

2015 5th International Youth Conference on Energy

(IYCE 2015)

Pisa, Italy
27 – 30 May 2015



IEEE Catalog Number: CFP1535J-POD
ISBN: 978-1-4673-7173-5

TABLE OF CONTENTS

A MIXED STANDARD/CUSTOM DESIGN STRATEGY TO MINIMIZE COST AND MAXIMIZE EFFICIENCY FOR PICOHYDRO POWER POTENTIAL HARVESTING	1
<i>Andolfatto, Loic ; Euzenat, Charly ; Vagnoni, Elena ; Munch-Alligne, Cecile ; Avellan, Francois</i>	
USING OF PHASE CHANGE MATERIALS IN BUILDING ENERGY SYSTEMS	9
<i>Farkas, Rita ; Andrassy, Zoltan</i>	
A SMART HOME DEMAND-SIDE MANAGEMENT SYSTEM CONSIDERING SOLAR PHOTOVOLTAIC GENERATION	17
<i>Baldauf, Akos</i>	
AN INTEGRATED LEVELIZED COST MODEL FOR POWER GENERATION	22
<i>Bank, Mohammad Reza ; Samani, Narjes ; Yazdizadeh, Ali Reza ; Duchene, Gerard</i>	
DEVELOPMENT OF SIMULATION-BASED METHODOLOGY FOR ENERGY PERFORMANCE CERTIFICATION OF BUILDINGS	28
<i>Banoczy, Emese</i>	
SENSITIVITY ANALYSIS IN THE CALCULATION OF ATMOSPHERIC DISPERSION OF RADIOACTIVE MATERIAL	36
<i>Batta, Alexandra ; Homolya, Emese</i>	
VOLTAGE CONDITIONS ESTIMATION IN FREQUENCY DOMAIN OF POWER SYSTEMS BASED ON MEASURING POWER QUALITY	44
<i>Becirovic, V. ; Pavic, I. ; Curevac, S. ; Hanjalic, S. ; Nikolic, B. ; Dozic, N.</i>	
OPTIMAL CONTROL OF SMALL HYDROPOWER PLANTS AND POWER TRANSFORMER TAP CHANGER IN DISTRIBUTION NETWORK IN ORDER TO MINIMIZE ACTIVE POWER LOSSES	52
<i>Becirovic, V. ; Hasanagic, M. ; Dozic, N. ; Hanjalic, S. ; Curevac, S. ; Nikolic, B.</i>	
DESIGN & PERFORMANCE OF A HYDRAULIC MICRO-TURBINE WITH COUNTER-ROTATING RUNNERS	60
<i>Biner, D. ; Hasmatuchi, V. ; Avellan, F. ; Munch-Alligne, C.</i>	
AMPACITY OF MV UNDERGROUND CABLES: THE INFLUENCE OF SOIL THERMAL RESISTIVITY	70
<i>Calcara, L. ; Pompili, M. ; Cauzillo, B. A.</i>	
CONSIDERATIONS ON DC SIDE GROUNDING CONFIGURATIONS OF LVDC MICROGRIDS	75
<i>Carminati, M. ; Ragaini, E.</i>	
A NOVEL EVALUATION CRITERION FOR GSHP SYSTEMS BASED ON OPERATIVE PERFORMANCES	81
<i>Conti, P.</i>	
VALIDATION OF FREE SURFACE VORTEX ANALYTICAL MODELS	89
<i>Cristofano, Luca ; Nobili, Matteo</i>	
FREQUENCY SUPPORT BY DISTRIBUTED DEMAND SIDE MANAGEMENT OF BUILDING COOLING SYSTEMS	98
<i>Crosa Di Vergagni, M. ; Conte, F.</i>	
GEN IV SCWR CLADDING ANALYSIS PROJECT: NICKEL CONTENT IN SCWR CLADDING MATERIAL	103
<i>Brar, Charanjot ; Davis, William ; Mann, Eric ; Ridley, Clifford ; Wirachowsky, Brenton ; Rangacharyulu, Chary ; Guzonas, David ; Leung, Laurence</i>	
A DATA CENTER PERFORMANCE COMPARISON ANALYSIS BETWEEN TIER III ARCHITECTURE AND A CCHP ALTERNATIVE SOLUTIONS	111
<i>De Angelis, F. ; Grasselli, Umberto</i>	
SCALE MODEL OF A VERY HIGH VOLTAGE ALTERNATING CURRENT POWER TRANSMISSION LINE INTEGRATED INTO A SMART GRID	117
<i>Blanes, Jorge ; Borge-Diez, David ; Gonzalez-Martinez, Alberto ; De Simon-Martin, Miguel</i>	
ANALYSIS OF THE IMAGE PRODUCED BY SCHEFFLER PARABOLOIDAL CONCENTRATOR	124
<i>Dib, E. A. ; Fiorelli, F. A. S.</i>	
EXTENSION OF THE MELCOR CODE FOR ANALYSIS OF LATE IN-VESSEL PHASE OF A SEVERE ACCIDENT	131
<i>Dietrich, P. ; Kretschmar, F. ; Miasoedov, A. ; Class, A. ; Villanueva, W. ; Bechta, S.</i>	
DIRECT ENERGY CONVERSION OF HEAT TO ELECTRICITY USING AMTEC	139
<i>Diez De Los Rios Ramos, N. ; Onea, A. ; Scherrer, S. ; Weisenburger, A. ; Hering, W.</i>	

A METHODOLOGY FOR SUPPORTING THE PLANNING OF MICROGRIDS BASED ON COMPOSABLE TOOLS: A CASE IN BHUTAN	147
<i>Duus, Hakon ; Mandelli, Stefano ; Molinas, Marta ; Fosso, Olav Bjarte</i>	
DESIGNING A STEAM JET EJECTOR AND ITS MEASURING EQUIPMENT	153
<i>Ekes, D. ; Grof, Gy. ; Katona, B.</i>	
EVALUATION OF THE MECHANICAL PROPERTIES OF IRRADIATED NPP'S STRUCTURAL MATERIALS USING SEMIDESTRUCTIVE TESTING METHOD	160
<i>Eliasova, Ivana ; Kopriva, Radim ; Falcnik, Michal</i>	
VISUAL APPROACH TO ASSESS THE ENVIRONMENTAL IMPACT OF OVERHEAD TRANSMISSION LINES	165
<i>Erdmann, Niels ; Schegner, Peter</i>	
THE METHOD DEVELOPMENT SEQUEX: BIOAVAILABILITY OF TRACE ELEMENTS FOR BIOGAS PRODUCTION.....	171
<i>Feher, Adam ; Loewen, Achim ; Fritz, Thomas ; Nelles, Michael</i>	
STRUCTURE OF THE TURBULENT FLOW IN THE BREST-OD-300 WIRE-SPACED FUEL ASSEMBLIES.....	179
<i>Fomichev, Dmitry V. ; Solonin, Vladimir I.</i>	
ACCUMULATION SYSTEM OF ELECTRIC VEHICLE AND ITS SECONDARY EXPLOITATION	185
<i>Friedrichkova, K. ; Vala, D. ; Horak, B.</i>	
ANALYSIS OF PV CURVES OF A SYSTEM WITH SERIAL CONTROLLABLE FACTS DEVICES	191
<i>Gasperic, S. ; Mihalic, R.</i>	
ASSESSMENT OF ENERGY STORAGE EFFECT INTO AUTOMATIC RECLOSING IN SMART GRID.....	197
<i>Gorte, O. ; Kiryanova, N. ; Khmelik, M. ; Arestova, A. ; Baluev, D. ; Prankevich, G. ; Markin, V.</i>	
FAULT-TOLERANT CONTROL FOR PEMFC AND ITS DC/DC CONVERTER	204
<i>Guilbert, Damien ; Gaillard, Arnaud ; N'Diaye, Abdoul ; Djerdir, Abdesslem</i>	
SMART ENERGY MONITORING SYSTEM WITH ADE7758 IC.....	210
<i>Guimaraes, A. M. F. ; Freitas, T. T. ; Griner, H. ; De Almeida, T. H. S.</i>	
INVERTER CONTROL MODELING IN DIGSILENT POWER FACTORY TO ANALYZE THE EFFECTS OF DG UNITS ON THE DISTRIBUTION GRID	215
<i>Hackel, Kristof ; Farkas, Csaba ; Dan, Andras</i>	
FORECASTING RISK AND RETURN TO PROVIDE ELECTRICITY IN BATAM, INDONESIA BY USING EFFICIENT FRONTIER.....	222
<i>Hakim, A. ; Hanggraeni, D. ; Ragawino, O.</i>	
ARC PROTECTION DURING LIVE-LINE MAINTENANCE ON HIGH VOLTAGE SYSTEMS	230
<i>Halasz, Balint Gergely ; Gocsei, Gabor ; Nemeth, Balint ; Cselko, Richard ; Bokor, Tamas</i>	
ENERGY MANAGEMENT MODEL	236
<i>Hambalko, Zsuzsa ; Bajor, Tibor ; Szente, Szabolcs</i>	
LEGAL AND POLICY INSTRUMENTS TO FACILITATE DEVELOPMENT FOR RENEWABLE ENERGY	242
<i>Harabut, Chattaporn</i>	
TEMPERATURE DISTRIBUTION MEASUREMENTS IN THE POOL OF TRIGA MARK II REACTOR	247
<i>Henry, R. ; Matkovic, M. ; Tiselj, I.</i>	
CATALYTIC HYDROGENATION OF CARBON DIOXIDE TO METHANOL UNDER SUPERCRITICAL CONDITIONS.....	253
<i>Hocke, E. ; Kommoss, B. ; Vogel, G. H.</i>	
DESIGN AND DEVELOPMENT OF A PICO HYDRO TURBINE SYSTEM FOR THE USE IN DEVELOPING COUNTRIES.....	256
<i>Hofmeister, J. ; Krebs, S. ; Schickhuber, G. ; Scharfenberg, G.</i>	
ANALYSIS AND MODELING OF HPP TALA/BHUTAN FOR NETWORK RESTORATION STUDIES	263
<i>Holst, A. ; Karchung ; Sharma, D. ; Chhetri, R.</i>	
PARAMETRIC ANALYSIS OF SOLAR HOT WATER PRODUCTION IN “COMMI-BLOCK” BUILDINGS.....	271
<i>Horvath, M. ; Hrabovszky-Horvath, S. ; Csoknyai, T.</i>	
GRID CONNECTED WIND-PHOTOVOLTAIC HYBRID SYSTEM	276
<i>Laabidi, Houda ; Mami, Abdelkader</i>	
“GEPPETTO EFFECTS ON RESIDENTIAL BUILDINGS' HEAT DEMAND	284
<i>Iftime, S. ; Brabete, A. ; Bitir-Istrate, I. ; Necula, H.</i>	

AN OIL REFINERY PRODUCTION OPTIMIZATION.....	289
<i>Kancijan, Marko ; Ivanjko, Marin ; Ilak, Perica ; Krajcar, Slavko</i>	
IMPLEMENTATION OF A MULTI-AGENT BASED VOLTAGE CONTROL METHOD FOR A DISTRIBUTION SYSTEM	300
<i>Jeong, Mu-Gu ; Kang, Hyun-Koo ; Chung, Il-Yop ; Moon, Seung-Ill</i>	
OPTIMAL ANALYSIS OF BATTERY ENERGY STORAGE FOR REDUCTION OF POWER FLUCTUATION FROM PV SYSTEM IN MAE HONG SON PROVINCE	308
<i>Jintanasombat, Borirat ; Premrudeepreechacharn, Suttichai</i>	
INFLUENCE OF A DEAD TIME DURATION ON THE INPUT CURRENT SPECTRUM OF VOLTAGE-SOURCE ACTIVE RECTIFIERS.....	314
<i>Josefova, T. ; Kus, V.</i>	
DIY SOLAR COLLECTOR PROJECT, A NEW APPROACH.....	320
<i>Kallo, Peter</i>	
OLTC AND MULTIPLE SVRS IN DISTRIBUTION SYSTEM BY USING DATABASE.....	323
<i>Kawano, Shunsuke ; Yoshizawa, Shinya ; Fujimoto, Yu ; Hayashi, Yasuhiro</i>	
DETERMINING THE ENERGY SUPPLY SECURITY OF HUNGARY USING THE S/D INDEX	329
<i>Kekes, Matyas ; Gabor, Lipcsei</i>	
THE EFFECTS OF ALTERNATIVE CERAMIC FUELS ON THE US-APWR NUCLEAR POWER PLANT OPERATIONAL TIME.....	335
<i>Saadi, M. Kheradmand ; Bashiri, B.</i>	
DEVELOPMENT OF A SIMULATOR PROGRAM FOR THE TRAINING REACTOR OF THE BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS	340
<i>Kovacs, Istvan Soma</i>	
ENERGY CO-OPERATIVES BUSINESS MODELS: INTERMEDIATE RESULT FROM EIGHT CASE STUDIES IN SOUTHERN GERMANY	346
<i>Kuller, Ph. ; Dorsch, N. ; Korsakas, A.</i>	
MODELING OF CIGRE BENCHMARK HVDC SYSTEM USING PSS/E COMPARED WITH PSCAD.....	354
<i>Kwon, Do-Hoon ; Moon, Hyeon-Jin ; Kim, Rae-Gyun ; Kim, Chan-Gi ; Moon, Seung-Ill</i>	
MODELLING OF A DYNAMIC COOPERATION BETWEEN A PV ARRAY AND DC BOOST CONVERTER.....	362
<i>Latkova, M. ; Bahernik, M. ; Bracinik, P. ; Hoger, M.</i>	
AN INVESTIGATION INTO COMBINED CONCENTRATED PHOTOVOLTAIC AND FLUIDIC THERMAL EXTRACTION IN HARNESSING THE POWER OF THE SUN	369
<i>Kronland, Michael J. ; Leak, Nicholas B. ; Randall, Joseph E. ; Womack, Cory D. ; Elsayy, Ahmed E.</i>	
STRATEGIC PLANNING IN THE ENERGY SECTOR OF HUNGARY	374
<i>Lipcsei, G. ; Bihari, P.</i>	
SUBSTRATE CONCENTRATION DEPENDENCY OF ELECTRICITY PRODUCTION IN MICROBIAL FUEL CELLS.....	379
<i>Lorant, Balint ; Loka, Mate ; Tardy, Gabor M.</i>	
DYNAMIC SIMULATION OF A SOLID BIOMASS POWER PLANT, BASED ON EFMGT: TWO DIFFERENT APPROACHES.....	386
<i>Ludovici, G. ; Casella, F.</i>	
CYCLE LIFE EVALUATION OF LITHIUM CELLS SUBJECTED TO MICRO-CYCLES	393
<i>Lutzemberger, G.</i>	
PHASE EXCITATION BOOSTING OF ASYNCHRONIZED SYNCHRONOUS GENERATOR FOR TRANSIENT STABILITY IMPROVEMENT	398
<i>Olga, Malozemova ; Pavel, Chusovitin ; Nikita, Mukhlinin</i>	
DEEP GEOLOGICAL REPOSITORY FOR DISPOSAL OF NUCLEAR WASTE IN THE CZECH REPUBLIC	403
<i>Dvorakova, M. ; Vencl, M. ; Becvarikova, T.</i>	
COMPARISON OF DIFFERENT SOLAR ENERGY UTILIZATION METHODS: PHOTOVOLTAIC SYSTEMS AND SOLAR THERMAL POWER PLANTS.....	407
<i>Mayer, Martin Janos</i>	
CALCULATING THE ENVIRONMENTAL COST OF THE NUCLEAR POWER PLANTS ANGRA 1, 2 AND 3 USING THE PROGRAM SIMPACTS.....	414
<i>Menzel, F. ; Sabundjian, G. ; Stecher, L. C. ; Cavalieri, T.</i>	
DIAGNOSIS OF PEMFC FOR AUTOMOTIVE APPLICATION	422
<i>Mohammadi, Ali ; Djerdir, Abdesslem ; Steiner, Nadia Yousfi ; Bouquain, David ; Khaburi, Davood</i>	
IRON-CATALYZED HYDROGENATION OF CARBON DIOXIDE TO HYDROCARBONS/FUELS IN CONDENSED PHASE.....	428
<i>Mokou, C. ; Beisswenger, L. ; Vogel, H. ; Klemenz, S. ; Albert, B.</i>	

EVALUATION OF POWER FLOW SOLUTIONS IN THE PRESENCE OF SECONDARY VOLTAGE CONTROL	434
<i>Moraes, G. R. ; Salgado, R. S.</i>	
CHALLENGES AND OPPORTUNITIES FOR UNIVERSAL ACCESS TO ELECTRICITY IN THE AMAZON	440
<i>Muniz, R. N. ; De Sa, J. A. S. ; Da Rocha, B. R. P.</i>	
DYNAMICS OF DFIG CONTROLLED BY ROTOR SIDE CONVERTER IN WIND ENERGY	446
<i>Stumpf, Peter ; Berei, Jozsef ; Nagy, Istvan ; Vajk, Istvan</i>	
DYNAMIC DISCRETE MODEL FOR ELECTRICITY PRICE FORECASTING	454
<i>Nowakowska, Liliana</i>	
MAGNETOHYDRODYNAMIC HEAT EXCHANGE IN NEXT-GENERATION POWER PLANTS	460
<i>Ognerubov, D. ; Listratov, Ya. ; Sviridov, V. ; Zikanov, O.</i>	
ENERGY MANAGEMENT OF A “POCKETQUBE” SATELLITE	467
<i>Olaszi, Balint David ; Jozsa, Viktor ; Ladanyi, Jozsef</i>	
OVERVIEW OF A NEW DYNAMIC LINE RATING SYSTEM, FROM MODELLING TO MEASUREMENT	472
<i>Balango, David ; Pacsonyi, Imre ; Nemeth, Balint</i>	
WHOLESALE ENERGY MARKET MONITORING: ACER AND THE TECHNICAL IMPLEMENTATION OF REMIT	478
<i>Papageorgiou, S.</i>	
ECONOMIC MODELLING OF ENERGY STORAGE PLANTS IN HUNGARY	482
<i>Papp, M. G.</i>	
SERVICE CONTINUITY IN HOSPITALS: OVERLOAD RISKS IN OPERATING THEATERS	489
<i>Parise, L. ; Lamedica, R.</i>	
DECOMMISSIONING OF CANDU FUEL INTERMEDIARY REPOSITORY	495
<i>Budu, Andrei Razvan ; Pavel, Gabriel Lazaro</i>	
ASSESSMENT OF RENEWABLE ENERGY RESOURCES AND THE USE OF HYDRO POWER FOR FLUCTUATION COMPENSATION IN CAMEROON	501
<i>Pendieu Kwaye, M. ; Bendfeld, J. ; Anglani, N.</i>	
ASSESSMENT OF RENEWABLE ENERGY RESOURCES IN CAMEROON AND SPECIAL REGARDS ON ENERGY SUPPLY	506
<i>Pendieu Kwaye, M. ; Bendfeld, J. ; Anglani, N.</i>	
RELIABILITY-BASED ECONOMIC EVALUATION OF POWER PLANT EQUIPMENT	513
<i>Peter, N.</i>	
THE BEST-ESTIMATE PLUS UNCERTAINTY (BEPU) CHALLENGE IN THE LICENSING OF CURRENT GENERATION OF REACTORS	521
<i>Petruzzi, Alessandro ; Cherubini, Marco ; Lanfredini, Marco ; De Luca, Domenico</i>	
THE POSSIBILITIES OF RDF/SRF UTILIZATION IN HUNGARY	528
<i>Pintacsi, Daniel ; Bihari, Peter</i>	
IMPACTS OF ELECTRIC VEHICLE CHARGERS ON THE POWER GRID	537
<i>Pinter, Laszlo ; Farkas, Csaba</i>	
DESIGN AND TESTING OF HORIZONTAL AXIS WIND TURBINE BLADES AND COMPONENTS TO INCREASE EFFICIENCY	543
<i>Rapin, Andrew ; Commet, Sean ; Monroe, Adam ; Hendley, Josh ; Pourmovahed, Ahmad</i>	
EVALUATION OF ENGINEERING AND ECONOMIC FEASIBILITY OF MICRO-HYDROPOWER PLANT PROJECT	553
<i>Wongphat, Monton ; Premrudeepreechacharn, Suttichai</i>	
SOLAR ENERGY ANALYSIS SUPPORTED ON HYDROPOWER MODELLING FOR TAKING ADVANTAGE OF PHOTOVOLTAIC POWER PLANTS	559
<i>Relva, S. G. ; Udaeta, M. E. M. ; Gimenes, A. L. V. ; Grimoni, J. A. B.</i>	
DECISION SUPPORT SYSTEM BASED ON GENETIC ALGORITHMS FOR OPTIMIZING THE OPERATION PLANNING OF HYDROTHERMAL POWER SYSTEMS	567
<i>Alencar, T. R. ; Gramulia, J. ; Otobe, R. F. ; Asano, P. T. L.</i>	
AN OVERVIEW OF NUCLEAR POWER	573
<i>Robertson, L. K. ; Lamont, L. A.</i>	
COMPARISON OF MICRO INVERTERS BASED ON PRACTICAL ANALYSIS	579
<i>Sadati, A. M. ; Krauter, S. ; Bendfeld, J.</i>	
SIMULATION AND CONTROL OF HYBRID RENEWABLE ENERGY SYSTEM CONNECTED TO THE GRID	585
<i>Saib, S. ; Gherbi, A.</i>	

LOCATION OF DISTRIBUTED GENERATION BY THE PERSPECTIVE OF SUSTAINABLE DEVELOPMENT	591
<i>Cardoso De Lima, G. S. ; Leite, P. T. ; Canesso, B. C. ; Zambon, K. L.</i>	
INVESTIGATION OF GEOTHERMAL POWER GENERATION ON ABANDONED HYDROCARBON WELLS	597
<i>Mayer, M. J. ; Nyerges, V. ; Schroth, A.</i>	
EXPERIMENTAL INVESTIGATION OF A TWIN VORTEX BREAKDOWN ON THE DRAFT TUBE MODELS	604
<i>Tsoy, M. A. ; Skripkin, S. G. ; Shtork, S. I.</i>	
ANALYSIS OF METHODS TO REDUCE THE GROUND RESISTANCE OF TRANSMISSION LINE TOWERS	609
<i>Smohai, Balazs ; Ladanyi, Jozsef</i>	
THE EFFECTS OF THE OVERSIZING ON THE HEATING AND COOLING SYSTEMS	615
<i>Soki, R.</i>	
THE ASSESSMENT OF DOMESTIC SIZE PHOTOVOLTAIC ENERGY PRODUCTION	623
<i>Takacs, Borbala</i>	
RESEARCH ON CHARACTERISTICS AND POWER FLOW CONTROL STRATEGY OF ROTARY POWER FLOW CONTROLLER.....	629
<i>Zhenlong Tan ; Chunpeng Zhang ; Qirong Jiang</i>	
NEUTRONIC ANALYSIS OF EUROPEAN SODIUM-COOLED FAST REACTOR USING MONTE CARLO	637
<i>Thomas, D. P.</i>	
THE INFLUENCE OF THERMAL PROPERTIES OF MATERIALS ON ELECTRIC INSULATING SYSTEMS OF AIR-COOLED TURBOGENERATORS.....	645
<i>Tomaskova, T. ; Trnka, P.</i>	
A HYBRID ARTIFICIAL NEURAL NETWORK FOR VOLTAGE SECURITY EVALUATION IN A POWER SYSTEM.....	650
<i>Zhukov, Aleksey ; Tomin, Nikita ; Sidorov, Denis ; Panasetsky, Daniil ; Spirayev, Vadim</i>	
DEVELOPMENT OF AN APPROACH TO ASSESS THE INVESTMENT DECISION IN HIGH-CAPACITY BATTERIES INSTALLED IN PLUS-ENERGY BUILDINGS.....	658
<i>Weissmann, C. ; Weber, T.</i>	
RECENT PROGRESS IN MAGNETIC MIRROR PLASMA PARAMETERS RELEVANT TO FUSION APPLICATIONS	664
<i>Yakovlev, D. V.</i>	
PUBLIC LIGHTING - ROAD TO ENERGY EFFICIENCY.....	670
<i>Zdunic, G.</i>	
POTENTIALS OF SUSTAINABLE ENERGY MANAGEMENT IN BUILDINGS	676
<i>Katzenbach, Rolf ; Clauss, Frithjof ; Zheng, Jie</i>	
Author Index	