# AEE World Energy Conference 2023

Orlando, Florida, USA 25 – 27 October 2023

Volume 1 of 2

ISBN: 978-1-7138-8393-7

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© (2023) by Association of Energy Engineers (AEE) All rights reserved.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact AEE Energy Books at the address below.

Association of Energy Engineers (AEE) 3168 Mercer University Drive Atlanta, Georgia 30341 USA

Phone: (770) 447-5083 Ext. 222 Fax: (770) 446-3969

www.aeecenter.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



## 2023 AEE World Proceedings Table of Contents

#### **Track A- FED Energy**

Chanton 1	France Efficiency Incontinues in the Inflation Deduction Act	٦
Chapter 1	Kristin Gustafson, PE, CEM, BEMP, AEE PNW Chapter President, Eide Baily, LLP	1
Chapter 2	<b>Protecting DOD's Mission Critical Facility Related Control Systems</b> Sandy Kline, Director Facility Related Control Systems, Office of the Secretary of Defense (EI&E)/Construction US Department of Defense	27
Chapter 3	<b>Federal and DoD Initiatives</b> Allan Federman, VHA Energy Engineers Working Group, Veterans Health Administration	34
Chapter 4	Unlocking Opportunities- Maximizing Your Investment with Energy Storage Tax Credits and Incentives Nasreddine Guerfala, Vice President, Solutions & Legal, SunGrid	59
Chapter 5	<b>The Trane Thermal Battery System</b> Bruce B. Lindsay, PE, CEM, Business Development Team Leader, Trane Technologies	69
Chapter 6	Inflation Reduction Act 2022- 179D Tax Deduction and 45L Tax Credit David Diaz, Managing Partner, Walker Reid Strategies	80
Chapter 7	Energy Security Adrian Cotasaenz, President & CEO, SANFRAN Energy Global	85
Chapter 8	<b>Energy Security in the 21<sup>st</sup> Century</b> Greg Lewis, Principal Logistics Analyst, CANA/Association of Marine Corps Logisticians/Future of Hampton Roads	87

#### **Track B- Energy Management**

Chapter 9	<b>One Energy Engineer's Journey into Business</b> Chad Griffith, PE, CEM, GBP, LEED AP, Managing Principl Solutions, Inc., Founder, Griffith Engineering, Inc.	e, TLC Engineering 91
Chapter 10	<b>So You Want to Start an Energy Efficiency Business?</b> Jason Perez, LEED AP, Founder & CEO, YARDZ	98

Chapter 11	<b>So You Want to Start an Energy Efficiency Business?</b> Brian Coughlan, PE, CEM, Founder, Utility Management Services, Inc.	119
Chapter 12	<b>So You Want to Start a Buildings Energy Efficiency Business?</b> Keith Gipson, Founder & CEO, facil.ai Corp.	128
Chapter 13	Natural Gas Demand Response (NGDR) Alex Quintal, MSME, Principal, QGM Consulting	133
Chapter 14	Demand Load Shed Integration with Building Automatic System 7 Energy Management Program Kelley Whalen, EEP, Facilities & Energy Manager, Adtran	145
Chapter 15	<b>Decarbonization of Secondary Aluminum Manufacturing Operations</b> Bill Allemon, Global Energy Best Practices Leader, Constellium	171
Chapter 16	<b>Performance Contracting Overview</b> Matthew Burnam, PE, Senior Manager, Project Development, RWE Clean Energy	179
Chapter 17	<b>Finance Basics for Energy Savings Performance Contracts</b> Charlie Zitnik, Managing Director and Senior Vice President, Public Finance, DA Davidson & Co.	189
Chapter 18	<b>Performance Contracting Innovations</b> Joe Barger, Vice President- ESCO Division, Powersmiths International Corporation	196
Chapter 19	<b>Performance Contracting Innovations</b> April Frakes, Director of Commercial Business Development, Aerosol	203
Chapter 20	<b>The Power of AND- Leveraging the Benefits of CHP AND Renewable Energy in</b> <b>Performance Contracting</b> Glyn Strong, Chief Commercial Officer, Green CHP	216

## Track C- Alternative and Renewable Energy

Chapter 21	Artificial Intelligence Powered Energy Audit & Inspection Data Analysis and Management Ayo Jemiri, MS, MBA, PMP, CEP, President & CEO, CG Global Management Solutions, LLC	221
Chapter 22	What's Next for Vehicle-to-Everything? Findings from World's Largest V2G Trial Johnathan Levy, US Managing Director, Kaluza	233
Chapter 23	Maintaining Momentum toward Carbon Neutrality Steven Driver, PhD, CEM, CEA, Energy Program Director, Sanofi	242
Chapter 24	On Power with a Linear Generator- Amazing Distributed Energy Resource Technology Richard Costello, PE, MSEM, BSME, CEM, CEA, President, Acela Energy Group, Inc.	257

Chapter 25	<b>Technical Considerations of Hydrogen Blending into End User Infrastructures</b> Yan Zhao, PhD, Principal, GTI Energy	276
Chapter 26	Hydrogen Blending Pilot to Validate the Concept of Fuel Blending Angela Serrano de Rivera, Director, Business Strategy and Projects, New Mexico Gas Company	284
Chapter 27	Hydrogen's Role in Achieving Net Zero David Scearce, PE, President, Entertek International Inc.	297
Chapter 28	Opportunity Identification and Recommendations for Nuclear Integration with Industrial Heat Users Daniel Mikkelson, PhD, Integrated Energy Simulation and Modeling Engineer, Idaho National Laboratory	313
Chapter 29	Accelerating the Path to Net Zero with Energy as a Service for Geothermal Exchange Systems Matthew Tokarik, President, Subterra Renewables	321
Chapter 30	Renewable Energy Sources for Low Exergy Radiant Systems in Buildings Dušan Petráš, Professor and Head of the Department of Building Services, Slovak University of Technology in Bratislava	335
Chapter 31	<b>The Power of Micro Inverters</b> Lana Draz, CEM, CEA, CLEP, Solar Design Engineer, Dynamic SLR	351

## Track D- Industrial Energy Management

Chapter 32	Amid Decarbonization, Still Working on Energy Efficiency Darren Hubbard, Senior Director, Sustainability, Celanese International Corporation	371
Chapter 33	<b>ENERGY STAR Focuses on Energy Efficiency in Industrial Decarbonization</b> Elizabeth Dutrow, CEM, ENERGY STAR Industrial Team Lead, US Environmental Protection Agency	381
Chapter 34	AbbVie Global Energy Program: Employee Engagement Initiatives Peter Moran, CEM, MBA, Global Energy Program Manager, AbbVie	385
Chapter 35	Automatic Fault Detection and Diagnostics in Pharmaceuticals Dan Groza, MS, Associate Director for Building Automation Systems, Bristol Myers Squibb	397
Chapter 36	From Projects to Long-term Energy Program Design: ESG's Impact on the Energy Program David Steiner, CEM, Utility & Environmental Sustainability Leader, Hexion Inc.	y 406
Chapter 37	Effect of Ventilation, ADPI, and ACE on Variable Air Volume Flow for an Office Building Ruba Al-Foraih, CEA, Energy and Building Research Center, Kuwait Institute for Scientific Research, Kuwait	413

Chapter 38	Superior Year-Over-Year Energy Savings Ethan Rogers, Technology Manager, US Department of Energy	417
Chapter 39	<b>Decarbonization Through Industrial Process Efficiency</b> Michael Stowe, PE, CEM, 50001 CP EnMS, 50001 SEP PV, Senior Energy Engineer, Advanced Energy	425
Chapter 40	<b>ISO 50001: A Cross-sectorial Proven Platform for Decarbonization</b> Peter Therkelsen, PhD, Research Scientist, Lawrence Berkeley National Laboratory	
Chapter 41	Manufacturing Process Optimization Strategies Justin Marmaras, MSME, Principal, QGM Consulting	449

## **Track E- Better Plants Program**

Chapter 42	Eastman's Pathway to Decarbonization Lisa Lambert, PE, Manager, Global Natural Resources, Eastman	460
Chapter 43	<b>GE Aerospace: Using Lean Concepts to Meet 2030 Decarbonization Goals</b> Breitner Marczewski, MS, CEM, Energy and Carbon Accounting Manager, General Electric- Aerospace	470
Chapter 44	Energy Management and Information Systems Edison Kivatsi, CEM, Principal Energy Engineer, Pactiv Evergreen	488
Chapter 45	<b>Decarbonization &amp; Electrification: A Volvo Powertrain</b> Dee Spolarics, Environmental, Energy, and Sustainability Engineer, Volvo Trucks	495
Chapter 46	Electrification as a Part of a Decarbonization Roadmap to Achieve Net Zero Scot Blommel, Senior Manager, Global Sustainability, Whirlpool Corporation	511
Chapter 47	<b>Fort Wayne City Utilities Green Resiliency Initiatives</b> Douglas J Fasick, Chief Sustainability Officer, Mayor's Office, Fort Wayne City Utilities Engineering	520

## **Track F- Building Performance**

Chapter 48	<b>Building Performance Standards: The Most Powerful Tool to Reduce Emissions</b> Cliff Majersik, LEED AP, Senior Advisor, IMT	529
Chapter 49	Navigating the Changing Standards for Green Buildings Kiersten Washle, LEED GA, LFA, CEM, MS, MBA, Building Science Engineer, CMTA	54
Chapter 50	Identifying the Sweet Spot: Sustainable Indoor Air Quality Thru Commissioning Stephanie Scibilia, Director of Channel Partnerships, SafeTraces, Inc.	56

Chapter 51	<b>Five Steps to Successful Chilled Water System Optimization</b> Duane Warren, Engineering Director, Energy & Sustainability Services, Jones Lange LaSalle	569
Chapter 52	<b>The Power of RCx + MBCx: How to Achieve and Sustain Energy Savings</b> Clifford Alberts, PE, CEM, CMVP, CBCP, CWEP, BEMP, Engineering Technical Lead, AESC, Inc.	582
Chapter 53	Leveraging FDD for Continuous Energy Savings and Carbon Reductions Gary Mullaney, Senior Energy & Water Consultant, National Facilities Services Kaiser Permanente Bena Zeng, CEM, Energy Engineer, Johns Hopkins University Nick Gayeski, Co-CEO, Clockworks Analytics	590
Chapter 54	What to Look for in Compressed Air System Audits, and How Much You Can Expect to Save Albert Williams, CEM, CEA, CIEP, CMVP, CAP, REP, BEP, CWEP, CLEP, UNIDO Qualified Expert, Freelance Energy Engineering Consultant and Training Instructor, Honeyguide Energy Engineering	600
Chapter 54 Chapter 55	What to Look for in Compressed Air System Audits, and How Much You Can Expect to Save Albert Williams, CEM, CEA, CIEP, CMVP, CAP, REP, BEP, CWEP, CLEP, UNIDO Qualified Expert, Freelance Energy Engineering Consultant and Training Instructor, Honeyguide Energy EngineeringBest Practices for Energy Audits Using ASHRAE 211-2018 and RETScreen Javier Ojeda, PE, CEM, REP, PMP, MBA, Owner, Principal Engineer, Hysovent Limited	600 623

#### **Track G- Decarbonization**

Chapter 57	<b>Overcoming Electric Vehicle Adoption Reluctance</b> Evelina Tverdohleb, CEM, Senior Utilities Services Specialist, LADWP	643
Chapter 58	<b>EV Charging Load Management within the Built Environment</b> Rick Jennings, PE, CEM, E-Mobility Product Manager, SkyFoundry	657
Chapter 59	Economic Effect of the Electric Vehicle on Microgrids Alberto Ramos Millán, PhD, CEM, REP, Proffesor, Universidad Politécnica de Madrid	668
Chapter 60	Best Practices for Developing Solar PV Car Parks- A Case Study Samer Zawaydeh, MsC, CRM, REP, Independent Engineer	693
Chapter 61	Microgrids in Healthcare Keith Waters, PE, CEM, Manager, Industry Standards, Scheider Electric	720
Chapter 62	<b>Optimizing DER Systems with Data Analytics and Visualization</b> Sol Haroon, MS, EE, NABCEP, MBA, Director of Renewables, McKim & Creed, Inc., Adjunct Professor, Georgia Institute of Technology	731
Chapter 63	<b>Recalibrating the Grid</b> Sofia Weir Pierin, EIT, MS, Physical Security Analyst, E-ISAC	745

Chapter 64	Micro Generator for Wind Energy Harvesting Ramzi Shawqi Almashny, Interconnection Engineer, DTE Energy	751
Chapter 65	<b>The Hottest HVAC Designs for the Coldest Climates</b> Lukas Glaspell, Decarbonization HVAC Advisor, Trane Technologies Canada	756
Chapter 66	<b>Building a Data Infrastructure- An Important Step in Building Decarbonization</b> Kaushik Bhattacharjee, CEM, CMVP, CEA, CBCP, Principal, Reipower Inc.	776
Chapter 67	Moving Faster to Net-Zero and Building Decarbonization Josh Mullen, Product Manager, BrainBox AI	788
	<b>Track H- Resiliency and Reliability</b>	
Chapter 68	Unlocking the Value of Renewable Energy Levent Gun, CEO, Ampt	806
Chapter 69	<b>The California Electric Grid During the 2022 Labor Day Heat Wave an the</b> <b>Contribution of Demand Response to Grid Sustainability</b> Edwin Gonzalez, Energy Engineer, CPower Energy Management	815
Chapter 70	<b>Battery Energy Storage Accelerating the Decarbonized US Energy Economy</b> Sean Casey, CEM, LEED AP, Decarbonization Technical Lead, AECOM	826
Chapter 71	<b>Fully Automated Net Zero DERMS</b> Rey Montalvo, President & CEO, Consolidated Energy Design, Inc	832
Chapter 72	How to Establish a Transition Plan for One or Multiple Sites Robert Berninger, Director- Plant Operations, Energy & Engineering, Memorial Sloan Kettering Cancer Center Edward Kiser, CEM, CEA, CDSP, Director of Engineering, World Energy Innovations	838
Chapter 73	Carbon Neutral, Net Zero & Carbon Offsets Raoul Empey, BA BAI, MSc, CEng, MIEI, CEM-I, Managing Director, Sustineo	848
Chapter 74	<b>Combined Engine Exhaust Solutions in CHP</b> Dan Howland, BA, Business Development Manager, North America, Array Industries Inc.	862
Chapter 75	<b>CHP and Microgrids Central Plant Infrastructure Renewal 2023 to 2030</b> Terrence Rollins, MBA, FAEE, CEM, CDSM, CPMM, CSDP, Project Manager, RCHGLOBAL Energy Solutions	868
Chapter 76	Market Opportunities for Energy Efficiency Projects Danielle Bond, PhD, CEM, EIT, Supervisor, Senior Energy Engineer, CPower Energy	878
Chapter 77	The Practical Use of Big Data Analytics and Artificial Intelligence Application to a Large Chiller Plant in one of Hong Kong's Tallest Buildings Dr. Leonard Chow, CEM, PhD, Managing Director, ISPL Consulting Limited	888

#### **Track I- Corporate Sustainability and Initiatives**

Chapter 78	<ul> <li>Process Heat Decarbonization Infrastructure- Regional Energy Transition</li> <li>Accelerator</li> <li>Kanchana Marasinghe, CEM, CMVP, Energy Transition Programme Manager, Energy</li> <li>Efficiency &amp; Conservation Authority- New Zealand</li> </ul>
Chapter 79	Experiences of the Implementation of the Hungarian Energy Efficiency Obligation Scheme Zoltán Czinege, CEM, R&D Director, AlfaPed LLC
Chapter 80	Decarbonization by Means of Regulatory Control of Coal Produced Greenhouse Gas Emissions in the US Claude Morris, PMP, Senior Engineer/Site Sustainability Lead, Takeda
Chapter 81	Mandatory Energy Management Systems for Companies in Chile Michel de Laire, MBA, CEM, AMP, CEO, Task Energy
Chapter 82	Is Your Energy and Sustainability Data Financial-grade? Lalit Agarwal, VP, Energy Management & Sustainability, EnergyCAP, LLC
Chapter 83	Designing, Strategizing and Executing Coporate Wide Comprehensive ESG Strategy Vaibhav Gagrani, MBA, PE, CEM, LEED AP, Director- ESG, Universal Health Services
Chapter 84	Part 1: Casting the Net- Networking Tips & Tricks Part 2: Doing the Work- Guided Networking Exercises Deborah Lenny, Governing Board Co-chair, CWEEL Kiersten Washle, CEM, LFA, LEED Green Associate, Building Science Engineer, CMTA
Chapter 85	Advancing Male Allyship in the Energy Sector Ellen Bomasang, Principal- Global Equity, Diversity and Inclusion, Abt Associates

#### **Track J- Energy Basics**

Chapter 86	Electric Motor Efficiency Scott Wetteland, CEM, LEED AP, Senior Energy Engineer, Willdan	1010
Chapter 87	Interpreting Pump Curves for Energy Management Christopher Christian, CEM, CBCP, EBCP, CEP, CSDP, CMVP, Energy Engineer/Energy Manager, CBRE/Christus Health	1018
Chapter 88	Steam, Boiler, and Water Systems John Puskar, PE, CEM, CIEP, Fellow, President, Prescient Technical Services, LLC	1037

Chapter 89	<b>Overview of Compressed Air Energy Projects at Three Food/Beverage Plants</b> Lou York, PE, Director, Case iZ	1085
Chapter 90	<b>Understanding GHG Inventories 101</b> Jocelyn Gan, MS, Energy & Sustainability Specialist, NYU Langone Health	1091
Chapter 91	<b>Energy Master Planning 101</b> Tom Lanzilotta, CEM, CEA, Assistant Director of Energy and Sustainability, Stony Brook University	1099
Chapter 92	<b>EV Charging: The Next Hot ECM</b> Lonnie Russell, CEM, REP, CLEP, Senior Sales Manager, Autel Energy	1107
Chapter 93	Energy Audits 101 Aaron Brown, EIT, CEM, CLEP, Senior Engineering Manager, Energy & Sustainability, Cox Enterprises, Inc.	1137
Chapter 94	HVAC Controls 101 Jim Crockett, PE, Lead Energy Engineer, Bernhard	1151
Chapter 95	<b>Trend Analysis 101</b> Brian Bimberg, PE, CxA, Senior Mechanical Engineer, RS&H	1164
Chapter 96	Retro-Commissioning 101 Saverio Grosso, Founder, Opt-In Consultants	1172
	Track K- Energy Data, Analytics, and Tracking	
Chapter 97	M&V + MBCx Simply Add Up to Lower Operational Costs Victor Seah, CEM, CxA, PCC, LEED AP, BD + C, Principal, SSR	1190
Chapter 98	<b>The Future of Measurement &amp; Verification</b> David Walke, CEM, CLEP, CMVP, LEED AP, M&V Manager, Energy Systems Group Robert Topping, CEM, CMVP, CDSM, CWEP, Lead M&V Manager, Energy Systems Group	1204
Chapter 99	M&V Lessons Learned Karel Steyn, CEM, CMVP, PE, Energy & Carbon Management Consultant, KS Consultant	1213
Chapter 100	The Role of SEU's within M&V Christo van der Merwe, ME, CEM, CMVP, Director, CFJM Solutions	1224
Chapter 101	<b>The Case for "Energy and Sustainability ERP" Software</b> Steve Heinz, PE, CEM, CMVP, Founder, EnergyCAP LLC	1234
Chapter 102	Genetic Algorithms Applied to Refurbishment of Buildings Hicham Lahmidi, PhD, CEM, CBCP, President, AEE France Chapter	1247

Chapter 103	Why is the Utility Penalizing the Customer with High Energy Cost? Adil Khan, BSEE, MBA, Electrical Engineer- Applications and R&D, TransPower Company	1255
Chapter 104	<b>Economically Efficient Pathways to a Clean Energy Future</b> Raj Rentanandan, MSc, CMVP, Principal Consultant, EMRC	1263
Chapter 105	<b>Effects of Electric Utility Rates on Sustainability and Energy Efficiency in Industry</b> Gary Williams, MBA, IAC2, PMP, Director of Sustainability & Energy Solutions, ESFM	
Chapter 106	Using Predictive Analytics to Manage Natural Gas Price Risk Dan Conrath, Senior Market Analyst, StoneX Financial Inc., FCM Division	1284

#### Track L- Accelerating Community Pathways to Net Zero

Chapter 107	Low Cost Decarbonization: An Owner's Experience Shahid Naeem, MBA, Manager, Energy and Sustainability, Peel District School Board	1294
Chapter 108	Integrating Neighborhood Land-use and Urban Energy Planning for Accelerated Decarbonization- Systematic Analytical & Simulation Approaches Robert Kerr, PM, Senior Associate, President, QUEST, Robert J Kerr + Associates	1312
Chapter 109	Sheridan's Energy & Climate Transition Journey: An Invaluable Resource for the Wider Community Evan Green, CEM, CMVP, CBCP, Manager, Engineering for Sustainable Development, Sheridan College	1325
Chapter 110	Humber College Integrated Energy Masterplan- Flexible Road Map to	1335
	Breakthrough Decarbonization Spencer Wood, CEM, Director, Facilities Management, Humber College	
Chapter 111	Breakthrough Decarbonization         Spencer Wood, CEM, Director, Facilities Management, Humber College         Successful Community Infrastructure Risk Management in a Decarbonized Future         Alexander Hay, PhD, CE, PE, FICE, CRM, RSES, Principal, Souther Harbour Ltd	1346

#### Track M- Energia en Español

Chapter 113	<b>El Uso del Hidrógeno en la Descarbonizacióndel Sector Marítimo para 2050</b> Javier Cervera, CEM, CEA, CMVP, CAP, President, Alliance Net-Zero Mar	1366
Chapter 114	Aplicación de Los Nuevos Combustibles en laDescarbonización del Sector Marítimo:gas natural, hidrógeno y amoniac Antonio Miranda Bonet, Head of Bunkering, Naturgy	1391

Chapter 115	<b>Eficiencia Energética: Herramienta paraMitigación, Descarbonización y Ahorro</b> José Samuel Monterroso, PhD, CEM, CGBE, ENergy & Engineering Director, Servicios Energéticos e Ingeniería	1412
Chapter 116	Modernización de sistemas de Volumen de Aire Variable (VAV) en edificios – Desafíos y oportunidades Alejandro Bellini, CEM, PE, CGBE, Principal, Intellibuildings LLC	1425
Chapter 117	Sistemas de Gestión de Energía obligatoriospara grandes empresas en Chile Michel de Laire, MBA, CEM, AMP, CEO, Task Energy	1441

#### Posters

Chapter 118	<b>The Impact of Building Retrofits on Thermal Comfortability</b> Areej Asad Mahmoud Khalil, PhD Student, University of Wisconsin- Milwaukee, Industrial Assessment Center	1457
Chapter 119	Biomass Energy Resources with Different Livestock Manures Cheikh Kada, Student, University of Wisconsin- Milwaukee, School of Engineering and Applied Science Mohamed Maache, Student, University of Wisconsin- Milwaukee, School of Engineering and Applied Science Dr. Hiroyuki Kumano Ryoichi S. Amano, Professor, Department of Mechanical Engineering, University of Wisconsin-Milwaukee	1465
Chapter 120	Tool Time Donald Edwards, CEM, CPQ, CEA, CDSM, EA, Principal Energy Manager, DTE	1471
Chapter 121	Economic and Environmental Impact of Decarbonization of Water Sector: Case Study Jordan Elyana Aljaber, Energy Engineering Student, All Hussein Technical University Samer Zawaydeh, Industrial Fellow, Al Hussein Technical University	1480
Chapter 122	<b>Towards Microgrids and Future Power Twins</b> Hamza Al Nawafah, PhD Student, Department of Mechanical Engineering, University of Wisconsin- Milwaukee Ryoichi S Amano, Professor, Department of Mechanical Engineering, University of Wisconsin-Milwaukee	1485
Chapter 123	<b>Green Hydrogen: Solution for Zero Emission</b> Husam Almanasir, Student, Jordan University of Science and Technology Osama Freihat, Student, Jordan University of Science and Technology	1494
Chapter 124	IEC 61850 Standard for Smart Grid: A Futuristic Approach Mohammed Ibrahim, Substation Engineer, Leidos Engineering	1499
Chapter 125	Photovoltaic Panel's Efficiency Enhancement Using Water Cooling Kada Kada, Graduate Research Assistant, University of Wisconsin- Milwaukee	5 <b>0</b> 8

Chapter 126	The Contribution of Ductwork Solutions Towards Decarbonized Built Environment Kemal Bayraktar, International Market Manager, Saint-Gobain	1515
Chapter 127	Laboratory-size ESP Examination using DC and AC Power Supply László Székely, Student, Budapest University of Technology and Economics István Kiss	1520
Chapter 128 in Taj	A Multicriteria Approach to Identifying and Developing Renewable Energy Zones ikistan Mansurdzhon Kudusov, Deputy General Director, OJSC	1524
	Akash J. Akanksha J. Pramod J. U. Madvaliev	
Chapter 129	Effect of Winglet Direction and Cant Angle on the Performance of Small-Scale Horizontal Axis Wind Turbine Saif Al Hamad, MSc, CEM, PhD Candidate, University of Wisconsin- Milwaukee	1532
Chapter 130	Dynamic and Climate Responsive Enclosure Systems(DCRES): Enhancing Indoor Environmental Comfort and Energy Efficiency Zhan Shi, PhD Student, Carnegie Mellon University	1553
Chapter 131	Insulation Performance Investigation of Insulating Papers for Electric Vehicles Zsófia Lilla Bangó, Student, Budapest University of Technology and Economics Dr. Richárd Cselkó László Székely, Student, Budapest University of Technology and Economics	1562