

5th IET International Conference on Clean Energy and Technology (CEAT 2018)

IET Conference Publications 749

Kuala Lumpur, Malaysia
5 - 6 September 2018

ISBN: 978-1-5108-8184-6

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by the Institution of Engineering and Technology
All rights reserved.

Printed by Curran Associates, Inc. (2019)

For permission requests, please contact the Institution of Engineering and Technology
at the address below.

Institution of Engineering and Technology
P. O. Box 96
Stevenage, Hertfordshire
U.K. SG1 2SD

Phone: 01-441-438-767-328-328
Fax: 01-441-438-767-328-375

www.theiet.org

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
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

GROWTH AND CHARACTERIZATION OF AL-ALN FILMS BY PLASMA-ASSISTED REACTIVE EVAPORATION	1
<i>M. Alizadeh ; B. Shokri ; N. Abd Rahim</i>	
FORECASTING OF SOLAR RADIATION IN MALAYSIA USING THE ARTIFICIAL NEURAL NETWORK AND WAVELET TRANSFORM.....	6
<i>N. A. Abdullah ; S. Koohi-Kamali ; N. Abd Rahim</i>	
MATHEMATICAL MODEL OF GRID CONNECTED FLYBACK INVERTER IN THE TIME DISCRETE DOMAIN.....	14
<i>R. Za'Im ; J. Jamaludin ; N. Abd Rahim</i>	
INVESTIGATION ON THE LOAD FACTOR PERFORMANCE AT WISMA R&D UNIVERSITI MALAYA BUILDING	22
<i>S. B. M. Ali ; M. Hasanuzzaman ; N. A. Rahim</i>	
ARTIFICIAL NEURAL NETWORK BACK-PROPAGATION BASED DECISION SUPPORT SYSTEM FOR SHIP FUEL CONSUMPTION PREDICTION	28
<i>Keh-Kim Kee ; Boung-Yew Lau Simon ; K.-H. Y. Renco</i>	
REMOTE DESKTOP POWER MANAGEMENT SYSTEM USING SINGLE-BOARD COMPUTER.....	34
<i>M. B. M. Noor ; S. R. Azzuhri ; J. Jamaludin ; A. A. A. Shariffuddin ; N. I. Kamel</i>	
OPTIMIZATION OF NEURAL NETWORK HYPERPARAMETERS FOR GAS TURBINE MODELLING USING BAYESIAN OPTIMIZATION	40
<i>M. H. M. Tarik ; M. Omar ; M. F. Abdullah ; R. Ibrahim</i>	
IMPACTS OF LARGE-SCALE SOLAR PHOTOVOLTAIC GENERATION ON POWER SYSTEM FREQUENCY RESPONSE	45
<i>K. A. Qaid ; Chin Kim Gan ; N. Bin Salim ; M. Shamshiri</i>	
EVALUATION OF FIVE COMPENSATION CIRCUITS FOR ELECTRIC VEHICLE INDUCTIVELY COUPLED POWER TRANSFER (ICPT)	53
<i>A. F. A. Aziz ; M. F. Romlie ; T. Z. A. Zulkifli ; Z. Baharudin</i>	
SMART ENERGY METER USING TELEGRAM BOT	59
<i>S. S. Sulaiman ; N. M. Nor ; Z. H. Baharudin ; I. Ismail ; N. Baharudin ; H. Sidek</i>	
BUCK-BOOST CONVERTER WITH Q-ZSC TOPOLOGY	65
<i>M. Ado ; A. Jusoh ; S. M. Ayob ; M. H. Ali ; G. S. M. Galadanchi</i>	
HARMONIC MINIMIZATION OF A SINGLE PHASE CASCADE H-BRIDGE MULTILEVEL INVERTERS USING FIREFLY ALGORITHM.....	71
<i>M. Rasheed ; R. Omar ; M. Sulaiman</i>	
PLL-LESS SRF TECHNIQUE FOR OPERATION OF SAPF UNDER UNBALANCED AND DISTORTED SUPPLY VOLTAGE.....	76
<i>Y. Hoon ; M. A. M. Radzi ; M. K. Hassan ; N. F. Mailah</i>	
MODELING OF CAMPUS MICROGRID FOR OFF-GRID APPLICATION	84
<i>M. Uddin ; M. F. Romlie ; M. F. Abdullah ; K. N. M. Hassan ; C. K. Tan ; A. H. A. Bakar</i>	
RECENT STUDIES IN CONCENTRATED PHOTOVOLTAIC SYSTEM (CPV): A REVIEW	89
<i>M. George ; A. K. Pandey ; N. Abd Rahim ; R. Saidur</i>	
BINARY NANOCOMPOSITE OF CO_3O_4 NANOCUBES SUPPORTED ON CARBON MATRIX FOR SUPERCAPATTERY	97
<i>A. Numan ; M. Khalid ; S. Ahmed ; S. Ramesh ; K. Ramesh ; N. A. Khan</i>	
OPTIMAL PLACEMENT AND SIZING OF DISTRIBUTED GENERATION BASED ON MVMO-SH.....	103
<i>M. N. Saad ; M. Z. Sujod ; M. F. Abas ; M. H. Sulaiman ; M. Rashid</i>	
INVESTIGATION ON EFFECT OF MWCNT IN MICROSTRUCTURAL AND THERMAL PROPERTIES OF PARAFFIN BASED PCM	109
<i>M. M. Islam ; A. K. Pandey ; M. Hasanuzzaman ; N. A. Rahim ; M. R. Karim</i>	
ENERGY SAVING POTENTIAL THROUGH ENERGY CONSERVATION OF OFFICE EQUIPMENT IN MALAYSIA POLYTECHNIC	115
<i>M. F. M. Zublie ; M. Hasanuzzaman ; N. Abd Rahim</i>	
IONIC CONDUCTIVITY AND MOLECULAR VIBRATION ANALYSIS OF PMMA/ENR 50-NH4SCN POLYMER BLEND ELECTROLYTES	120
<i>N. A. A. Rahman ; S. Z. Z. Abidin ; S. Navaratnam ; F. A. Latif</i>	

THE IMPACT OF ENERGY YIELD OF A PHOTOVOLTAIC SYSTEM UNDER PARTIAL SHADING	124
<i>J. C. Teo ; R. H. G. Tan ; V. H. Mok ; V. K. Ramachandaramurthy ; Chiakwang Tan</i>	
OPTIMIZATION FOR THE PLANNING OF DISTRIBUTED RENEWABLE GENERATORS USING GENETIC ALGORITHM.....	130
<i>A. Ali ; M. F. Romlie ; N. M. Nor ; T. Ibrahim</i>	
GASIFICATION OF REFINERY SLUDGE USING COAL FLY ASH AND REFINERY SLUDGE AS CATALYSTS	136
<i>R. M. Ahmed ; C. S. Mohan</i>	
NUMERICAL AND EXPERIMENTAL INVESTIGATION OF THE EFFECT OF TILT ANGLE ON THE PERFORMANCE OF PV SYSTEMS	142
<i>M. A. A. Mamun ; M. Hasanuzzaman ; J. Selvaraj ; R. Nasrin</i>	
CONDUCTING POLYMERS: NEW ARENA IN DYE-SENSITIZED SOLAR CELLS	150
<i>N. A. Mazlan ; S. Shahabuddin ; S. N. A. Baharin ; A. K. Pandey ; R. Saidur</i>	
SINGLE-ENDED PRIMARY INDUCTOR CONVERTER (SEPIC) FOR LED APPLICATION.....	157
<i>A. F. Y. Jabbar ; M. Mansor ; S. Jaafar</i>	
BIODIESEL IMPACT ON COST, FUEL SAVING AND EMISSION REDUCTION FOR POWER GENERATION IN MALAYSIA	161
<i>E. S. Tan ; N. A. Fauzan ; K. Yoshikawa</i>	
SYNTHESES OF AZOMETHINE-THIOPHENE MONOMERS FOR POTENTIAL APPLICATION IN ENERGY STORAGE DEVICES	169
<i>S. N. A. Baharin ; S. Shahabuddin ; N. A. Mazlan ; N. M. Sarif ; R. Saidur ; N. H. Hashim</i>	
MODELLING OF SINGLE POWER LINE BY ATP-DRAW FOR PARTIAL DISCHARGE SIGNAL MEASUREMENT	174
<i>A. B. Sukardi ; M. N. K. H. Rohani ; M. Isa ; B. Ismail ; A. S. Rosmi ; W. A. Mustafa</i>	
EXPERIMENTAL ANALYSIS ON DEFECT POWER CABLE WITH TDR TECHNIQUE APPLICATION	180
<i>T. M. Kuan ; A. M. Ariffin</i>	
LOCALLY AVAILABLE MATERIAL AS ADSORBENT TO TREAT ARSENIC CONTAMINATED WATER.....	186
<i>D. Dhakal ; S. Babel</i>	
INFLUENCE OF CONCENTRATION OF POLYANILINE (PANI) AS COUNTER ELECTRODE IN DYE SENSITIZED SOLAR CELL	191
<i>U. Ahmed ; N. Abd Rahim ; S. Shahabuddin ; M. Alizadeh ; A. K. Pandey</i>	
TECHNO-ECONOMIC ANALYSIS OF LIGHTING SYSTEM RETROFIT AT THE INDUSTRIAL TRAINING INSTITUTE	196
<i>K. R. Wagiman ; M. N. Abdullah ; M. A. M. Ariff ; M. Y. Hassan</i>	
4-COILS MAGNETIC RESONANCE COUPLING WIRELESS POWER TRANSFER WITH VARYING ROTATIONAL ANGLE	202
<i>S. Y. Tan ; H. J. Lee ; P. J. Ker</i>	
FUEL QUALITY INDEX OF TRANSESTERIFIED AND NONTRANSESTRIED OIL SAMPLES OF MUSTARD AND RICEBRAN OIL.....	207
<i>R. Kothari ; S. Ahmad ; V. V. Pathak ; A. K. Pandey ; R. Saidur</i>	
REDUCTION OF UNBALANCED ARMATURE MAGNETIC FLUX IN SEGMENTAL ROTOR FEFSM USING ROTOR SPAN REFINEMENT	213
<i>M. F. Omar ; E. Sulaiman ; C. P. Liew</i>	
A REVIEW OF GLOBAL CURRENT TECHNIQUES AND EVALUATION METHODS OF PHOTOCATALYTIC CO₂ REDUCTION.....	220
<i>Y. Tanaka ; M. Hasanuzzaman</i>	
ANALYSIS AND PERFORMANCE OF 4S-8P PERMANENT MAGNET FLUX SWITCHING MOTORS (PMFSM) FOR ELECTRIC BICYCLE APPLICATIONS	226
<i>L. I. Jusoh ; E. Sulaiman</i>	
DESIGN INVESTIGATION OF HIGH RELIABLE HE-FSM FOR ELECTROMECHANICAL ACTUATOR USED IN AIRCRAFTS	233
<i>H. A. Soomro ; E. Sulaiman ; M. F. Omar ; S. K. Rahimi</i>	
THE DIRECT POWER CONTROL FOR THREE-PHASE OF AC-DC CONVERTER	240
<i>N. A. Yusoff ; A. M. Razali ; K. A. Karim ; Z. Rasin ; M. Muhammad</i>	
DESIGN AND IMPLEMENTATION OF WIRELESS-POWER MONITORING SYSTEM FOR MICRO-INVERTER.....	245
<i>O. Erixno ; N. Abd Rahim ; A. Rivai ; Z. F. Yadi</i>	

REDUCTION OF SWITCHING TRANSIENTS IN CC/CV MODE OF ELECTRIC VEHICLES BATTERY CHARGING.....	250
<i>S. Arora ; M. Singh</i>	
LATENT HEAT RETRIEVAL TECHNIQUES IN PV/T COLLECTORS	256
<i>V. V. Tyagi ; A. Chauhan ; S. Anand ; J. A. L. Selvaraj ; A. K. Pandey</i>	
CALIBRATION OF A COMMERCIAL BUILDING ENERGY SIMULATION MODELS USING ENERGY AND WEATHER DATA.....	264
<i>N. N. N. Azmi ; N. A. Ramli ; A. Kassim ; S. A. A. Munaff</i>	
ANALYSIS OF Emitter LAYER DIVERSE EFFECTS ON ELECTRICAL PERFORMANCE FOR PROSPECTIVE SI HYBRID SOLAR CELL.....	272
<i>B. K. Ghosh ; A. M. Khairul ; A. Afishah ; I. Saad ; A. I. A. Rani ; S. K. Ghosh</i>	
SNO₂ AND TIO₂ COATINGS TOWARD DECREASING THE SURFACE TEMPERATURE OF SOLAR CELLS	276
<i>M. Z. Farah Khaleda ; V. Balakrishnan ; A. Syafiq ; N. Abd Rahim ; A. K. Pandey</i>	
RECENT ADVANCEMENT IN HEAT PIPE FOR STATIONARY SOLAR COLLECTORS.....	281
<i>K. Chopra ; V. V. Tyagi ; P. Gupta ; J. Selvaraj ; N. Abd Rahim</i>	
MAXIMUM ENERGY EXTRACTION FOR PV SYSTEM USING CLOSED BRACKET TECHNIQUE.....	289
<i>N. Abd Rahim ; A. Amir ; A. Amir ; J. Selvaraj</i>	
PROCESS SIMULATION OF BIO-ETHANOL PRODUCTION FROM EMPTY FRUIT BUNCH VIA ACID HYDROLYSIS PRETREATMENT	294
<i>L. K. Bhullar ; Z. A. Putra ; M. R. Bilad ; N. A. Hadi ; M. D. Hakim</i>	
COST BENEFIT ANALYSIS FOR ZEB: OPTIMAL CAPACITY BASED ON RELIABILITY, ECONOMY AND DIVERSIFICATION	301
<i>S. Kosai ; Chiakwang Tan</i>	
STEADY STATE PERFORMANCE ANALYSIS OF ONE SWITCHED INDUCTOR SERIES Z- SOURCE INVERTER.....	308
<i>N. Subhani ; R. Kannan ; M. F. Romlie</i>	
INVESTIGATION ON QUASI-Z-SOURCE INVERTER WITH HYBRID ENERGY STORAGE FOR PMSM DRIVE SYSTEM.....	314
<i>M. Muhammad ; Z. Rasin ; A. Jidin ; A. M. Razali ; N. A. Yusoff</i>	
ISLANDING DETECTION TECHNIQUE BASED ON RATE OF CHANGE OF REACTIVE POWER (DQ/DT).....	321
<i>M. Arshad ; M. Sufyan ; M. M. Aman ; S. R. S. Raihan ; N. A. Rahim</i>	
SELF-TUNING FUZZY LOGIC CONTROL BASED ON MRAS FOR INDUCTION MOTOR DRIVES	328
<i>N. Farah ; M. H. N. Talib ; Z. Ibrahim ; M. Azri ; Z. Rasin ; J. M. Lazi</i>	
OPTIMIZING PEMFC MODEL PARAMETERS USING DRAGONFLY ALGORITHM: A PERFORMANCE STUDY	334
<i>N. S. Hamal ; Z. M. Isa ; N. M. Nayan ; M. H. Arshad ; N. A. M. Kajaan</i>	
ELECTRICAL SIMULATION OF DIFFERENT PHOTOACTIVE LAYER THICKNESS ON ORGANIC HETEROJUNCTION SOLAR CELL	342
<i>A. I. A. Rani ; K. A. Mohamad ; B. K. Ghosh ; I. Saad ; P. Ibrahim ; A. Alias ; A. B. Abd Rahman</i>	
TECHNO-ECONOMIC STUDY OF AN INNOVATIVE PV-HYDROGEN-BIOMASS SYSTEM FOR OFF-GRID POWER SUPPLY	347
<i>H. Farzaneh</i>	
PUBLIC OPINIONS TOWARDS ACCEPTANCE AND AWARENESS OF RENEWABLE ENERGY TECHNOLOGIES.....	353
<i>A. Qazi ; N. Abd Rahim</i>	
SOLAR ENERGY TRANSITION IN MALAYSIA THROUGH IMPLEMENTATION OF PV AND PVT TECHNOLOGIES	357
<i>H. Fayaza ; M. Hasanuzzaman ; N. A. Rahim</i>	
A FLEXIBLE MICROGRID THROUGH OVERCURRENT PROTECTION.....	361
<i>J. Y. R. Wong ; Chiakwang Tan ; A. H. A. Bakar ; Y. P. Voon ; K. H. Oon</i>	
IMPACT OF INTERMITTENCY TOWARDS MICROGRID PROTECTION & RELIABILITY CONSIDERING GRID CODES.....	368
<i>Kheng Heong Oon ; Chiakwang Tan ; A. H. A. Bakar ; J. Y. R. Wong</i>	
CONTROL MODEL DEVELOPMENT USING TMS320F28335 MICROCONTROLLER FOR HIGH RATED INVERTER AND DC MOTOR DRIVE APPLICATION	373
<i>S. A. Zulkifli ; M. A. M. Ariff ; T. C. Sean ; N. H. M. Sobri</i>	
DESIGN OF DOUBLE STATOR SLOTTED ROTOR FOR LARGE CEILING FAN APPLICATION	378
<i>N. Abdullah ; R. N. Firdaus ; S. Farina ; M. Z. Aishah ; F. Azhar ; K. A. Karim</i>	

HILL CLIMBING MAXIMUM POWER POINT TRACKING ON FOUR STAGE SWITCH CAPACITOR BASED BOOST CONVERTER.....	385
<i>N. Abd Rahim ; A. Amir ; A. Amir ; Hang Seng Che ; A. Elkhateb</i>	
MATHEMATICAL MODELLING OF PV ARRAY IN MATLAB/SIMULINK WITH PARTIAL SHADING CONDITIONS	390
<i>C. Serenje ; T. K. S. Freddy ; R. Lakshmanan</i>	
INTEGRATED RENEWABLE ENERGY MICRO-GRID FOR MEETING PEAK HOURS DEMAND	397
<i>K. A. Aznan ; S. Khan ; M. Yaacob ; O. O. Khalifa ; E. Aboadla ; M. Tohtayong ; A. Khalil ; N. A. N. Muhsisen ; N. M. L. Tan</i>	
CLASSIFICATION OF THE HARMONIC LOAD TYPES USING MULTI-LAYER EXTREME LEARNING MACHINE	401
<i>S. Y. Wong ; K. S. Yap ; X. Li</i>	
MODERN LOAD PROFILE FOR STANDALONE PV RURAL HOUSEHOLD IN MALAYSIA.....	406
<i>M. I. Fahmi ; R. Rajkumar ; Lee Wai Chong ; D. Isa ; M. Shahrukh Adnan Khan</i>	
DESIGN OF MULTIPHASE TRANSFORMER USING PHASOR METHOD	412
<i>K. A. Karim ; N. A. Yusoff ; N. Abdullah ; R. N. Firdaus ; A. Jidin ; M. L. M. Jamil</i>	
SUPERIOR SELF-CLEANING GLASS THROUGH HYDROPHOBIC AND SUPERHYDROPHILIC COATING FOR OUTDOOR APPLICATIONS.....	418
<i>A. Syafiq ; N. Abd Rahim ; B. Vengadaesvaran ; A. K. Pandey</i>	
ENERGY MANAGEMENT SYSTEM EMPLOYING HARMONY SEARCH ALGORITHM FOR HYBRID COGENERATION	424
<i>N. M. Isa ; Tan Chee Wei ; A. H. M. Yatim</i>	
Author Index	