power Plants"	226
#68	"Implementation of the Standard Wall Function in Numerical Computation Software"	231

#79	“Optimal Pump Scheduling Strategies Accounting for Background Leakages and Energy Cost”	236
#105	“Reducing Background Leakages and Energy Consumption in a Real WDN by Optimal DMA Design”	241
#103	“Hydraulic Balancing of the Cooling Water System of a Pumped Storage Power Plant”	246
#122	“Energy Consumption Due to Pipe Background Leakage in a District Water Distribution System in Bucharest”	251
#121	“HBMOA Computational Efficiency Assessed for a Hydropower Optimization Problem”	255
#118	“Assessment of the Possibility to Model a Toe Dam Hydropower Plant Using Dedicated Software”	260
#57	“Modified Honey Bees Mating Algorithm for Optimal Weekly Operation of a Pumped Storage Plant”	265
#127	“Assessing the Opportunity to Use the Infrared Thermography Method for Predictive Maintenance of Hydrostatic Pumps”	270
#128	“Image Processing Approach for Estimating the Degree of Surface Degradation by Corrosion”	275

Nuclear Power Energy

#23	“Aspects Regarding the Steam Generator Tube Plugging at the Support Plate Entrance Using a High Speed Mechanical Deformation Procedure”	279
#34	“Neutronic Calculation and Comparison of Two Proposed Molten Salt Reactor Geometries”	284
#52	“Review of the Intermittent Buoyancy Induced Flow Core Cooling for a CANDU Type Reactor”	288
#62	“On Some Aspects of the Multiunit Probabilistic Safety Analyses Models”	293
#64	“Key Parameters in the Early Stages of a Station Blackout Analysis in a CANDU 6 Reactor Using RELAP/SCDAPSIM”	298

#71	“Determination of Americium and Plutonium Isotopes Out of Spent Nuclear Fuel Solution using Electrodeposition Technique”	303
#108	“Loop for Studying the Flow of Lead in a Thermal-hydraulic Circuit. Technical Design”	306

Renewable Energies

Paper Number	Paper Title	Page number
#19	“Flexible Harmonic Domain Model of a Photovoltaic System for Steady-State Analysis”	311
#33	“Implementation of Primary Frequency Regulation on Fully Rated Wind Turbine Generators”	316
#55	“Single - Stage Single - Phase Grid - Connected Photovoltaic System with Current Ripple Mitigation Based on Nonlinear Control”	321
#126	“A Direct Sensitivity Analysis of a Piezoelectric Energy Harvester”	326
#66	“Numerical Study of the Flow Inside a Wind Trapping System”	330
#60	“Experimental Validation of a Permanent-Magnet Micro-Wind Turbine Generator with Counter Rotating Rotors”	335
#91	“Sequential Optimization of a Solar Stirling System”	339
#81	“Design Optimization of a Flywheel using SolidWorks Modeling and Simulation Capabilities”	344
#85	“Functional Assessment System of Solar Power Plant Energy Production”	349
#40	“The Solar Radiation Influence on the Microclimate in the Healing Tunnels/Rooms for Grafted Vegetables”	354
#53	“The Evolution of Green Certificate Support Scheme for Promoting Renewable Energy in Romania”	359

#83	"Storage Tank Mass Control for Optimum Solar-Powered Absorption Cooling System Operation"	363
#96	"Mathematical Modeling and Simulation of a Thermal System using Solar Radiation as Energy Source"	368
#86	"Thermal Energy Production from Closed Geothermal Reservoirs using Reinjection"	372
#104	"Biomass O.R.C. Cogeneration - A Case Study"	376
#111	"Biogas Production Modeling and Simulation in Low End Conditions"	381
#119	"Solution for Efficient Combustion of the Biogas Obtained Depending on the Characteristics of the Anaerobic Fermentation of Animal Protein"	385
#136	"Transitory Regime of Wood Biomass Air Gasification"	390

Fluid Mechanics and Applications

Paper Number	Paper Title	Page number
#72	"Numerical Study of the Secondary Phase Dispersion in a Particle-Laden Flow"	394
#129	"Experimental Investigation on the Behavior of a Tall and Slender Building Placed in a Turbulent Boundary Layer"	399
#65	"Hydraulic Physical Scale Modeling of a Complex Sewage System"	404
#67	"Coupling of a Thermo-Mechanical Model for NTE to a Fluid Solver"	409
#46	"Jetting Flow and Diffusion Process in the Vicinity of Convex Surfaces"	414
#59	"Influence of Surface Structure on Impinging Jets Aerodynamics"	419
#25	"Flow Focusing at the Interface of Two Immiscible Liquids"	424

#89	“Improving the Hydraulic Efficiency of Centrifugal Impellers by using Reverse Engineering – Case Study of a Centrifugal Pump”	428
#95	“Influence of the Volute Design on Performances of a Centrifugal Compressor”	432

Energy & Environment for Buildings

Paper Number	Paper Title	Page number
#112	“Transpired Solar Collectors Energy Efficiency Improvement Using Inertial Materials”	437
#116	“The Influence of the Inlet Angle of Vehicle Air Diffuser on the Thermal Comfort of Passengers”	442
#117	“Numerical and Experimental Study for the Development of an Advanced Model of an Operating Room with Surgeons and Patient”	447
#42	“Exterior Shades Energy Efficiency for a Mixt, Office - Residential Building in Bucharest”	452
#41	“Thermal Bridges Evaluation for a Passive House Building in Romanian Southern Climate”	456
#14	“Behavior of Confined Masonry Walls in Dual Buildings”	460
#15	“Importance of Masonry Infill Walls for Framed Buildings”	465

Smart Cities

Paper Number	Paper Title	Page number
#36	“The Importance of Building Clusters Trading in Smart Cities”	470
#47	“Sewer System Calibration for Smart Cities”	475
#54	“Load Profiles in Smart Cities”	480

#93	“Stochastic Programming Approach for TEP Optimization Considering RES Integration in Electricity Market”	485
#110	“Electric Vehicle Use in Public Fleets: The Case of the Genoa University”	490
#134	“Smart Metering Platform as a Solution for Data Analysis”	495
#7	“Taggs of Price in Managing Deficits” – not presented	

Fossil Fuels Power and Heat Generation

Paper Number	Paper Title	Page number
#43	“Post-combustion CO₂ Capture Process Applied to Flue Gases with High CO₂ Contents: Micro-pilot Experiments and Simulations”	500
#22	“CO₂ Adsorption Process Simulation in ASPEN Hysys”	505
#29	“Compact Solutions for Heat Recovery from Cogeneration Modules Engines - Case Study for a 500 kW(e) Unit”	510
#51	“Increasing Energy Efficiency of a Combined Heat and Power Plant Using the Heat Storage”	515
#98	“Increasing the Operational Efficiency of a Heat Engine Plant Through Implementation of Trigeneration”	520
#114	“Performance Improvement of a Romanian Cogeneration Plant Through Optimal Coverage of Heat Load”	524
#113	“Special Situations Regarding the Transition of District Heating Systems. Technical and Economic Analysis Regarding the Use of Different Technologies in Transition Sources”	528