

EI Awards celebrate 2018's energy trailblazers



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Community Initiative Award: *Community Managed Solar Energy Mini-Grids Systems*

Sponsored by Myriad Global Media
Launched by Pakistan's foremost poverty alleviation agency, the Pakistan Poverty Alliance Fund (PPAF), the Community Managed Solar Energy Mini-Grids Systems is a project investing in community-based solar energy mini-grid systems in remote areas of the Khyber-Pakhtunkhwa (KPK) Province of Pakistan. The initiative targets the electrification of off-grid communities in remote, underdeveloped and underserved areas with no opportunity of connecting to the national electricity grid in the next 10–15 years.

As well as providing lighting to poor communities, the project has helped to trigger economic activities in the remote region by increasing its access to clean and sustainable energy, reducing deforestation and the use of kerosene oil – and thus improving socio-economic conditions. So far, the PPAF has deployed 68 off-grid micro/mini-grid solar energy systems, with the capacity of individual systems ranging from 2 kW to 16 kW and a total project capacity of 500 kW.

PPAF's solar mini-grid
system located in District
Swabi, Pakistan
Photo: PPAF



Reliable, affordable and sustainable energy is a particularly critical need for Pakistan. As a developing country of 208mn people, the nation has faced severe energy shortages since 2008, with an estimated 33% of the population without access to any form of modern energy. Resolving the energy crisis is a top priority for the nation's government, and poses the greatest challenge to Pakistan's social and economic development.

Through this project, PPAF has successfully developed and promoted the concept of community-managed renewable energy projects. This is now an established renewable energy delivery model where communities are involved in initiating, developing, operating and managing renewable energy projects.

Energy Champion Award: *Eddie Boyd, the Highland Council* **Sponsored by Arenko Group**

This year's Energy Champion Award went to Eddie Boyd, Energy & Sustainability Manager at the Highland Council in Scotland. With more than 35 years' experience in the construction industry, Eddie brings a wealth of knowledge and expertise to his role at the Council – where he has headed low carbon and sustainable strategies for ten years, alongside developing a new energy and sustainability team.

Eddie's remarkable knowledge and passion for the industry have had an admirable impact on the organisation's carbon reduction plan, alongside driving a 3% reduction of carbon emissions in the last year alone.

Eddie's enthusiasm and knowledge are highly prized among

Now in its 19th year, the Energy Institute's annual Energy Awards showcase the inspiring accomplishments of energy professionals worldwide. From smart solutions to energy management and flexibility, and a new wave of energy champions, we detail the winning projects.

all members of staff at all levels within the Highland Council, where he has been heavily involved in applying good practice based on the Council's carbon management plan. Under his leadership, the Highland Council team have improved its skills through individual project mentoring and professional training on building thermal modelling, building services engineering, GIS mapping and energy management systems.

Eddie has also championed the development of policies and public sector practices which bring high value to the Council's low carbon agenda, alongside establishing a quality design and maintenance standards for public sector works. He is also currently the head for implementation of the Route Map for Energy Efficient Scotland, where he has played a key part in the nation's new Energy Strategy and Climate Plan.

Energy Champion Award – Highly commended:

Matthew Barnett, Nexen
Highly commended in the Energy Champion category was Matthew Barnett, whose passion for sharing knowledge and best practice have made a significant contribution to Nexen and the wider oil and gas industry, alongside helping to develop a new generation of budding engineers.

As the chair of the EI committee for developing guidance on integrity management of valves, Matthew has connected the committee with the EI's HSE and BVAA pipeline user group to ensure that both groups are working towards common goals and industry best practice. Alongside this, Matthew is a member of several EI committees

for improvement of bolted joint management to aid hydrocarbon release programmes.

Energy Management Award:
Boots UK – a decade of beating the EnergyCare challenge through a holistic approach to energy management

Sponsored by Keltbray

A holistic approach to energy management, coupled with a strong staff engagement strategy, has seen high street stalwart Boots reach its carbon emissions reduction target of 30% by 2020 – three years ahead of schedule. Since its launch in 2008, the retail giant's 'EnergyCare at Boots' energy management plan has helped to cut emissions 33% in stores opened in 2005, thanks to significant store investment and the involvement of thousands of Boots employees.

Underpinning EnergyCare's success is a four-point action plan encompassing robust utility management; data analysis and reporting; comprehensive understanding of the energy arena; significant investment in technology, innovation and stakeholder engagement, including sending communications to 60,000 colleagues across the country.

Staff engagement has also been pivotal, with significant efforts being made to engage Boots UK employees with the benefits of energy efficiency. To date, more than 50% of Boots UK employees have completed an e-learning energy module, while 300 of the largest Boots UK stores have been visited by the energy team to share advice on electricity reduction. The company has also organised a series of fun staff engagement activities, including a pedal-powered outdoor cinema (pictured), while a range of various internal communication channels allow staff to share energy-saving inspiration and ideas.

Since being implemented, the EnergyCare plan has had a

significant impact internationally, including in the US. Walgreens Boots Alliance – the US-based parent company of Boots UK – has adopted the EnergyCare model in the US and across its international group, consisting of over 25 countries, 13,000-plus stores and nearly 400 distribution centres.

Environment Award:
GSH Group and Kaleesuwari: Fuel Switch from Coal to Biomass for Steam Production

Sponsored by the Committee on Climate Change

In 2016, steadily rising Indonesian coal prices prompted the Chennai-based GSH Group, a global facilities management company, to investigate lower carbon fuel sources that could replace coal with limited outlay and without disrupting production – developed in collaboration with the India-based Kaleesuwari Refinery (KR).

The outcome was 'GSH and Kaleesuwari: Fuel Switch from Coal to Biomass for Steam Production'; a programme designed to reduce steam generation costs and emissions by switching from coal to biomass.

Working in consultation with KR Management, GSH undertook a thorough investigation of renewable, low carbon and local fuel sources that could replace coal, and successfully identified alternative fuel sources that can be combusted with minor furnace modification. These included sawdust from sawmills, secondary charcoal, turmeric waste, chili waste and corn waste – all of which are renewable and easily sourced from local waste materials. Using a monitored mix of coal and biomass, GSH began conducting tests in the fluidised-bed furnaces at KR's Palani and Chennai facilities, with encouraging results.

Since its launch in October 2017, the programme has resulted in the proportion of biomass increasing to almost 60% (around 1,000 tonnes per month) at the Palani plant and to about 20% (around 300 tonnes per month) at the Chennai facility, with plans to achieve 100%. It has also driven down emissions significantly, achieving a 60% carbon emission reduction – with potential for 100%.

Health and Safety Award:
Repsol Sinopec Resources UK: Evaluating the effect of shift design on fatigue and alertness

Sponsored by Shell
Winner of this year's Health & Safety award is a benchmark study evaluating the effect of shift patterns on fatigue and alertness on workers on the Flotta Oil Terminal.

In undertaking its study, Repsol identified key areas where the current shift pattern deviated from good practice – by comparing the current shift pattern against the industry good practice, specifically in the number of consecutive nights worked by individuals undertaking safety-critical tasks.

Undertaken in 2016, Repsol's project methodology comprised three main phases: the research design phase, which employed wearable sleep technology, bio-mathematical modelling, a fatigue questionnaire and rota opinion surveys; phase 2 – the data collection phase, which involved setting up iPad data collection points and issuing surveys; and phase 3, the data analysis phase, which involved comparing the mean day shift and night shift alertness, sleep and fatigue levels on both shift patterns.

Significantly, analysis revealed substantial differences between mean sleep duration, alertness and fatigue scores between the forward and backward shift patterns.

The impact of the project has been significant, with the data analysis phase supporting a clear and evidence-based recommendation on which new shift pattern to adopt – the forward rotation – which had been less preferred by the workforce, but is safer – with lower levels of fatigue and higher levels of alertness achieved. The project also saw a marked change in the workforce's perceptions towards forward rotation.

Alongside this, the project has facilitated proactive engagement with specific individuals who showed varying levels of fatigue and alertness. It has also gained further commitment to developing a longer-term project of continuous improvement based on data evaluation.

Health and Safety Award – Highly commended:
The Ramp Trial

The Ramp Trial is a lightweight, cost-friendly ramp designed to help disabled pedestrians safely navigate roadworks by utility companies. Developed by UK Power Networks and Melba Swintex, the ramp has been designed to tackle the common access challenges often posed by traditional kerbside ramps, which often feature too-narrow or too-steep inclines; ramps that bridge that gap between the road and kerb, which can buckle and give way; while ramps with 'too high' sides can create access issues for visually impaired people.

The resulting design was a

Boots UK's pedal-powered outdoor cinema event
Photo: Boots UK



wheelchair ramp that weighs below 20 kg; is structurally sound and tough; reduces the risk and hazard to members of the public; and accommodates a large range of kerb heights.

Innovative Technology Award:
The Origami Energy Technology Platform and m-Pipe (joint winners)
Sponsored by Sembcorp

This year's Innovative Technology Award saw not one, but two winning entries: Origami's Energy Technology Platform and Magma Global's m-Pipe project.

As the use of intermittent renewable energy increases, the need for cost-effective energy flexibility is becoming ever more paramount. To this end, Origami Energy has developed its Technology Platform; an intelligent, scalable and secure technology solution that delivers real-time monitoring and control of any distributed energy asset – enabling these assets to quickly respond to electricity system needs.

By securely managing assets and services, the platform helps all energy market participants achieve better financial outcomes whilst accelerating the transition to a more reliable and greener energy future.

Using its patent-protected intelligent Energy Router, the platform enables remote monitoring and real-time control of any assets – turning 'dumb' assets smart. It also enables remote deployment of new flexibility services over secure communications and provides local intelligence to handle network latency and connectivity issues.

In 2017, Origami piloted its technology with multiple large energy consumers spanning the generation, storage and demand-response assets sectors, supplying full provision of services generating revenue from National Grid.

m-Pipe is a first-of-its-kind, highly durable pipe designed to meet the increasingly complex and challenging demands on oil and gas operators. Made from carbon fibre PEEK thermo plastic, the product has been developed to access where steel and non-bonded flexible pipe are not viable solutions, such as oil exploration and production in ultra-deepwater, high pressure, high temperature, sour service and harsh offshore conditions.

Stronger and one tenth the weight of steel or non-bonded flexible pipe, m-Pipe does not corrode – unlike its steel counterpart – and can be taken up and re-used after completing service. As yet, no other existing pipe can reach the same levels of

capability. Due to its light weight, m-Pipe also typically delivers 65% cost savings.

After years of development, m-Pipe is already being adopted as the core of some of the world's largest offshore oil contractors' drilling and oil production solutions. The pipe is enabling companies to dramatically cut installation time from months to days, and massively reduce risk from weather and to offshore staff, while using smaller vessels and less ancillary equipment. The pipe is also able to withstand high-temperature operations up to 200°C.

Public Engagement Award:
EDF Energy: The Pod
Sponsored by the Chartered Institute of Public Relations

Born in 2008, the Pod is a digital education programme designed to provide children worldwide with a free curriculum-linked resources covering a wide array of environmental topics, including energy, water, waste, biodiversity and climate science. Exceeding an initial target to reach 3mn children worldwide, the project has reached more than 10mn children and become the largest programme of its type in the world.

Since its inception, more than 22,000 schools and 38,000 teachers have registered with the Pod, including over 200 schools across 56 countries, including Hong Kong, India, Costa Rica, Japan, Russia, South Africa and Australia.

While traditional education focuses heavily on 'telling', the Pod provides hands-on skills and activities that truly involve and engage children from the outset, through a host of programmes in line with the educational curriculum taking each child on a journey of STEM and environmental discovery.

The programme has enjoyed positive feedback from both students and teachers – 79% of teachers agreed the Pod made it easier to teach about energy, while 78% of primary students said that they found the programme interesting.

Young Energy Professional of the Year:

Charlie Cook, Octopus Energy
Sponsored by Aramco

Taking this year's accolade for Young Energy Professional of the Year Award is Charlie Cook, who has been the driving force behind the creation, funding and management of Powerloop – a £7mn project to demonstrate domestic vehicle-to-grid (V2G) technology. The project was awarded more than

£3mn in government funding, via InnovateUK, in January 2018.

Throughout the project, Charlie has brought a passion for the energy space to his role, along with focus and hard work delivering an exceptional project for Octopus Energy and the consortium. Of the project, he hopes that 'within the first five years of my energy career in the UK, the UK's storage needs will be largely met by EVs', with the UK eventually becoming a leader in the V2G industry.

The long-term objective for Powerloop is to develop a domestic V2G management service that will be offered across the UK and exported abroad. The project, launched in 2007, has been designed to benefit UK Power Networks as the company tests new localised flexibility markets for V2G-connected vehicles to participate in.

Once fully developed, the Powerloop will comprise a V2G aggregation platform built by the company's aggregator partner, Open Energy, and a V2G Scheduling Engine to control the portfolio of chargers to be developed by Chargepoint Services. Octopus Energy is building a customer app, a V2G tariff, settlement and billing system to provide a simple and convenient experience to the driver, while the Energy Saving Trust will track this customer experience throughout the project. Navigant, a global management consulting firm, will study the system benefits.

Young Professional of the Year – Highly commended:

Rona Mitchell, UK Power Networks

Highly commended in the Young Professional of the Year category is Rona Mitchell, who, in just two years at UK Power Networks, has earned the credibility and trust to lead complex innovation projects uniting transmission and distribution, gas and electricity to deliver better outcomes for customers.

Chief among these are a ground-breaking project to change Civil Aviation Authority (CAA) rules to allow drones to inspect overhead lines more effectively, and leading five network operators on a project to ensure that distribution networks are best-prepared for the full smart meter rollout.

Whilst overseeing the CAA's Beyond Visual Line of Sight project, Rona gained support from top stakeholders across the business, and demonstrated the project benefits to the head of innovation, asset management and network operations directorates. ●