







## Energy Systems Resilience seminar – Speakers, Topics, Synopsis & Bios

Bio	
<p style="text-align: center;"><b>Event Host: ARUP</b> <b>Joe Sumners</b></p> 	<p><b>Joe Sumners</b> is an Arup Director &amp; chartered electrical engineer specialising in large multi-disciplinary infrastructure projects. He leads Arup's UK Power System teams, located in Manchester, Birmingham and London. His experience covers the development of strategic processes, conceptual designs and the translation of these into appropriate implementation plans.</p> <p>Joe has particular interests in the application of Smart technology associated Load Side Demand Management, Embedded &amp; Renewable Generation. He also has a growing interest in Advanced 2D Materials such as Graphene, where he has presented papers on their likely application in the built environment.</p>
<p style="text-align: center;"><b>Morning Session Chairman</b> <b>Martin Ansell</b></p> 	<p><b>Martin Ansell</b> is a seasoned international executive who has worked in both the Telco and Energy industries for over 35 years. His experience spans from start-ups to Fortune 500 companies. During his time at ALSTOM T&amp;D, Martin was responsible for the business development of its Protection, Control &amp; Automation activity and then went on to lead its UK based activities in Power Electronics/HVDC, HV Switchgear and Substation Projects. In GE Energy, he served as a member of its global T&amp;D Executive driving profitable growth in the EMEA region and then, as a member of GE's Smart Grid leadership team, was responsible for the strategy and growth of its Asset Management &amp; Optimisation software business. In 2011 he became a founding partner with LIG Consultancy Services LLP. He currently has Non-Executive Advisory/Directorships roles with FaultCurrent Ltd, Fundamentals Ltd and Burns &amp; McDonnell.</p> <p>Martin has a bachelor's degree in electrical engineering and has professional memberships of the IET &amp; IEEE. He also serves on the National Committee of CIGRE in the UK.</p>
<p style="text-align: center;"><b>Afternoon Session Chairman</b> <b>Adam Middleton</b></p> 	<p>As Divisional Vice President, <b>Adam Middleton</b> leads the Energy Management activities of Siemens in Belgium, France and French-speaking Africa. Previously, Adam led Laing O'Rourke's Power and Energy activities, including development of its position within the nuclear generation segment. Adam was a member of the UK Government Department of Energy and Climate Change (DECC) Nuclear Industry Council and led the work on cost reduction in the design and construction of new nuclear power generation infrastructure. Prior to this, Adam has held a number of global executive management positions within the Power, Energy and Oil &amp; Gas segments with major corporations including General Electric (GE), ALSTOM, AREVA and CG Holdings, based in Europe and North America.</p> <p>Adam is a member of CIGRE and sits on its International Administrative Council. Adam holds the role of Chair of CIGRE UK (2016-2020) and sits on the Conseil D'Administration of CIGRE National Committee France (CNF). His particular focus has been around the development of young engineers within the electrical supply industry with the creation of the CIGRE Next</p>

	<p>Generation Network (NGN) in 2007, and the creation and support of the CIGRE Women In Engineering/Women's Network in 2016 for the attraction and active development of a more diverse population within the industry</p>
<p><b>Opening Remarks</b> <b>Professor John Loughhead</b></p> 	<p><b>Professor Loughhead</b> CB OBE FREng FTSE FIMechE FIET is Chief Scientific Adviser at the Department for Business, Energy and Industrial Strategy (BEIS). Prior to this he was Chief Scientific Adviser at the Department of Energy and Climate Change (DECC).</p> <p>Before joining DECC, John was Executive Director at the UK Energy Research Centre (UKERC). Prior to that, he was Corporate Vice-President of Technology and Intellectual Property at Alstom's head office in Paris.</p> <p>John's professional career has been predominantly in industrial research and development for the electronics and electrical power industries, including advanced, high power industrial gas turbines, new energy conversion systems, spacecraft thermal management, electrical and materials development for electricity generation and transmission equipment, and electronic control systems. He has extensive international experience in both industry and academia.</p> <p>John is a Chartered Engineer, graduating in Mechanical Engineering from Imperial College, London, where he also spent 5 years in computational fluid dynamics research. He is Past-President of the UK's Institution of Engineering and Technology, Fellow of both the UK and Australian national Academies of Engineering, Professor of Engineering at Cardiff University and Fellow of Queen Mary University of London.</p>

Speakers	Topics	Synopsis	Bio
<p data-bbox="141 218 470 279"><b>Andrew Myatt &amp; Darren Jones</b></p>  	<p data-bbox="524 218 815 347"><b>Digitalisation and its contribution to enhanced system resilience</b></p>	<p data-bbox="875 218 1402 459">It is well understood that ageing assets present a significant challenge to the on-going resilience of electricity networks. This presentation will discuss how legacy approaches to asset management were developed and how the approach has since matured and developed as electricity networks have aged.</p> <p data-bbox="875 496 1420 675">It will then describe how the enabling of digital technologies within the power system provide data and information which can serve to enable entirely new asset management approaches, illustrated with real life examples.</p> <p data-bbox="875 711 1413 922">Significantly, digitalisation will also provide the potential to enhance system resilience by providing greater situational awareness at control room level, a greater ability to mitigate system constraints and enhanced network management to control the networks of the future, rich with embedded renewables.</p> <p data-bbox="875 959 1413 1106">The presentation will demonstrate how digitalisation, network optimisation and digital twins are a key factor in contributing to a significantly enhanced level of network resilience in the future.</p>	<p data-bbox="1447 218 2130 738"><b>Andrew Myatt</b> is a graduate of Staffordshire University with an Honours Degree in Electrical &amp; Electronic Engineering. He is a Chartered Engineer and member of the Institution of Engineering and Technology. Andrew has over 25 years' experience working in the Power Engineering Sector, having originally started his career as a Protection Engineer. Since then he has continued to operate in the technology supply arena, holding a variety of technical, commercial, operational and General Management roles associated with supply of Grid technologies to a variety of clients both in the UK and globally. Andrew joined ABB in October 2016 to lead the UK &amp; Ireland Grid Automation business. In February 2018, Andrew took up the challenge to lead ABB's Power Grids Division in the UK, having direct responsibility for the Divisional Sales &amp; Marketing and execution activities and for developing the regional growth strategy.</p> <p data-bbox="1447 775 2130 1206"><b>Darren Jones</b> is currently employed as Technology Manager within the Power Grids Division of ABB. His remit includes understanding and influencing the future direction of UK electricity distribution network development and supporting ABBs NIC funded projects. Darren has previously been employed at Electricity North West, initially as Research and Development Manager where he was responsible for a range of ENWLs innovation activities including project development and delivery and supporting the LCNI Conference then latterly supporting the implementation of ENWLs Advanced Distribution Management System. Darren has also held previous roles at EA Technology and ABB Power Quality Division.</p>

**Duncan Botting**



**Whole-System impacts: resilience a keystone of system integrity**

Command and control has been the weapon of choice for the utilities to ensure the integrity of their networks by use of statutory implements, codes and license conditions to manage the “below the meter” behaviour and all connection points to the system.

With the advent of large amounts of non-dispatchable generation, mobile loads (and mobile generation, possibly) in the form of Electric Vehicles, IoT, and the gaming between different energy vectors that is likely to emerge, this continued strategy will be challenged to avoid unintended consequences.



Resilience along with reliability, redundancy and integrity is unlikely to deliver the desired outcomes in today’s economy without carefully considered whole system enabling frameworks to facilitate the various stakeholders involved.



To ensure emergent architecture is delivering societal needs, safe, economic and environmentally acceptable solutions - new governance arrangements will be needed.



Resilience is only effective, or less effective, if the sum of its parts is greater than the individual contributions from each element being positive – rather than negative!

**Duncan Botting** currently holds the post of Managing Director Global Smart Transformation Limited. In this role he works closely with customers, academia, industry, utilities, government and regulators to deliver innovative technical, commercial, environmentally balanced and culturally acceptable solutions to market challenges. He also provides mentoring and business acceleration services to numerous SMEs to help them achieve their strategic aims. He has over 40 years’ experience covering the complete spectrum of technical and commercial roles from apprentice to boardroom. Some of his previous roles include: Director European Utilities Telecoms Council, Business Innovation and Growth Director at Parsons Brinckerhoff (part of Balfour Beatty Group), Executive Chairman of the Scottish European Green Energy Centre, Managing Director ITI Energy (a research institute), Head of Technology & Business Development for ABB, Departmental Head of Schneider Power Projects, a Mathematician and Radar Modelling Engineer with Thorn-EMI Electronics. He is engaged across the energy domain from market design to end user delivery and is invited on many influential panels, advisory boards and committees at a National, European and International level. He gained his degree from the Open University in Mathematics and Physics. He is a visiting professor at the University of Strathclyde, Glasgow and previously was a visiting professor at Imperial College London.

He is an active member of the Institution of Engineering and Technology (IET, formerly the IEE). He is chair of the IET Energy Sector Executive, a member of the IET Energy Policy Panel and IET / Energy Systems Catapult Future Systems Architecture Project (FPSA) management group, founding member of the DECC/Ofgem Smart Grid Forum and a work stream chair and currently member of the BEIS/Ofgem Smart System Forum. He was voted one of the top 40 influencers in Europe on Smart Grids by his peers in 2014 (Metering and Smart Energy International). He is an international research assessor/advisor for competitive research programmes in various countries including Innovate UK.

<p><b>Juliet Mian</b></p> 	<p><b>Understanding resilience at different scales: from cross-sector to individual systems...what works where?</b></p>	<p>Infrastructure systems, including energy networks, are required to be resilient in the face of a volatile and uncertain future, whether that is related to political situations, climate change, or other events that we aren't able to predict. Further, because of globalisation, technological advances and urbanisation, these systems are become increasingly interconnected, and society is increasingly dependent on them to continue to function.</p> <p>This short presentation will consider some of the challenges associated with understanding resilience in the light of these different scales and levels of interdependencies. It will also draw on lessons from other sectors that may be transferrable to the energy sector, whilst recognising the unique facets of the electricity sector.</p>	<p><b>Dr Juliet Mian</b> is a civil engineer with over 20 years' experience on a broad range of infrastructure projects both in the UK and overseas including HS2, Network Rail, Highways England and the National Infrastructure Commission. She focuses on delivering specialist advice relating to the assessment and mitigation of risks to infrastructure and how to deliver future resilience. Juliet has a strong interest in the application of new research and innovation to her client's needs, and a particular capability in the risk and resilience of existing infrastructure assets, to weather, climate change and other threats, combining risk-based approaches with expertise in asset management, and a robust understanding of technical performance issues. She is a certified asset management professional and has a PhD in estimation of losses due to earthquakes. Juliet is currently Technical Director for the Resilience Shift, an exciting global initiative to catalyse change in how we plan, design, deliver, operate and maintain critical infrastructure systems to be resilient, both <i>within</i> and <i>between</i> sectors(<a href="http://www.resilienceshift.org">www.resilienceshift.org</a>).</p>
<p><b>Mathaios Panteli</b></p> 	<p><b>CIGRE WG4.47 Power System Resilience: overview, progress and next steps</b></p>	<p>The concept of resilience is of growing importance in all disciplines, including engineering and in particular the critical infrastructure of power systems. In recent years, the catastrophic social and economic impacts of climate change-driven weather events and natural hazards has placed power grid resilience in the spotlight of policy-makers, regulators and stakeholders worldwide, including UK. The CIGRE WG4.47 has gathered experts in the field from around the world to help define and understand resilience in the context of power systems to enable its efficient integration in the operation, planning and policy-making of future, resilient power systems. This presentation will provide an overview of WG4.47, the progress made so far and the next steps and deliverables of the working group.</p>	<p><b>Dr Mathaios Panteli</b> is a Lecturer in Power Systems at The University of Manchester, UK. He holds a PhD in Electrical Power Systems from The University of Manchester, UK, with more than 10 years of research experience in power systems. His key expertise lies in the risk, reliability and resilience assessment of future energy systems, adaptation of critical infrastructures to arising uncertainties and interdependency modelling of critical infrastructures. Dr Panteli has published extensively in these research areas and has given invited seminars and presentations around the world. He is the co-convenor and Technical Coordinator of the CIGRE WG4.47 "Power System Resilience" and an invited member in resilience working groups of other international professional bodies, including IEEE and CIRED. Dr Panteli is an IEEE Senior Member and the recipient of the 2018 Newton Prize.</p>

<p><b>Min Zhu</b></p> 	<p><b>Risk-based regulation for network asset management</b></p>	<p>Ofgem regulates the gas and electricity network companies through price control including setting revenue allowances, output targets and incentives.</p> <p>Asset management is a significant part of this work in terms of its proportion of the costs which are eventually borne by the consumers, as well as its impact on the security of energy supply, public safety and wider environment.</p> <p>Ofgem has developed a risk-based regulatory approach to drive value for energy consumers and reflect industry good practice.</p>	<p><b>Min Zhu</b> is a Deputy Director in the Systems and Networks division of Ofgem. She is currently responsible for regulating the electricity transmission network companies through setting revenue allowances, output targets and incentives. She also leads on the risk-based regulatory regime for gas and electricity network asset management. Min has previously held other senior roles leading the offshore transmission tendering regime, technical codes and standards, and network tariffication and access arrangements.</p> <p>Prior to joining Ofgem in 2003, Min held various technical and commercial posts in National Grid. She has a PhD in electrical engineering from Imperial College, London, and is a Chartered Engineer.</p>
<p><b>Owen Wilkes</b></p> 	<p><b>Electricity Infrastructure Resilience: planning for the future</b></p>	<p>The energy landscape has and will continue evolve over the next decade and beyond, as it responds to the decarbonisation and technology drivers of the energy sector and those sectors dependent on it. In posing the question “<i>how do we ensure our electricity infrastructure is resilient in the future?</i>”, this presentation will discuss the current industry trends, future electricity application and dependency, business and societal expectations of electricity availability, emerging threats, and the cross-sector interdependencies that make resilience an infrastructure challenge that is broader than any one sector.</p> <p>Reference will be made to recent and collaborative industry and cross-sector work, and important next steps in planning for future resilience will be highlighted.</p>	<p><b>Owen Wilkes</b> is National Grid Electricity Transmission’s Product Development manager, where his team are responsible for identifying future opportunities and threats to the electricity transmission network and developing solutions to best meet the needs of the electricity consumer, National Grid and the industry. With a practical and theoretical training in Power System Engineering, Owen has 10 years’ experience in engineering, innovation and commercial roles within National Grid’s System Operator and Transmission Owner businesses, including contributions to infrastructure projects of national significance. Owen is National Grid Electricity Transmission’s lead on future network resilience, and has recently supported the delivery of the Energy Research Partnership’s report entitled “<i>Future Resilience of the UK Electricity System</i>” <a href="#">link</a>.</p>

<p><b>Paul Barnfather</b></p> 	<p><b>E-Port Energy: a master plan for local energy resilience</b></p>	<p>E-Port Energy is a UK Research and Innovation-funded project to deliver a 'Smart Energy Master Plan' - a local, smart energy system based around the industrial heartland of Ellesmere Port.</p> <p>It aims to develop a nationally-replicable model for a local energy system that can deliver resilient, low-cost, low-carbon energy for industrial, commercial and domestic users.</p> <p>The master plan will set out a ten-year private sector investment programme in smart energy solutions that is scalable across the UK.</p>	<p><b>Paul Barnfather</b> leads EA Technology's Electric Vehicle Readiness team. He has a B.Eng (Hons) in Mechanical Engineering and Electronic Systems and has a background in the regulated electricity utility sector. He specialises in infrastructure investment and asset management for electricity transmission and distribution networks.</p> <p>Paul sits as Patron's representative on the Institute of Asset Management Council and is chairman of the ISO/TC 123 UK mirror committee on Management of Network Assets in Power Systems</p>
<p><b>Peter Jones</b></p> 	<p><b>Future resilience of the UK Electricity System: are we resilient to meet the needs of this rapidly changing world?</b></p>	<p>The electricity system has seen significant change over the last decade with a trend towards decentralisation of generation, a rapid increase in intermittent renewable generation, and an increased electrification of other critical infrastructures and sectors.</p> <p>There is a growing trend of society and business becoming increasingly reliant upon new technology, broadband and communications; all requiring electrical energy and ultimately leading to an increased interdependency between sectors.</p> <p>Furthermore, the world is changing; from climate change inducing extreme weather events, through to an increase in malicious intent to affect networks.</p> <p>To maintain the high level of resilience we experience today from our energy networks do changes need to be considered?</p>	<p><b>Peter Jones</b> is a Chartered Engineer and Fellow of the Institution of Engineering and Technology with over 30 years of experience working with ABB and Scottish Power on transmission and distribution related projects.</p> <p>Currently Peter is the Technical Manager for the Energy Research Partnership (ERP)</p>

**Johanna Doyle**



**Inertia Measurements:  
addressing the  
challenges of a rapidly  
changing energy system**

The global energy sector is undergoing a significant shift from large, centralised conventional power sources to decentralised, renewable generation.

This shift to a lower carbon energy system characterised by increased amounts of non-synchronous, distributed generation is causing a host of new technical challenges for system operators, the most pressing of which is how to manage system stability and resilience in a low inertia environment.

For this reason, National Grid ESO and Reactive Technologies partnered on an innovation project (Project SIM) to demonstrate that inertia could be directly and continuously measured – a world first. In this talk, the learnings from Project SIM will be shared and the implications of its findings for system operators globally will be explored.

**Johanna Doyle** joined Reactive Technologies in 2014 as Head of Commercial Delivery. In that time, she has been instrumental to the company's growth, leading Reactive's ground-breaking demonstration projects with National Grid in the UK and securing an award-winning demand side response contract for Reactive with Carrefour Hypermarkets in France. Before joining Reactive, Johanna was Head of Biomass at RES UK & Ireland.

Johanna is passionate about the energy transition and has an MSc in Renewable Energy Systems Technology and a BA in Earth Sciences from Harvard University.