



# RETHINK

## ENERGY CONFERENCE 2018

FORECAST 2050: Exploring the Challenges of Global Decarbonisation



24<sup>th</sup> February 2018  
The Great Hall,  
Sackville Street Building

Sponsored by



# Re-Think Energy Conference 2018

## Forecast 2050 – Exploring the Challenges of Global Decarbonisation

### Who are we, and why are we here?

Manchester Energy and Environment Society (MEES) was founded by a group of University of Manchester undergraduates who are passionate about the concept of a sustainable future. We realised the lack of a platform for university students interested in environmental challenges to be able to engage in discourse with like-minded individuals and created MEES, not only to raise awareness about environmental issues but to start an interdisciplinary dialogue that would get students thinking about emergent solutions.

### Why Re-Think?

It is well known that, historically, the generation of energy has been dominated by fossil fuels and that continued dependence on such carbon intensive non-renewables is conspicuously unsustainable. With the global population expected to soar to 8.4 billion by mid-2030, it is clear that satisfying the growing demand for energy in a manner that is both sustainable and competitive with traditional methods is no easy task as there is no single solution.

This conference aims to bring together bright minds from both academia and industry to deliver talks on matters likely to have a significant influence on the future of the energy industry.

In doing so we hope that their insight will stimulate a valuable discussion around the theme of "Forecast 2050 - Exploring the challenges of global decarbonisation".

# EVENT FLOW

TIME	PROGRAM
09:00-10:00	Registration
10:00-10:10	Opening Remarks
10:10-10:40	<b>Welcome Speech</b> – Dr Dana Abi-Ghanem
<i>Session 1: Future Cities</i>	
10:40-11:05	<b>Sustainable Cities</b> – Mr Stephen Caraher
11:05-11:30	<b>Multi Energy System Planning &amp; Modelling</b> – Dr Eduardo Martinez Cesena
11.30-11.55	<b>Machine Learning</b> – Mr Omar Rahim
11:55-12:30	<b>Panel Discussion</b> – Mr Stephen Caraher, Dr Eduardo Martinez Cesena, Mr Omar Rahim
12:30-13:30	Networking session & Lunch Break
<i>Session 2: Energy Mix</i>	
13:30-13:55	<b>Political Economy of the Energy Industry</b> – Mr Geoff Taylor
13.55-14.20	<b>Offshore Energy Systems</b> – Mr Murali Venkata & Mr Darren Motley
14:20-14:45	<b>Battery Storage</b> - Dr Peter Nockemann
14:45-15:10	<b>Nuclear Energy</b> – Professor Melissa A. Denecke
15:10-15:45	<b>Panel Discussion</b> – Mr Geoff Taylor, Mr Murali Venkata & Mr Darren Motley, Professor Martin Atkins, Professor Melissa A. Denecke
15:45-15:55	Closing Remarks
15:55-16:30	End

# SPEAKER BIOGRAPHIES

## WELCOME SPEECH Dr. Dana Abi Ghanem



- A lecturer and researcher at the School of Mechanical, Aerospace and Civil Engineering, based at the Tyndall Centre.
- Her research focuses mainly on energy and society, with particular interest in design and development of new technology; consumption and everyday life; and energy, cities and conflict.
- Has been actively involved in projects such as Following the Wires: sensing socio-material practices of everyday electricity supply in post-conflict Greater Beirut and RESNET: Resilient Electricity Networks for Great Britain.
- Was also a Visiting Fellow of the American University of Beirut from 15 September 2014 to 15 October 2014.

## SUSTAINABLE CITIES Stephen Caraher

- Graduate Energy Consultant at Arup
- A member of the Energy Institute and Institution of Chemical Engineers
- Graduating with a degree in Chemical Engineering from the University of Bath, the practical element of his degree has equipped Stephen with the fundamentals of chemical engineering principles and their respective applications in industrial level systems.
- As an energy consultant, he delivers energy based advisory and engineering services to clients from project concept through to construction and operation.



## MULTI ENERGY SYSTEM PLANNING & MODELLING Dr. Eduardo Alejandro Martínez Ceseña



- Research Associate in the School of Electrical and Electronic Engineering at the University of Manchester for the past five years.
- Has co-authored over 40 research publications in peer-reviewed journals, international conferences and book chapters.
- Has also participated in several European and UK research projects and in work streams related to the integration of smart and flexible network solutions, economic and financial assessment, and business models for electricity and multi-energy systems.
- His research interests include : power systems economics, planning and design of generation systems based on renewable energies, distribution network reinforcement planning in light of demand response, storage and other smart solutions, multi - energy system analysis, optimisation techniques, and Real Options theory.



# SPEAKER BIOGRAPHIES

## MACHINE LEARNING

### Omar Rahim



- CEO and Co-founder of Energi Mine, a company that aims to utilise Artificial Intelligence (AI) and Blockchain to revolutionise the purchase and consumption of energy globally.
- Mr Rahim is experienced in energy trading across Europe, having managed portfolios in excess of \$3 billion for some of the largest energy companies in the world such as Inenco Group and Vattenfall.
- He was also the Director of Trading and co-founder of LG Energy Group, a Lancashire-based energy consulting company.

## POLITICAL ECONOMY OF ENERGY INDUSTRY

### Geoff Taylor

- Has been the Innovation Project Control Officer at National Grid since 2015.
- Mr Taylor has also been a volunteer for the Warwickshire & West Midlands (South Sector) Army Cadet Force as a detachment commander since 2010.



## OFFSHORE ENERGY SYSTEMS

### Murali Venkata



- Murali holds a Bachelor's degree in Electrical and Electronics Engineering from Malnad College of Engineering (University of Mysore), as well as a Masters Degrees in Power Systems and Power Electronics.
- He is a chartered electrical engineer with more than 17 years of experience in power system planning and control, grid connection, grid compliance, power quality, and protection and network regulation.
- He is currently the power systems studies lead on offshore wind farms in his current capacity as a Principal Power System Engineer at Siemens.

### Darren Motley

- Graduating with a Honours degree in Product/Industrial Design from Staffordshire University, Darren Motley is an experienced Product Manager within the Siemens Energy Management Division.
- He has over 15 years of experience in design engineering and manufacturing, having worked at several engineering companies such as Hydratron, Anord Control Systems Ltd., and Hawker Siddeley.



# SPEAKER BIOGRAPHIES

## BATTERY STORAGE

### Dr Peter Nockemann



- Dr Nockemann (Fellow of the Royal Society of Chemistry since 2017) is a Senior Lecturer in Inorganic and Materials Chemistry and the Director of Internationalisation at Queen's University Belfast.
- He graduated at the University of Cologne in Chemistry in 2000 (Dipl. Chem.) and obtained his PhD in 2002 in inorganic chemistry with Prof. Dr. Gerd Meyer (summa cum laude). His thesis on the "Affinity of Mercury to Nitrogen Donor Ligands" was awarded the Klaus-Liebrecht-Award in 2002.
- With Profs MP Atkins, Dr Nockemann co-founded Green Lizard Technologies Ltd (GLT).
- He is also the co-founder and director of Start-up company Seren Technologies Ltd. commercialising new technologies in metal extraction and separation.
- He has been actively involved in the first generation ionic liquid systems applied to gas scrubbing generated IP and have been commercialised by PETRONAS as Hycapure-Hg. This technology has gained three awards from the IChemE for Innovation and Excellence (2013) and Don Nicklin medal (2014), and RSC Teamwork in Innovation award (2014).

## NUCLEAR ENERGY

### Prof Melissa A .Denecke

- Scientific Director of the Dalton Nuclear Institute at The University of Manchester.
- Prof. Denecke is the first woman to ever win the prestigious Becquerel Medal.
- She has over two decades of experience in nuclear fuel cycle R&D, and is a world expert on studies of radioactive materials using synchrotron radiation.
- Serves on a number of scientific advisory boards, including the DESY Photon Science Committee and the Institut de Chimie Séparative de Marcoule, and committees propagating gender balance, such as Women in Nuclear Global Executive Board representing Europe.



# OUR SPONSORS

Our conference would not have been possible without the generous support of our sponsors, and we have included a brief overview of their expertise and company/organization profile.

## Platinum Sponsor CLP Group

CLP Group was founded in Hong Kong in 1901, and now powers millions of homes and businesses across the Asia Pacific regions. It operates a vertically-integrated electricity supply business in Hong Kong which includes power generation, transmission, distribution, and electricity and gas retail activities. Apart from having investments in the energy sector outside of Hong Kong in Mainland China, India, Southeast Asia, Taiwan and Australia, CLP also operates a diversified portfolio of generating assets, harnessing six different energy sources including coal, gas, renewables and nuclear. Having received numerous awards and extensive recognition, CLP now strives to meet Asia-Pacific's energy challenge in a sustainable manner from one generation to the next.

The logo for CLP Group, featuring the letters "CLP" in a blue sans-serif font, followed by a blue circle containing a white Chinese character "中", and then the Chinese characters "中電" in a blue sans-serif font.

## Sliver Sponsor The University of Manchester Dalton Nuclear Institute

The logo for The University of Manchester Dalton Nuclear Institute. It features a purple rectangular box with the word "MANCHESTER" in white, "1824" in yellow, and "The University of Manchester Dalton Nuclear Institute" in white text below it.

The University of Manchester Dalton Nuclear Institute is the UK's largest academic provider of nuclear R&D and high-level skills development, and is an undeniably important player in the nuclear industry. It was awarded the Queen's Anniversary Prize for Higher and Further Education in 2011 - the most prestigious form of national recognition for an academic institution.

In light of its expertise, the institute has formed several research partnerships within the nuclear sector, including the National Nuclear Laboratory, Rolls-Royce Nuclear University Technology Centre, Sellafield Ltd. Decontamination and Effluent Treatment Centre of Expertise, and Amec Foster Wheeler.

## Bronze Sponsor

**The University of Manchester**

**School of Chemical Engineering and Analytical Science (CEAS)**

It is the birthplace of chemical engineering and has an impressive portfolio of research activity and industrial engagement.

CEAS currently holds the prestigious Athena Sliver SWAN Award, which is awarded to institutions committed to advancing the careers of women in science, engineering, higher education and research.



The SUPERGEN Bioenergy Hub aims to bring together industry, academia and other stakeholders in the bioenergy sector to focus on the research and knowledge challenges associated with increasing the contribution of UK bioenergy to meet strategic environmental targets in a coherent, sustainable and cost-effective manner.

Some of the objectives for the hub are to act as a focal point for sharing and dissemination of knowledge; to facilitate the near-term deployment of technologies; investigate and develop new approaches for dealing with the challenges associated with the deployment of novel technologies; and to improve scientific understanding of the fundamental aspects of different forms of biomass and its conversion.



In 2003, the EI was formed as a result of a merger between the Institute of Petroleum (IP) and the Institute of Energy (InstE) to address both the depth and breadth of the global energy market. Supporting over 23,000 individuals working in the energy sector or studying energy and 250 companies globally.

The Energy Institute is the professional body in the energy industry responsible for developing and sharing knowledge, skills and good practices for a safe, secure and sustainable energy system.

The EI also provides learning and networking opportunities for professional development, as well as professional recognition and technical and scientific knowledge resources on energy in all its forms and applications.

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