

**EUA**

energy&utilities alliance

[www.eua.org.uk](http://www.eua.org.uk)

A U T U M N 2 0 1 7

OUTPUT

# Green gas

The low carbon  
solution for  
the future?

## **This issue:**

News from the Divisions  
Upgrading our Energy System  
Viewpoint - Community Energy





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A company limited by guarantee and registered in England.  
Company Number: 10461234

Design and Publishing: [www.mhgraphics.net](http://www.mhgraphics.net)



ORGANISED BY:

# GAS INDUSTRY AWARDS 2018

**TUESDAY  
15th MAY 2018**

LONDON  
HILTON HOTEL,  
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SAVE  
THE  
DATE

WELCOME



Welcome

**G**as currently accounts for nearly 50 per cent of non-transport UK primary energy needs – for power generation and heat. But the environmental cost is that gas accounts for 40 per cent of the UK's greenhouse gas emissions.

In this issue we look at green gas and its potential as a low carbon solution for the future. There is no definition of what green gas is, it is a range of options and we look at developments in biomethane, bioSNG and hydrogen.

Gas offers flexibility and the UK has the world's leading gas grid infrastructure in place, directly supplying the energy to heat 85 per cent of UK homes. Green gas offers a realistic way forward and should be considered a longer-term solution.

Also this issue, we consider some of the key actions for EUA arising from Ofgem's Smart Systems and Flexibility plan, a key element of Government's Industrial strategy.

EUA's President, Andrew Keating, assesses how blockchain might impact the way we do business. Already widely used in the financial services sector, a growing number of industries are experimenting with the technology. The energy sector has been slow to recognise its potential but a growing number of organisations are committing to developing blockchain technology.

We are extremely grateful to all our contributors for helping to pull together this issue. Hope you enjoy the read.

*Caroline*

Caroline Haine,  
Editor, OUTPUT



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## Utility Networks News

# Network Engineering & Equipment Group (NEEG) Meeting

Peter Day, NEEG Manager

**J**une's NEEG meeting was hosted by member company ControlPoint at their premises in Chesterfield, Derbyshire.

Attendees heard from a number of industry speakers on a variety of topical subjects:

David Gill, Northern Gas Networks Director of Stakeholder Relations provided an update on The Northern Powerhouse and Energising the North. Severn Trent's Water Standards Implementation Manager spoke about how STW evaluate new products and services. The Health & Safety Executive informed attendees of developments on sector plans including GSMR. DNV GL Vice President, Utilities & Infrastructure Tony Green offered solutions to the loss and attrition of business critical knowledge and experience which can expose organisations to safety and availability risks. The Chartered Institution of Building Services Engineers (CIBSE) provided members with

background and updates on BIM Level 2.

Following a fascinating tour of Sheffield University's Advanced Manufacturing Research Centre (AMRC) and Factory 2050, the AMRC Business Development Director outlined innovation opportunities in machining, welding & cladding, metrology & inspection, data analytics, robotics, cobotics, visualisation and augmented reality. If you wish to see copies of any of these presentations please contact [peter@eua.org.uk](mailto:peter@eua.org.uk)

Further meetings will take place in October and December - confirmed speakers include; National Grid Gas Transmission Innovation Team, Project CLoCC. Home Builders Federation, UK District Energy Association, The Water Regulations Advisory Scheme (WRAS), Achilles UVDB, UKRN, Ofgem and National Infrastructure Commission.

Please contact [peter@eua.org.uk](mailto:peter@eua.org.uk) for further details.

'a few positives to report'...

## EUA respond to Ofgem's proposed RIIO-2 Framework

**I**n order to formulate a formal response, EUA arranged a workshop in August for members to discuss Ofgem's proposed RIIO2 Framework. Ofgem has outlined a number of potential reforms and warned networks that they should "prepare for tougher price controls". The member workshop looked in detail at the questions raised and members expressed their views on RIIO-1, what they hoped for in RIIO-2 and what changes they would like to see.

EUA and member companies broadly agree with the overarching objective for RIIO-2. The focus should be on ensuring a well operated

# Smart Update

Gary Cottrell, EUA Smart Meter Lead

**W**ell, another Output Magazine and another Smart Update piece but this time we have a few positives to report:

- DCC is live with release 1.3
- SMDA test house is up and running
- The Alternative HAN Company (set up by Energy Suppliers) is holding vendor days to further the development of an alternative HAN for multiple dwellings (flats, apartments, bedsits etc).

So, should we all be smiling? Well perhaps not entirely as the DCC is still having down time for fixes, so is still not reliable for suppliers to install against. This down time is still affecting testing for SMDA test house. I personally had hoped for speedier progress on the alternative HAN so that the fuel poor in flats etc. are not deprived of smart meters at the start of the mass roll out.

Going forward, Ofgem has confirmed details of an operational performance regime for the DCC to ensure they deliver timely and high-quality products and services by placing 100 per cent of the organisation's margin at risk if it fails to meet minimum performance levels. Performance will be measured against five areas, including the DCC's success rate in providing first time connections for new smart meter installations and its ability to deliver quality meter communications hubs. It will also be tested on its service availability and the time it takes to respond to service requests. The finalised framework is set to come into effect in April 2018, by which time it is expected that suppliers will finally be installing SMETS2 meters which can communicate with the DCC,

Once SMETS2 functionality is finalised, the DCC faces a number of challenges including resolving issues around the adoption of SMETS1 meters and providing connectivity for meters in multiple occupancy buildings.

But still we are progressing and the light at the end of the tunnel is getting closer every day although it may not be on a smart meter just yet!

Gary Cottrell: [gary@eua.org.uk](mailto:gary@eua.org.uk) - 01926 513764

and fair market for customers, stakeholders and networks. Current affordability and consumer satisfaction levels are testament to a well-run market that is operating in the national interest and the Gas Distribution networks annual reports demonstrate that the systems in place work well.

RIIO-1 has provided a framework for successful delivery and EUA hopes that RIIO-2 looks to improve on this rather than make radical changes. The focus should be on working with industry to make manageable changes rather than wholesale change, as any shocks to the system could lead to a reversal in progress. There are a broad range of stakeholders who all have a stake in operating in an efficient and fair manner who should be considered equally.

EUA does not believe there is a credible decarbonisation pathway without a fully functional and modern gas network, therefore, there should be no uncertainty over its future. The gas pipe network is a key function of future non-methane pathways so even in a reutilised network, the need for a safe and modern gas pipe network will be critical.

On innovation, overall EUA members believe that RIIO has had a positive effect on stability and provides the necessary returns to make innovation viable for both supplier and Network Companies. This has benefitted the consumer with better services and products.

EUA asked for more positive reporting around RIIO outputs as there is a lack of understanding about what RIIO is and what it delivers. The supply chain and network companies called for better communication of

innovation in the sector and how they have benefitted consumers. RIIO-2 needs to strike a balance between ensuring costs are low today and also in the future.

The response was sent to Ofgem in early September and the feedback will be used to inform a consultation on the structure of the RIIO-2 framework, which will be published in the first quarter of 2018. The Framework Review Stage will culminate in the publication of a final decision in mid 2018.

## SEC Panel Elections

Following nomination, Gary Cottrell has secured a position as a SEC Panel member and also becomes a member of the SEC Co board for one year. The position on the panel is strictly as an individual industry advocate not as a representative of any party. He will use his knowledge and experience of the metering industry to help the panel reach decisions on the matters before it and in accordance with the Smart Energy Code.

Thanks to all the SEC parties who supported Gary.





# Smart Connected Homes & Buildings Event: Key Trends & Opportunities



On Thursday 14 September, delegates from across the Energy and Utilities sector gathered at the state of the art Manufacturing Technology Centre in

Coventry for a day of insights and discussion surrounding the future of smart connected homes.

With Smart Home Appliances becoming the new normal, this event offered the chance to explore the opportunities and potential issues associated with the Internet of Things (IOT).

Highlights of the day included Tony Gee of Pen Test Partners hacking a smart kettle live in front of an incredulous audience, revealing the pitfalls related to computational aspects being added to ordinary things. With a myriad of smart devices in the home comes more opportunities for hackers to gain access to sensitive material. As such, security and data protection were prominent themes throughout the day. Adrian Baschnonga, Global Telecommunications Analyst at EY, revealed that security concerns and the perception of IOT devices as gimmicky were preventing them from reaching the masses. Ian Campbell, Director of BJIC Consulting & Chair of EUA Smart Connected Homes & Buildings Group, echoed this, stating that such technologies have 'a chasm to cross.'

Whilst there was insight into the challenges manufacturers face, there was also a sense of optimism about the smart appliances market, with Eleanor Knight of the Welsh Government demonstrating how innovation was improving the lives of people in Wales through providing alternate domestic gas and electricity sources. Recalling instances of dementia patients

conversing with voice activated systems, Eleanor revealed how smart appliances can transform people's lives. The transformative nature of such devices was echoed in Tim Potter's (Dixon Carphone) presentation which explored how smart devices allow businesses to predict and respond to customers' needs far more effectively than ever before. There was also a discussion as to how

smart meters can improve energy efficiency with a presentation from EDM's Axel Quingnard exploring how smart meters provide awareness and control to the consumer, creating a more accountable society.

There was a focus on collaboration, with Matti Kahola, Senior Analyst at Delta EE, reinforcing the need

for partnership and collaboration in the battle for the smart appliance market. Likewise, Samuel Dawson-Smith, Product Manager at Bosch Thermotechnology, focused on the need for interoperability in order to make the smart, connected home a reality.

Paolo Basso, Regulatory Affairs Manager for the Association of the European Heating Industry, provided a European perspective, revealing the EU Commission's plans to produce EPC style visual indicators of a device's 'smartness' and create regulations regarding smart appliances and optimising energy consumption. This provided some interesting insight into the future of the market.

Thanks to our sponsor EDM, our supporter the Association of Meter Operators, our exhibitors - Generis, Flindan and Energy & Utility Skills - and to all our speakers and delegates.

If you are interested in finding out more about the EUA's Smart Connected Homes & Buildings Group please contact Gary Cottrell: gary@eua.org.uk

Our next event, Gas 2017 will take place at the National Brewery Museum in Burton on Trent on 8 November 2017.



## HWA News

## Educating installers and homeowners

Isaac Occhipinti, Head of External Affairs, HWA



Quarter 4 of 2017 has an educational focus for the HWA. First is the need to educate installers on the latest Energy Related Products (ERP) changes and what they mean for the hot water industry.

On 26th September 2017, the UK entered phase two of the ERP legislation, which introduced minimum requirements on the heat loss of hot water tanks and more stringent efficiency requirements for water heaters.

- Hot water tanks now have to meet at least the Band C heat loss requirements, in most instances this is already the case as they meet quite stringent and separate UK Part L Building Regulation requirements.
- Water heaters have to meet higher efficiency requirements with a minimum of 36 per cent (Band C) for the "M" profile and 37 per cent (Band C) for the "L" profile.

In addition to the changes in minimum requirements, the labels for both hot water tanks and water heaters have been changed. In effect the lower Band G has been dropped and an additional band designated A plus (A+) will be added at the top end.

It is important to note that the actual values of the bands do not change. In other words a product that was say Band C in 2015 is still Band C following the change. There has however, been a change in the colour

designation for the bands so the Band C has changed from pale green to yellow.

Inevitably, due to production changeover logistics and stocking of products in the supply chain there will be period of several months where both labels are in circulation. As the actual values have not changed this should not cause a problem. It should be remembered that the legislation is applied at the point where the product first enters the market, which, in effect is when it leaves the factory. This means a merchant can sell, and an installer can fit, a product with the 2015 label, provided it left the factory prior to September 2017.

In addition to educating the industry on these legislative changes, HWA are part way through the second round of their consumer campaign, which launched in Q3 2017. Building on the success of the 2016 consumer campaign, HWA are looking at two possible angles for the follow up campaign:

**Project 1 - Utilising solar PV panels to heat hot water.**

Fitting a converter to allow solar PV panels to be connected to the water cylinder, effectively turning it into an immersion heater.

**Project 2 - Benefits of opting for a boiler and hot water cylinder installation.**

Raising awareness of the options available to homeowners to give them the tools to talk knowledgeably to their installer and choose a product that is right for their lifestyle.



## HHIC News

# HHIC calls for incentive to encourage the replacement of boilers

**S**tatistics released by the Department for Business, Energy & Industrial Strategy (BEIS) show that between 2014 and 2015 the number of families living in Fuel Poverty in England increased from 2.3 million to 2.5 million meaning that in 2015, the proportion of households in fuel poverty was estimated to be at 11 per cent.

Recognising the consequences of fuel poverty which include excess winter deaths or mental health, respiratory problems and social isolation, the Government must attempt to go further in order to tackle fuel poverty this winter.

One key area of interest to HHIC is the Government's Energy Company Obligation (ECO) scheme. This scheme has shifted its focus towards insulation, by placing a cap on the number of boilers fitted at 25,000 over 18 months - a substantial decrease from their prior yearly allowance of 130,000.

HHIC statistics also highlight a dramatic decline in the number of new boilers being fitted under

the ECO scheme. In March this year, 7,037 new boilers were fitted whereas by April only 1,211 were - a monthly decrease of 83 per cent. It is estimated that there are still around 9 million inefficient boilers being used in the UK, a large proportion of which are over 20 years old and thus would be classified as 'zombie boilers' - comprising of old technology resulting in them being highly inefficient. These so called 'zombie boilers' not only cost the consumer, causing higher bills (this can be considered a factor which



compounds fuel poverty) but also cost the environment - with higher CO2 emissions, compared to a modern condensing boiler.

Whether it be through investing more in ECO and lifting the cap on boilers introduced under the ECO2T scheme, or through incentivising boiler scrappage, it is intrinsic to eradicating fuel poverty and creating energy efficient homes that households are encouraged to replace 'zombie boilers'.

## HHIC Gas Fire Group launch consumer press campaign

**T**he HHIC Gas Fire Group employed PR agency WPR in the Summer to help promote the gas fire industry. WPR produced several articles for consumer facing magazines for the months of September and October. Uptake from the magazine editors in the sector has been good, with several articles having progressed to publication.

The campaign includes a competition with Bauer media for consumers to win a gas fire through publications ranging from Bella Magazine to Birdwatching.

Following on from the initial success WPR are due to commence the next part of the campaign with a Christmas theme.



## InstallersFirst identify key ambitions

**G**as safe engineers need a voice: up, down and across the industry to communicate with each other, with Government, with manufacturers and anyone else who has an influence on their work and livelihood. Installers First is a community of Professional Accredited Heating Installers set up to do this - to help bridge the gap between those who 'do' the job and those who affect it, making sure common sense and the voice of the industry is applied and listened to.

Over the past few months Installers First has been busy gathering industry feedback and meeting decision makers to discuss the priorities of the professional, accredited, heating installer, which has helped to identify three key ambitions:

- Training and skills - review and improve current industry access to training and ensure it meets the needs of the job
- Bureaucracy - Simplify the system, utilise industry expertise and experience and improve consumer awareness of Gas Safe
- Safety and Standards - Increase focus on driving up standards across the industry. Safety is paramount.

### Training & Skills

Through industry collaboration, Installers First will focus on the following projects in the coming months to help realise these ambitions and make a positive difference:

Installers are concerned about the inconsistent levels of training and standards for new engineers entering the industry, from fast track courses to lack of incentives for employers to take on an apprentice.

Installers First are encouraged by the activity already underway in this area, from the Institute of Gas Engineers & Managers (IGEM) standard for

training in gas work, which has been developed in conjunction with Energy & Utility Skills, to an enquiry into Gas Engineer Training Standards and also the formation of the APHC Plumbing & Heating Apprenticeship board.

An Installers First Training & Standards Newsletter is being launched to provide an update on current issues and give details of practical training from product manufacturers. The feasibility of running an industry skills and training buzz group is also under consideration.



### Bureaucracy

Installers believe that the industry is overburdened with 'schemes' and bureaucracy. Installers are best placed to input into the industry challenges.

Installers First have met with Gas Safe to relay concerns and identify how they can be addressed. Gas Safe were very receptive to the opportunity of working with Installers, via Installers First, for the good of the industry. Watch this space for details of an industry event!

More specifically, Installers First have been reviewing the process for the reporting of (RIDDOR) where faulty workmanship has caused an "Unsafe Situation". There are lots of less serious issues which can still be deemed poor workmanship, yet these can only be investigated if the consumer complains, of course this would require the consumer to be aware of what constitutes poor workmanship. Installers First is

looking at how they might be able to support this process and raise awareness with consumers.

### Standards & Safety

Illegal or substandard engineers put lives at risk, and damages the reputation of the industry. Installers First want to raise industry standards and make it harder for illegal or substandard engineers to operate within the industry. We also believe in providing the support for those who wish to improve their skills.

### Consumer Campaign

Installers First launched a Gas Safety Week competition in conjunction with Sentinel water treatment. The main theme for this campaign was to raise consumer awareness of the importance of using a Gas Safe Registered engineer, as well as having an annual gas safety check. Entrants were asked to write a Gas Safety jingle, for their chance to win a Baxi boiler plus Sentinel Goodies. To keep up to date with campaigns see the twitter feed @InstallersFirst or like the Facebook page @Installers First-Heating Installers UK.

### Restricted Sales

The restriction of sales of gas boilers has been banded around for years. The legal implications are quite complex, but we will keep investigating this issue on behalf of installers. In the meantime we are working with merchants to identify ways in which we can raise awareness of this issue and again, make it more difficult for the illegal operative to purchase goods.

### HI Awards

The Heating Installer Awards celebrates plumbers and heating installers who deliver excellent customer service on a daily basis, showcasing the superstars of the industry who often go unnoticed. Installers First have teamed up with the 2018 awards to help promote the industry and the champions within it.

If you would like to find out more about Installers First get in touch with [laurah@eua.org.uk](mailto:laurah@eua.org.uk). [www.installersfirst.co.uk](http://www.installersfirst.co.uk)





# Dedicated to Gas

**C**enex, the Centre of Excellence for low carbon technologies, has announced its involvement in the UK's largest trial of biomethane-fuelled lorries.

Output magazine spoke to Dr. Alex Mason, Technical Specialist at Cenex, to get a bit more information about the trial.

Dedicated to Gas is part of the Low Emission Freight and Logistics Trial, funded by the Office for Low Emission Vehicles (OLEV), in partnership with Innovate UK via the recently launched Low Emission Freight and Logistics Project.

Led by Air Liquide, the trial launched on April 1st and will run for 2 years. The aim is to run gas vehicles alongside diesel comparators in day to day fleet operations and also to benchmark them against each other.

## Project partners:

- Lead – Air Liquide
- Consortium of Fleets – Howard Tenens, ASDA, Kuehne+Nagel, Wincanton, Great Bear, Brit European
- Telematics – Microlise Ltd
- Emissions Measurement – Emissions Analytics
- Data Analysis and Project dissemination – Cenex Ltd

The project hopes to demonstrate both the operational, economic and environmental performance of the gas trucks as compared to diesel trucks and provide the data to advise fleets all over the UK on the best course of action

to take when it comes to reducing emissions from their fleets whilst still maintaining performance levels.

There are five lorries being trialled which range from 12 to 44 tonnes, and are all new to the UK market. The trial will road test the HGVs across 10 different vehicle configurations, creating a wealth of valuable data on vehicle performance, fuel efficiency, reliability and cost.

**Truck specs:**

**ASDA –**  
5 IVECO 4x2 400HP, 5 Scania 4x2 340 HP

**Wincanton –**  
6 IVECO CNG 7.5T 136HP, 4 IVECO CNG 12T 204HP, 10 IVECO LNG 6x2 450HP

**Howard Tenens –**  
2 Scania CNG 26T 6x2 with 340HP

**Kuehne+Nagel –**  
10 Scania LNG 4x2 340HP, 4 IVECO 4x2 400 HP, 5 AirLiquide Blueeze Cryogenic refrigerated trailers

**Great Bear –**  
5 IVECO LNG 6x2, 400 HP

**Brit Euro –**  
5 x IVECO CNG 6x2 400 HP (heavy modification into car transporter)

Many of the fleets involved were previously involved with the Low Carbon Truck Trial and other projects related to gas vehicles and as such have access to their own stations. The trucks will use a mixture of CNG and LNG depending on fleet preference. K+N vehicles will refuel with LNG at Wellingborough at the new station to be installed by Air Liquide. The station is not part of the funding for the projects.



K+N do have their own LNG station on site as well. Howard Tenens have their own CNG station. Brit Euro have their own mobile CNG station (but will also use the UK CNG network). Wincanton have access to an LNG station. The others are still to be confirmed.

Cenex will manage all data analysis and project dissemination, update a dedicated gas vehicle hub website, and organise informational workshops for participating fleet operators and interested members of the industry. Participating fleets will be supported by technical experts who will collate comprehensive data via telematics systems provided by Microlise and PEMS testing by Emissions Analytics, providing a complete analysis of the potential benefits of dedicated gas technology compared to diesel.

With regard to the testing, a selection of the trucks will be taken to Millbrook proving ground to look specifically at Nitrous-Oxide emissions (N2O). The NOx emissions will be captured by this testing and will also be captured on the regular PEMS testing performed at Bruntingthorpe by Emissions Analytics. All emissions testing will capture the full suite of emissions: CO, CO2, unburned Hydrocarbons, Particulates, NO, NO2 (NOx).

Project information will be shared throughout the trial at workshops and conferences and a final report with the findings is anticipated at the project end in March/April 2019.



# It's a gas, gas, gas.

One of the main issues affecting the UK heating industry is that of gas - in all its forms. Ross Anderson of ICOM explains.

For over 60 years, North Sea gas gave the UK a stable fuel supply with a narrow quality band which enabled high efficiency and high levels of safety. In fact, we became so accustomed to this 'luxury' that some complacency crept in.

As North Sea gas started to tail off, we began importing liquefied natural gas (LNG) to ensure security of supply, which raised issues regarding the quality of the specification. In particular, LNG needs to comply with our Gas Safety (Management) Regulation if it is to be

injected into the grid. The addition of nitrogen or propane to give suitable calorific values and Wobbe Index comes at a cost, so suppliers are now looking for ways to reduce that cost.

One such project by gas distribution company SGN, in the Scottish town of Oban, has shown that when gas appliances were installed, maintained and operated in accordance with manufacturers' instructions, they operated safely at a higher level of Wobbe Index than currently allowed for by the Gas Safety (Management) Regulation.

The project was based on mainly domestic appliances and SGN has now begun to investigate the effects on the commercial and industrial sectors, which are more likely to present problems in the control of heat input to the equipment.

The use of a wider range on Wobbe Index natural gases would certainly help in the security of supply in the UK. However, it must be proven that when operating existing gas appliances, they do not experience problems with combustion products exceeding safe levels and do not have a reduction in material life.

This is one area that will help to ensure security of supply in the medium term. However, it will not help to meet the UK's commitment to achieving an 80 per cent reduction in greenhouse gases by 2050. For that, we also need to consider 'green gases'.

## Green Gases

In relation to green gases, there are two extremes of policy being considered. One requires total de-carbonisation of the electricity grid and removal of gas from the energy scenario. The other is total de-carbonisation of the gas grid. The first would be disastrous for the heating industry as it stands, and the second would give the industry major problems in designing suitable appliances and then converting the grid.

The Government is investing in a number of projects to investigate the use of hydrogen. There are two options; firstly 100 per cent and, secondly, a hydrogen/natural gas blend.

One piece of work has been published on

behalf of the Department of Business, Energy and Industrial Strategy (BEIS), entitled "Hydrogen supply chain evidence base & modelling tool". This covers, in some detail, the supply chain from the various methods of manufacture, through to utilisation. It provides an overview and attempts to put costs against the various elements of the supply chain. Furthermore, BEIS has launched a £25m fund to look at developing the supply chain.

Another project, known as "HyDeploy", is using the discrete gas network serving the campus at Keele University. This is designed to determine the optimum level of hydrogen that can be added to the natural gas grid to ensure currently installed appliances operate safely.

Additionally, Loughborough University has begun a three-year project exploring how to odourise hydrogen without the currently-used sulphur based chemicals that would damage the catalysts in fuel cells.

Cadent has announced a project to consider manufacturing hydrogen and supplying a number of industrial users in the north west of England, using de-commissioned gas fields to store the resulting carbon dioxide.

All these projects around hydrogen will give more information as to the safety of using hydrogen, the costs and the feasibility.

Moreover, there is still the consideration of increasing production of biomethane, both for local use and injection into the grid. Synthetic natural gas and propane also have a place in achieving the 2050 goals. All of these green gases need investment to increase production volumes to play a bigger role in the strategy.

Probably the best scenario to achieve 2050 targets is the use of hydrogen in the natural gas grid at a level determined by "HyDeploy", local use of 100 per cent hydrogen in mainly industrial installations with a high gas demand, and then the addition of the various green gases.

Just how this scenario will unfold is still unclear, but what is clear is that there are several ways to ensure that we have a gas industry for the foreseeable future.





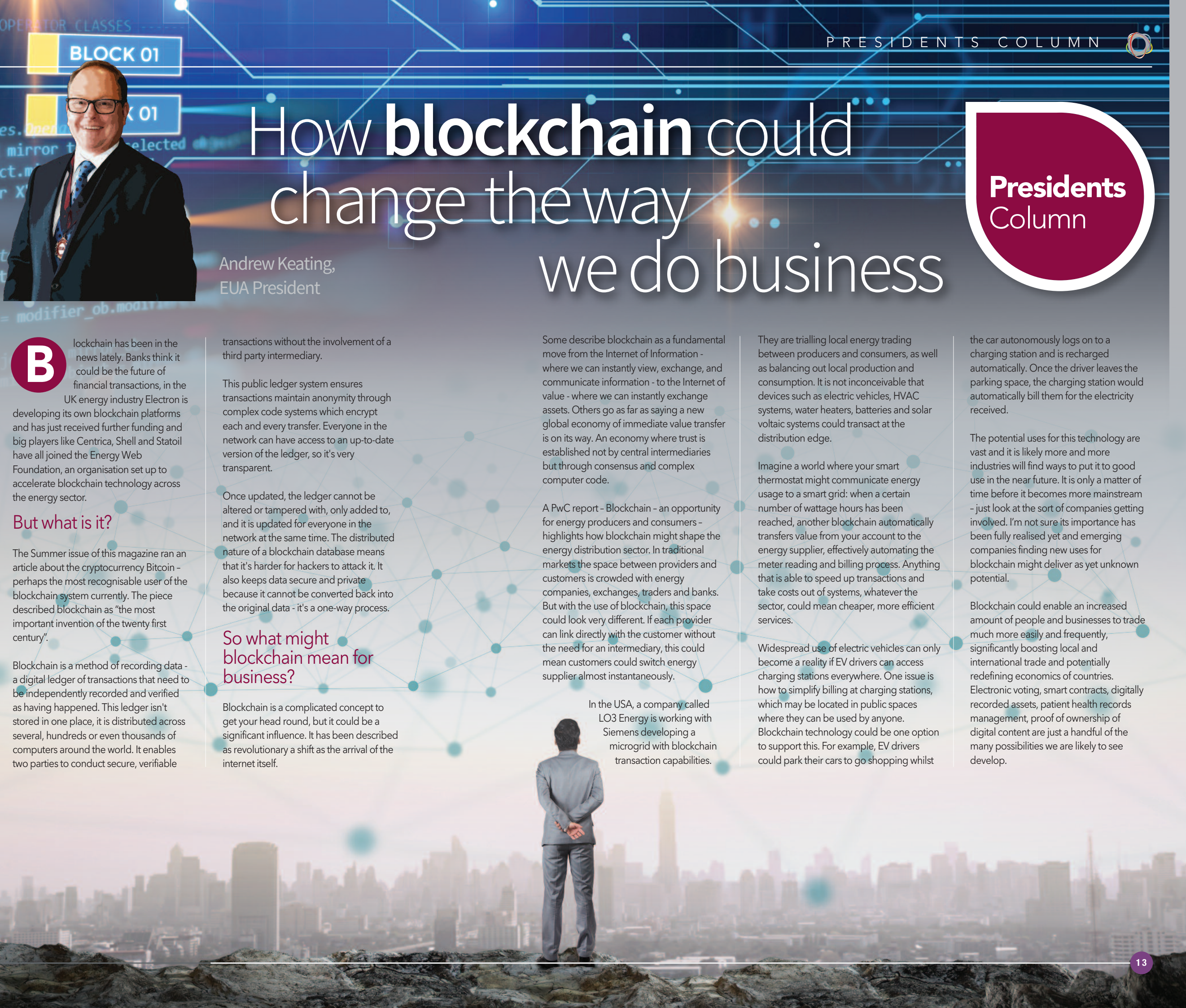
# MARC strengthens with new member

**T**he IRSAP group have joined MARC, strengthening the associations reach and influence. The company is Italy's leading manufacturer of design led radiators.



With over 50 years of experience, continuous research into new technology and development of new products has enabled IRSAP to offer products that save energy, lower costs, and respect the environment. Combining their manufacturing heritage with collaboration with design studios and universities helps ensure high levels of service and product excellence.

IRSAP will work with MARC to champion a whole house approach to energy efficiency in order to reduce carbon emissions, a key policy ask of the group. The benefits of an energy efficient or renewable heating system can only be realised if the whole system is efficient. For too long, heat emitters have been left out of the efficiency equation and MARC are working hard to see radiators included in future energy policy.



**B**lockchain has been in the news lately. Banks think it could be the future of financial transactions, in the UK energy industry Electron is developing its own blockchain platforms and has just received further funding and big players like Centrica, Shell and Statoil have all joined the Energy Web Foundation, an organisation set up to accelerate blockchain technology across the energy sector.

## But what is it?

The Summer issue of this magazine ran an article about the cryptocurrency Bitcoin – perhaps the most recognisable user of the blockchain system currently. The piece described blockchain as “the most important invention of the twenty first century”.

Blockchain is a method of recording data - a digital ledger of transactions that need to be independently recorded and verified as having happened. This ledger isn't stored in one place, it is distributed across several, hundreds or even thousands of computers around the world. It enables two parties to conduct secure, verifiable

transactions without the involvement of a third party intermediary.

This public ledger system ensures transactions maintain anonymity through complex code systems which encrypt each and every transfer. Everyone in the network can have access to an up-to-date version of the ledger, so it's very transparent.

Once updated, the ledger cannot be altered or tampered with, only added to, and it is updated for everyone in the network at the same time. The distributed nature of a blockchain database means that it's harder for hackers to attack it. It also keeps data secure and private because it cannot be converted back into the original data - it's a one-way process.

## So what might blockchain mean for business?

Blockchain is a complicated concept to get your head round, but it could be a significant influence. It has been described as revolutionary a shift as the arrival of the internet itself.

# How blockchain could change the way we do business

Andrew Keating,  
EUA President

Some describe blockchain as a fundamental move from the Internet of Information - where we can instantly view, exchange, and communicate information - to the Internet of value - where we can instantly exchange assets. Others go as far as saying a new global economy of immediate value transfer is on its way. An economy where trust is established not by central intermediaries but through consensus and complex computer code.

A PwC report - Blockchain - an opportunity for energy producers and consumers - highlights how blockchain might shape the energy distribution sector. In traditional markets the space between providers and customers is crowded with energy companies, exchanges, traders and banks. But with the use of blockchain, this space could look very different. If each provider can link directly with the customer without the need for an intermediary, this could mean customers could switch energy supplier almost instantaneously.

In the USA, a company called LO3 Energy is working with Siemens developing a microgrid with blockchain transaction capabilities.

They are trialling local energy trading between producers and consumers, as well as balancing out local production and consumption. It is not inconceivable that devices such as electric vehicles, HVAC systems, water heaters, batteries and solar voltaic systems could transact at the distribution edge.

Imagine a world where your smart thermostat might communicate energy usage to a smart grid: when a certain number of wattage hours has been reached, another blockchain automatically transfers value from your account to the energy supplier, effectively automating the meter reading and billing process. Anything that is able to speed up transactions and take costs out of systems, whatever the sector, could mean cheaper, more efficient services.

Widespread use of electric vehicles can only become a reality if EV drivers can access charging stations everywhere. One issue is how to simplify billing at charging stations, which may be located in public spaces where they can be used by anyone. Blockchain technology could be one option to support this. For example, EV drivers could park their cars to go shopping whilst

the car autonomously logs on to a charging station and is recharged automatically. Once the driver leaves the parking space, the charging station would automatically bill them for the electricity received.

The potential uses for this technology are vast and it is likely more and more industries will find ways to put it to good use in the near future. It is only a matter of time before it becomes more mainstream - just look at the sort of companies getting involved. I'm not sure its importance has been fully realised yet and emerging companies finding new uses for blockchain might deliver as yet unknown potential.

Blockchain could enable an increased amount of people and businesses to trade much more easily and frequently, significantly boosting local and international trade and potentially redefining economics of countries. Electronic voting, smart contracts, digitally recorded assets, patient health records management, proof of ownership of digital content are just a handful of the many possibilities we are likely to see develop.







# Green gas



## The low carbon solution for the future?

**G**as currently accounts for nearly 50 per cent of non-transport UK primary energy needs – for power generation and heat.

The UK has the world's leading gas grid infrastructure in place, directly supplying the energy to heat 85 per cent of UK homes.

But the environmental cost is that gas accounts for 40 per cent of the UK's greenhouse gas emissions. This needs to change and green gas is therefore central to the UK's future energy mix.

There is no definition of what "green" gas is, it is a range of options. In this feature we look at biomethane, bioSNG and hydrogen.

Biomethane is the gas captured from waste processing, typically anaerobic digestion. It

is increasingly commonplace in rural areas as the farming industry use the gas generated from anaerobic digesters locally, often to generate electricity which can be fed into the grid. Companies like Severn Trent have taken a further step, and clean up the biomethane to inject the "green" methane into the gas grid.

Synthetic (or Substitute) Natural Gas (SNG) is a methane-based gas, created artificially rather than being extracted from the ground. It achieves "green" status because it uses waste materials, usually sent to landfill or incineration, to create the gas but the processing of the gas is technically complex.

Hydrogen is currently produced from natural gas using steam methane

reforming, where the carbon can then be captured. When the gas is combusted it does not give off carbon dioxide and is therefore the ultimate green gas. What's more, it can be transported through the existing gas pipe network and only minor modifications required to appliances. However, there is a significant amount of work still to do to make hydrogen a reality.

EUA believes a range of options are likely to provide the answer to the UK's future energy needs. Green gas offers a realistic way forward and UK policy makers should not turn their back on gas nor limit its use solely as a short-term solution.

**Mike Foster, Chief Executive, Energy and Utilities Alliance**

## Putting our foot on the green gas

Charlotte Morton, Chief Executive of the Anaerobic Digestion & Bioresources Association (ADBA)



while a further 59 biomethane plants are in the pipeline. AD is currently reducing the UK's greenhouse gas emissions by 1 per cent and employing more than 3,500 people in the UK, but with the right policy support it has the potential to reduce emissions by 4 per cent, employ 35,000 people, and generate 78 TWh per year, making a vital contribution to the UK's heat and power requirements.

### What AD needs from Government

In order to meet this potential, the AD industry urgently needs the Department for Business, Energy and Industrial Strategy to pass the delayed Renewable Heat Incentive (RHI) legislation as soon as possible to ensure that new biogas and biomethane plants currently on hold can be built. We estimate there may be as many as 15-20 biomethane projects in development that are waiting for the RHI

produced in the UK, less than a quarter of this is being recycled through AD. ADBA is calling on England to follow Scotland, Wales, and Northern Ireland in rolling out mandatory separate food waste collections to allow this food waste to be turned into valuable heat and power whilst also avoiding significant methane emissions from landfill.

One other key area where Government can make a significant difference to the growth of AD is farming. With a new Government in place, declining financial incentives for energy generation and a need to replace the EU Common Agricultural Policy that currently supports British farming, ADBA is developing new policy recommendations that quantify the energy- and non-energy-related benefits of AD so that on-farm AD plants can receive the support they need as part of a new policy of agricultural payments.

### Looking to the future

AD has huge potential both in the UK and around the world, but will require the support outlined from Government in order to be able to provide the wide range of benefits it offers. AD operators are also looking to dramatically lower their costs so the industry can become competitive with other energy-generating technologies, necessary for as long as the true cost of carbon is not accounted for in many cost comparisons. ADBA's pioneering Best Practice Scheme will be a key tool in helping



**G**reen gas in the form of biomethane produced through anaerobic digestion (AD) can make a significant contribution to decarbonising the gas grid, as well as providing low-carbon, renewable heat to homes and businesses across the UK.

### Where we are today

ADBA's July 2017 Market Report showed that AD plants across the UK now have enough capacity to power over a million homes, a fantastic landmark for our industry. AD in the UK now has a capacity of 733 MWe-e, with total energy generation of 10.7 TWh per year. Operational performance in the industry continues to improve, with load factors rising to 73 per cent in 2016, up from 69 per cent the previous year.

There are now 559 AD plants across the UK. Whilst the vast majority of these are electricity/CHP plants, 85 produce biomethane,



legislation to be passed in order to receive their tariff guarantee and start construction.

With the AD industry currently operating at 80 per cent capacity, there is also huge scope for plants to take on more feedstock. For example, while 10 million tonnes of food waste is being

to raise operational performance across the industry, and we're also pushing for greater investment in AD research and innovation from Government to bring about the step change in the rate of development of anaerobic biotechnology that we need to take AD to the next level.





# Energy from Sewage



**S**evern Trent Water serves 5.3 million homes and businesses with water and sewerage services. They are market leaders in the production of renewable energy from the wastewater sludge that they treat. Their strategy has always been to seek out new opportunities to improve processes and push the industry forward in its development of renewable energy plants. In 2015 they delivered against a target of 30 per cent of the electricity the company consumes being generated from renewable sources. They are currently pushing towards 50 per cent by 2020 through deploying new technologies in the sewage, food and crop Anaerobic Digestion (AD) markets. One of the biggest components of this strategy has been delivering new biomethane injection plants.

## Biomethane Injection

In 2013, Severn Trent started generating Biomethane from the biogas produced at their largest Sewage Treatment Works at Minworth in the West Midlands. Biomethane gas is a much higher quality than biogas - almost pure methane. It is obtained by removing the carbon dioxide that is also produced in AD.

Biomethane injection offers significant improvements in energy recovery from the biogas when compared to CHP. This efficiency increases further if the heat produced cannot be used on site. By upgrading the gas they make it clean enough to inject into the national gas grid where it can be used in higher efficiency processes. Severn Trent searched across Europe to find a technology that could deliver this clean up and allow them to export 98 per cent of the energy contained in their biogas.

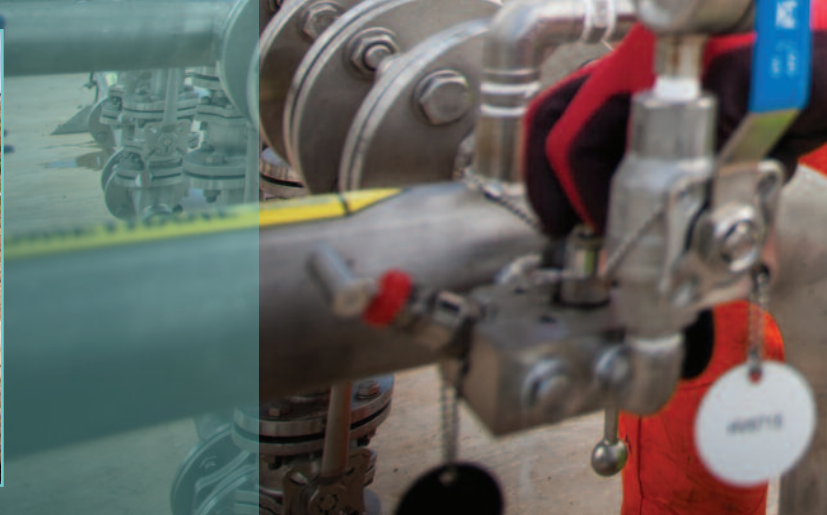
They developed a technology proven in Germany and Sweden, facing the challenge of bringing it to the UK market where there had only been minimal uptake of the concept of biomethane injection and almost no experience on sewage derived gas. The process was

delivered in conjunction with Cadent (then National Grid Gas) to ensure all gas quality was in line with UK legislation and that the gas could be safely delivered onto the network.

The Minworth plant is a water scrubbing plant that utilises pressurised water to effectively wash any carbon dioxide out of the biogas and leave a very high methane purity gas at the end of the process. Unfortunately pure methane does not comply with UK Gas Industry standards for energy content of the

onto the network every hour. The upgrading plant utilises the gas that is not needed to heat or power their largest wastewater site.

The AD plant on the site processes around 2.1 million peoples sewage from the West Midlands area. It converts the waste into 65 GWh of renewable biomethane gas for export, and enough electricity and heat to keep the site from using fossil fuel. Once in the network biomethane is used for domestic heating, industrial processing, electricity



gas. The process for upgrading the gas is also not 100 per cent perfect - some inert gases like Oxygen and Carbon Dioxide will be found in the product gas, albeit at low levels. This means that the gas needs propane added to boost its energy content and it must be odourised to ensure leaks can be detected before it goes onto the network.

## Their Success

Severn Trent was the first Company in the UK to inject sewage derived biomethane at a commercial scale. The plant at Minworth was commissioned in September 2014 and it consistently flows 750-900 cubic metres of gas

generation and vehicle fuel. The 65GWh of energy is enough to heat around 4,400 homes in the local area for a whole year.

Following Minworth, Severn Trent Water have expanded their Biomethane upgrading to 4 additional sites. Their next largest sewage works in Stoke on Trent injects around 40 GWh of gas into the network each year. They have also developed plants looking at the use of food waste and crops in AD to produce biogas for upgrade and export. The plants at Nottingham, Derby and Stourbridge are all doing this and injecting into the National Gas Grid.

## Future for the Industry

Biomethane Injection is reliant upon support from the Renewable Heat Incentive scheme. It provides a large proportion of the income for plants of this type and it delivers against the current carbon budget commitments that the Government has set. Biomethane is a major contributor to the decarbonisation of the energy market in general and looks to have a great future.

However, budgets for this scheme are currently under review (announcement due Autumn 2017) but assuming these are favourable, the industry is likely to progress at

pace and continue to grow. Longer term the industry needs to work out how to reduce a reliance on incentives to continue development in this sector but for now the industry needs to work with Government to ensure future delivery of the RHI and create a more sustainable market.

Severn Trent will also be looking to the gas industry to unlock new opportunities to inject and to reduce the cost of new plants. Challenging the conventional gas compositions and understanding how new and diverse gases like biomethane can be brought onto the networks without disrupting customers will be key for all involved and an

exciting challenge to take on.

New markets are opening up for biomethane in the transport sector where vehicles running on gas are becoming more accessible and opening up new low carbon options for future fleet managers.

Severn Trent is keen to deliver in all of these sectors and continue to push the development of renewable energy forward in the water and organic waste industry. By challenging new markets and developing the wastes received at their plants, they are keen to expand their energy generation capability and look at further decarbonising the water treatment process.



# The World's first green gas from waste BioSNG



"BioSNG  
could meet one third  
of domestic gas demand,  
complementing other  
low carbon heat  
solutions."

sustainable UK feedstock such as household wastes into a low carbon fuel with a similar cost to fossil natural gas. BioSNG could meet one third of domestic gas demand, complementing other low carbon heat solutions."

this is captured and sequestered greenhouse gas savings increase to 190%, resulting in a net reduction in atmospheric carbon dioxide.

Long term the technology has the potential to provide 100TWh (terawatt hours) of green gas a year – enough to fuel all of Britain's heavy goods vehicles or meet one third of its domestic heating demand. The BioSNG technology could also be used to convert waste into hydrogen, which means it has the flexibility to play an important role in heating homes in the future in a diverse energy market.

**C**onstruction of the world's first commercial BioSNG plant turning black bag waste into gas is progressing, with the first gas to grid expected in 2018.

The construction of the commercial BioSNG plant follows a pilot plant project that resulted in a positive report on the commercial and technical viability of the BioSNG technology. The £27m commercial plant is being developed by a consortium of Cadent, Advanced Plasma Power (APP), Wales & West Utilities, Progressive Energy and CNG Services, with funding from Cadent, APP, the Department for Transport's Advanced Biofuels Competition and Ofgem's Network Innovation Competition. Site build is expected to be completed early in 2018 with the first gas to grid in the summer.

BioSNG production combines APP's Gasplasma® technology, which produces a high quality, tar-free syngas from biomass feedstocks, with Amec Foster Wheeler's Vesta technology, which converts syngas to green natural gas. The commercial plant brings together these two technologies for the first time to produce green gas from household waste.

One of the benefits of BioSNG is that it can use waste from the local area. The new commercial plant will use household waste collected by

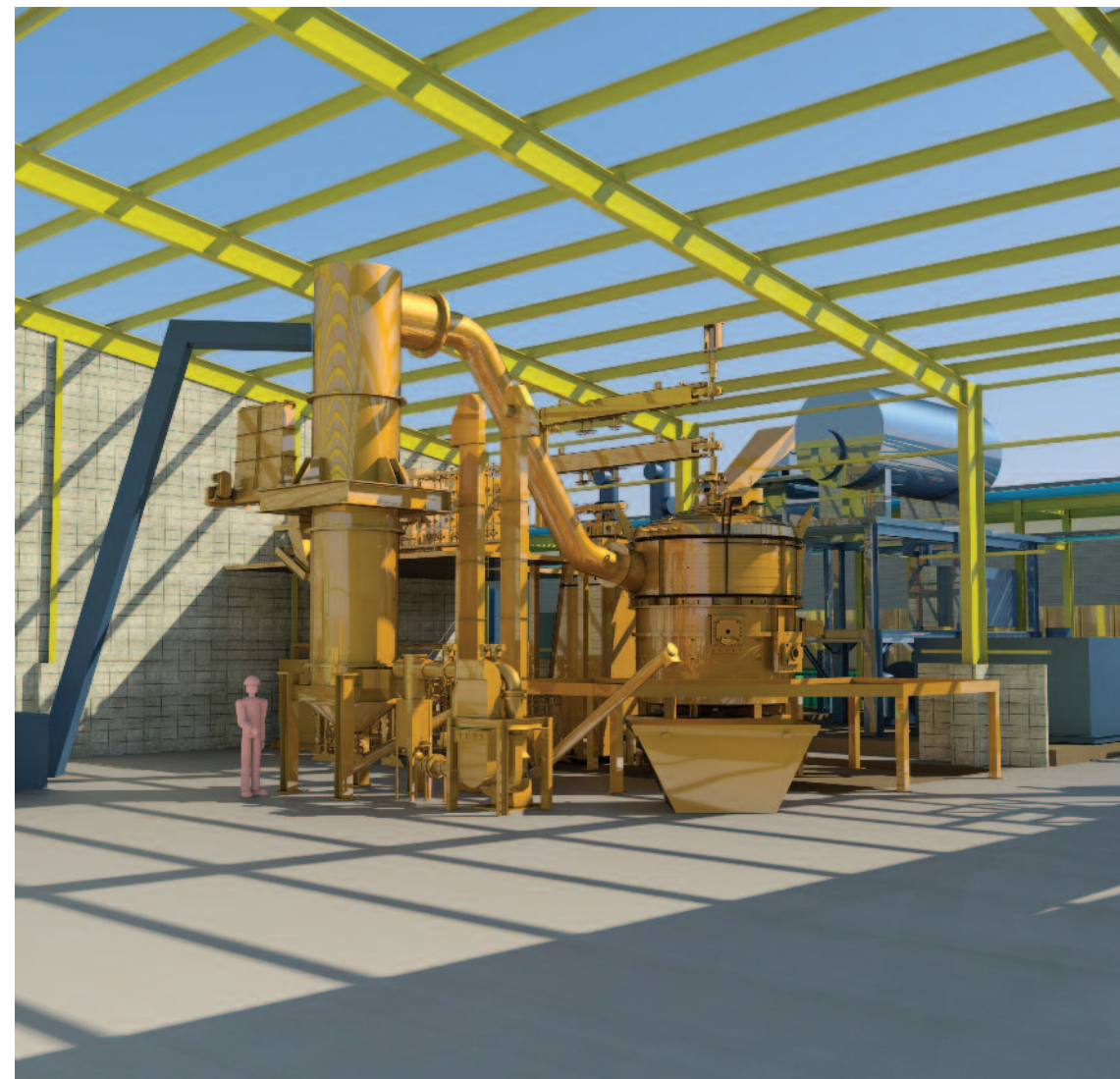
Swindon Borough Council and will convert 10,000 tonnes per annum of waste into 22GWh of gas. It will then be injected into the existing gas network providing enough gas to either fuel a fleet of 40 trucks or heat 1500 homes in the local area, reducing greenhouse gas emissions by more than 5,000 tonnes per year.

Howard Tenens, a local logistics company, are already committed to using gas from the plant for its fleet of trucks which could result in an 80 per cent cut in greenhouse gas emissions for the fleet.

The plant will operate continuously under normal commercial conditions which will provide more evidence about the technical robustness and economic performance of the technology.

Successful operation will help to build confidence in the technology, improving the business case for larger scale plants. The roll-out of such plants would eventually lead to reductions in production costs, making BioSNG competitive with natural gas over the next 5-10 years. A large scale facility could use the waste from a city the size of Coventry to meet one quarter of the city's gas demand.

David Pickering, BioSNG Manager Cadent: "Cadent's vision for the future of heat includes a large number of BioSNG plants converting



BioSNG is that it addresses two challenges: how to dispose of waste safely and how to produce low carbon heat.

BioSNG generates greenhouse gas emissions that are more than 80 per cent lower than fossil gas. The process produces a high purity stream of carbon dioxide, and if

Find out more at [gogreengas.com](http://gogreengas.com).

Film / Photos:

• Short film at:

<http://gogreengas.com/uncategorized/video-worlds-first-commercially-operating-biosng-facility/> or <https://www.youtube.com/watch?v=oLIZsa34ARQ>





The use of hydrogen, instead of natural gas, offers a potential route for the widespread decarbonisation of the gas distribution networks, as proposed in the Leeds City Gate (H21) study. The purpose of considering hydrogen is because it offers the potential for wide-scale, lower cost carbon abatement compared with other technologies.

The Liverpool-Manchester Hydrogen Cluster (LMHC) project is a conceptual study to develop a practical and economic framework to introduce hydrogen into the gas network in the Liverpool-Manchester area.

It proposes converting natural gas into clean-burning hydrogen gas, removing CO<sub>2</sub> from the gas captured using existing carbon and capture storage technology and storing in depleted offshore gas reservoirs and supplying the hydrogen gas to a core set of major industrial gas users in Liverpool-Manchester. Limited volumes would also be injected into the local gas network for delivery to homes and businesses.

The LMHC project seeks to formulate a first deliverable project which is cost effective and provides a meaningful reduction in carbon emissions, in the order of 1.5M/tonnes per annum. The project is specifically designed to present a 'no regrets step', but at the same time offers the potential to facilitate further future decarbonisation. This could be through wider geographical rollout beyond the LMHC area, or deeper decarbonisation within it, via inclusion of either more consumers or supply of a higher blend of hydrogen.

Like the H21 project, the study considers Steam Methane Reforming (SMR) of natural gas to be the best option to produce hydrogen at a sufficient scale. In contrast to the H21 study, however, the LMHC project aims to supply hydrogen as a 'blend' with natural gas to the network. This would mean consumers

(households and businesses) have no need to buy new appliances. Hence the costs are considerably lower. The Liverpool-Manchester area has significant population and the maximum level of hydrogen injected into gas distribution network (owned by Cadent) will be informed by Cadent's current HyDeploy project being hosted by Keele University.

It should also be noted that SMRs produce carbon dioxide (CO<sub>2</sub>) alongside hydrogen and so the deployment of associated Carbon Capture Storage (CCS) infrastructure is essential. The Liverpool Bay 'complex' of hydrocarbon fields, located in the East Irish Sea, off the coast of Merseyside, could be repurposed to provide storage for up to 130 million tonnes of CO<sub>2</sub>.

These hydrocarbon fields are coming to the end of their productive life and so repurposing them could delay significant decommissioning costs for both the operator and Government. The close proximity of the fields to Liverpool offers the prospect of extremely low cost CCS.

The project is also based upon converting a tranche of industrial plants to hydrogen. Most industrial manufacturing plants will operate continuously throughout the year and so offer a near constant base load demand. As such, if a supply of natural gas to industry is maintained alongside hydrogen supply, the mix can be varied to balance variations in gas network demand, thus reducing the need for expensive salt cavern storage.

The Liverpool-Manchester area was chosen for the trial because of its dense concentration of

large industrial heat users, as well as its close proximity to potential carbon dioxide and storage sites in the Irish Sea. Major industrial users operate continuously with "little change in demand either daily or annually", avoiding the need for costly investment in storage in the short term. The trial would see a tranche of 10 to 15 industrial plants adapt their furnaces and boilers to operate on a high hydrogen mix of hydrogen and natural gas.

The initial capital expenditure of this project is predicted to be in the region of £600m, whilst the continual operation costs are in the order of £57m per annum. Cadent is currently assessing how the project might best be financed, but it is notable that it represents significant cost savings compared to other similar projects offering comparable levels of CO<sub>2</sub> abatement. The project aims to show that it can offer a realistic, deliverable and no regrets option to decarbonise heat to a sufficient scale and can be replicable in other industrial locations throughout the UK.

# The Liverpool – Manchester Hydrogen Cluster

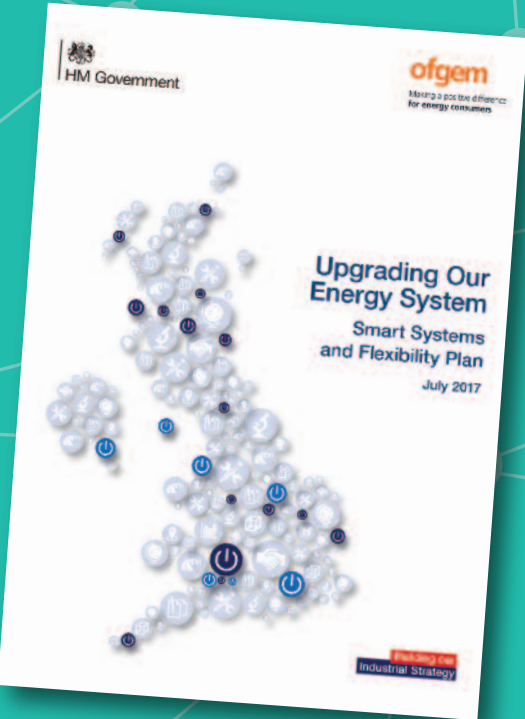


Ian Campbell, Chairman,  
Smart Connected Homes  
and Buildings Group

**A** plan to give homes and businesses more control over their energy use and support innovative technologies, as part of Government's Industrial Strategy, was set out by BEIS and Ofgem in July. The plan aims to create competition between new technologies/businesses and existing market leaders, to transform the energy system and drive down prices for consumers. The benefits of a smart energy system are estimated to be worth £17-40bn by 2050 and are geared around three main themes:

- Removing barriers to smart technologies, including storage.
- Enabling smart homes and businesses.
- Making markets work for flexibility.

The plan identified 29 Issues and Action Areas, 12 addressing the theme of 'Enabling Smart Homes and Businesses'. EUA Members have an opportunity to influence the implementation of this plan by participating in EUA's Smart, Connected Homes & Buildings Group. EUA is developing its interaction with BEIS and Ofgem, as well as other industry stakeholders, through responding to key issues.



To read the document in full go to <https://www.gov.uk/government/publications/upgrading-our-energy-system-smart-systems-and-flexibility-plan>

For more information on the Smart Connected Homes & Buildings Group and its three sub groups - Smart Appliance Protocols, Smart Heating & Hot Water Controls and Smart Metering & Grid - contact Ian Campbell [ian@bjic.net](mailto:ian@bjic.net) - 07958 356110

# Upgrading our Energy System – A Smart Systems and Flexibility Plan



Although EUA will be debating and examining all of the issues raised in the Government report our initial priorities for the Smart Connected Homes & Buildings Group will be to address these points:

Issue	Action	The Smart Connected Homes & Buildings Group
Issue 2.3 Smart meters are the foundation of an accessible smart energy system for consumers	The Government is committed to ensuring that every home and small business in the country will be offered a smart meter by the end of 2020. Smart meters are a critical building block, creating new opportunities for new services and business models which benefit consumers and the overall system.	EUA has longstanding and extensive on-going involvement in the GB Smart Metering Implementation Programme (SMIP) having been involved in every aspect for over 9 years participating in working groups under Ofgem, DECC/BEIS and DCC. The Smart, Connected Homes & Buildings Group will draw on this experience.
Issue 2.4 Existing price signals through the electricity settlement arrangements do not encourage suppliers to offer smart tariffs	Ofgem will decide on the case for mandatory half-hourly settlement (HHS) for all consumers in line with its revised plan, to be outlined shortly alongside the launch of a Significant Code Review. This builds on the introduction of elective HHS for domestic and smaller non-domestic consumers earlier this year.	The Smart, Connected Homes & Buildings Group will be promoting the development of member technologies that will enable consumers to take advantage of the "time of use" tariffs that will be enabled by the move to half-hourly settlement.
Issue 2.6 Limited availability of smart appliances means consumers cannot realise bill savings by providing demand response	The Government intends to consult on seeking powers to set standards for smart appliances. We consider that standards will ensure interoperability of appliances (and so avoid proprietary standards), maintain data privacy and provide cyber security. The Government will work with industry to develop these standards.	The Smart, Connected Homes & Buildings Group will be engaging with BEIS and other stakeholder groups to represent members views on the development of smart appliance standards in the same way that the EUA has in relation to Smart Metering standards.
Issue 2.7 The functionality of electric vehicle charge-points should be smart-enabled so that consumers are not locked out of future smart offers	The Automated and Electric Vehicles Bill, announced in the Queen's Speech, will include provisions to make regulations for smart electric vehicle charging infrastructure	The Smart, Connected Homes & Buildings Group will be working with members to lobby for regulations that will facilitate the easy adoption of "vehicle to grid" / "demand-side response (DSR)" solutions.
Issue 2.11 Further innovation is needed to test approaches to DSR for domestic and non-domestic consumers	As part of the up to £70m now available for smart technologies up to 2021, the Government launched a £7.5m non-domestic DSR innovation competition in January 2017 and a domestic DSR competition is planned for launch in Autumn 2017	The Smart, Connected Homes & Buildings Group will be supporting members or member consortiums that wish to participate in the planned domestic DSR competition.





# VIEWPOINT

## Community Energy – The future of energy generation and supply



**By Alan Jones, Director  
of Technology and  
Product Development,  
Energy Assets**

**T**here is a quiet revolution  
taking place in energy  
generation and supply.

Increasingly niche, small energy suppliers  
are offering innovative tariffs to businesses  
and homes to enable communities to  
benefit from local renewable generation.

Community energy projects unite people

and organisations that then benefit from  
reduced energy cost and lower carbon  
emissions, whilst optimising the distribution  
system. These projects should be seen as a  
microcosm for the future of the UK, where  
there will be a greater need to balance  
demand dynamically against the available  
supply.

Utilising local generation necessitates  
technology that can both meter and control  
load in near real-time.

Energy Assets has been involved in a  
number of pilot projects to develop  
business models and define the technology  
to optimise the use of local energy.

Community  
energy is  
particularly applicable  
in areas of rural off-grid gas or in tower  
blocks where often there is fuel poverty and  
high usage of expensive electric heating.

These projects have common  
requirements and issues:

- Locations are often not serviced by  
reliable mobile data communications.
- The Wide Area Network (WAN) must  
provide reliable, cost effective  
communications in near real time.
- Settlement requires summated, high  
integrity half-hourly demand data.
- Loads have to be switched in real time  
to balance supply and demand.
- Load control needs to be applied to  
individual homes or groups.

To operate effectively, data must be  
collected across a wide geographic area  
and processed from all of the domestic  
meters and the generators. Metering in  
these projects is technically and  
logistically challenging.

The current design of SMETS1/2  
meters and DCC were

considered but found to be unable to  
provide the required level of functionality  
and access to data. To realise the project  
necessitated the development of an  
“ultra-smart” metering system (USM), load  
control switches and communications  
infrastructure. The USM is based on  
proven advanced half-hourly technology,  
while extra functionality is enabled by  
retrofit of an intelligent communications  
module.

The existing electricity meter is replaced  
by the USM. Depending on the project,  
different modes of WAN communication  
have been used in combination,  
including LoRA, Wi-Fi and meshed  
ZigBee.

The fabric and construction of tower  
blocks presents a notoriously difficult

radio environment. ZigBee has proven  
successful in tower blocks and co-located  
properties where the meshing  
characteristic can considerably increase  
range and coverage. Where load control  
is required, the existing time switch or  
radio teleswitch has been replaced by a  
new device that also communicates by  
ZigBee and allows individual or group  
control of water and space heating loads.

To make maximum use of the available  
energy and keep the system stable  
requires advanced management software.

To date these projects have proven the  
viability of the technology in a number of  
tower blocks and rural locations. The  
combination of the USM with control  
technology and advanced management  
software enables Community Energy to  
deliver real benefits for the consumer and  
the environment. This approach also  
presents an opportunity for securitising  
energy supply and creating a blueprint  
for the future.



[www.energyassets.co.uk](http://www.energyassets.co.uk)





[www.eua.org.uk](http://www.eua.org.uk)  
@energyutilities



@hhic



# NEW MEMBERS

We are pleased to welcome the following companies into membership:



## Utilities Academy

join the Utility Networks Division. They offer dedicated Smart Meter training at their facility near Bradford, custom built to serve the needs of the smart meter industry. They join the Metering Services Group.

[www.utilitiesacademy.co.uk](http://www.utilitiesacademy.co.uk)

## PSS Hire

have joined the Utility Networks Division and will participate in the Network Engineering & Equipment Group (NEEG).

They supply a vast range of specialist products and services to the utilities, civil engineering and associated sectors. They offer one of the most up-to-date fleets of equipment available - from Butt Fusion Machines and Winches to Moles and state-of-the-art iVac Suction Excavator.

<http://www.psshire.com/>



## IRSAP group

The IRSAP group have joined Marc. The company is Italy's leading manufacturer of design led radiators

[www.irsap.co.uk](http://www.irsap.co.uk)



HEATING & HOTWATER INDUSTRY COUNCIL

## ebm-papst UK Ltd

offer sales and technical support for their products. They are a leading supplier of gas blowers to the UK boiler market.

[www.ebmpapst.co.uk](http://www.ebmpapst.co.uk)

## Legend Fires

join HHIC's Gas Fires Group. They design and manufacture a range of gas fires.

[www.legend-fires.com](http://www.legend-fires.com)

## Hearth Products

design and manufacture a range of domestic gas fires and join HHIC's Gas Fires Group.

[www.hearthproducts.co.uk](http://www.hearthproducts.co.uk)

## Orkli

Orkli is a company engaged in the manufacture and sale of components for central heating, domestic hot water, water heating and domestic appliances. Its headquarters are located in Ordizia (Gipuzkoa) Northern Spain.

Orkli's product range covers practically the whole world market. The company has manufacturing plants in China and Brazil, and a worldwide network of offices and agents. It is part of the Components Division of Mondragón Corporación Cooperativa.

<http://www.orkli.com/inindex.asp>



ACV UK Ltd  
Advance Appliances  
Altecnic Ltd  
Ariston Thermo Group  
Bosch Thermotechnology Ltd  
Cotherm Ltd  
Danfoss Ltd  
Dimplex UK Limited

Gledhill Building Products Ltd  
Heatrae Sadia  
Heatrod Elements Limited  
HETAS Ltd  
Honeywell, ACS Control Products  
Joule UK Ltd  
Kingspan Hot Water Storage  
McDonald Engineers

Newark Copper Cylinders Co Ltd  
OSO Hotwater (UK) Ltd  
Reliance Worldwide Corporation (UK) Ltd  
RM Cylinders  
Telford Copper Cylinders Ltd  
Vaillant Group UK Ltd  
Viessmann Ltd



ICOM  
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A O Smith Water Products Company BV  
ACV UK Ltd  
Adey Professional Heating Solutions  
Alpha Heating Innovation  
Andrews Water Heaters  
Bosch Commercial and Industrial Heating  
Calor Gas Ltd

Cochran Ltd  
Combat HVAC Ltd  
Deep Water Blue Limited  
Ecoflam UK  
ELCO UK  
Energy Technology & Control Ltd  
EOGB Energy Products Ltd  
Fenox  
Ferrol Ltd  
Flueboost Ltd  
G P Burners (CIB) Ltd  
Hamworthy Heating Ltd

Hoval Ltd  
Ideal Boilers Ltd  
Johnson & Starley Ltd  
Lochinvar Ltd  
Mikrofill Systems Ltd  
Nortek Global HVAC (UK) Ltd  
Nu-Way (Enertech Ltd)  
Potterton Commercial  
Powmatic Limited  
Remeha Commercial  
Riello Ltd  
Rinnai UK Ltd

Schwank Ltd  
Sentinel Performance Solutions Ltd  
Space-Ray Ltd  
Spirotech UK Ltd  
Stokvis Industrial Boilers (Intl) Ltd  
Strebel Ltd  
Vaillant Group UK Ltd  
Viessmann Ltd  
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A.C.Wilgar Ltd  
Adey Professional Heating Solutions  
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Alpha Heating Innovation  
Altecnic Ltd  
Anton Industrial Services  
Ariston Thermo UK Ltd  
Association of Gas Safety Managers (AGSM)  
Atag Heating Technologies Ltd  
Atmos Heating Systems  
Baxi  
Be Modern Group  
BEAMA Heating Controls  
BEAMA Water Treatment  
BFM Europe Limited  
Biasi UK Ltd  
Bosch Thermotechnology Ltd  
Bowbros Ltd  
British Gas

BSI Assurance UK Ltd  
Builders Merchant Federation  
Burley Appliances Ltd  
Calor Gas Ltd  
Carillion Services  
Charlton & Jenrick Ltd  
Crosslee plc  
Crystal Fires Limited  
Daikin Airconditioning UK Ltd  
Danfoss Ltd  
Delta Energy & Environment Ltd  
Dimplex UK Limited  
Domestic & General Group plc  
Ebm-papst UK Ltd  
Ecuity Consulting LLP  
EDF Energy  
Encore Energy  
Endo Enterprises UK Ltd  
Enertek International Ltd  
Fenox  
Ferrol Limited  
Flowgroup plc  
Fondital Helpline UK  
Gas Contract Services Ltd  
Gas Tag Ltd  
GAZCO Limited  
Grafton Merchanting GB

Grant Engineering (UK) Ltd  
Ground Source Heat Pump Association  
Grundfos Pumps A/S  
Harvey Water Softeners Ltd  
HETAS Ltd  
Hearth Products  
HomeServe Membership Ltd  
Honeywell, ACS Control Products  
Ideal Boilers Ltd  
IDHEE (Institute of Domestic Heating and Environmental Engineers)  
Infomill  
InstaGroup Ltd  
Intergas Heating Ltd  
Johnson & Starley Limited  
Kamco Ltd  
Kane International Ltd  
Kiwa Ltd  
Legend Fires  
Lettergold Water Treatment Solutions LLP  
Logic Certification  
Monarch Water Ltd  
Morgan Lambert Ltd  
NAPIT  
Navien UK Ltd  
Northern Gas Heating Ltd  
Nu-Flame Ltd

OFTEC  
Orkli S Coop  
Panasonic Manufacturing UK Ltd  
Pump House Pumps  
Ravenheat  
Rinnai UK Ltd  
Sentinel Performance Solutions Ltd  
Sime Ltd  
Solar Trade Association  
Spirotech UK Ltd  
SSE Home Services Ltd  
Sustainable Power Ltd  
Swale Heating Ltd  
Teddington Bemasn Ltd  
The AA (Home Services)  
The Electric Heating Company Ltd  
Thermoserv Ltd  
Travis Perkins Group  
UKLPG  
Vaillant Group Ltd  
Viessmann Ltd  
Vokera Limited  
Warmhaus Heating Ltd  
Widney Leisure Ltd  
Wolseley UK Ltd  
Worgas Burners Ltd



IRSAP UK Limited  
Kudox Ltd

Myson Radiators  
QRL Radiator Group

Stelrad Ltd  
Zehnder Group UK Ltd



ALH Systems Ltd  
AVK UK Limited  
Babcock Analytic Solutions  
Balfour Beatty  
BJIC Consulting  
Buss Metering Services Ltd  
ByBox  
Cadent  
Calvin Capital Ltd  
Centrica Storage Ltd  
Cerro EMS  
Clancy Docwra Ltd  
CNG Services Ltd  
ControlPoint  
Crane Building Services & Utilities  
Develop Training Ltd  
DI UK Ltd

DNV GL  
EDF Energy  
EDF Energy (Gas Storage Hole House) Ltd  
EDF Energy Customer Field Services  
EDMI Europe Ltd  
ElectraLink Ltd  
Elster  
Energy Assets Ltd  
Engage Consulting  
Enzen Global Ltd  
Fastflow Group Ltd  
Fiorentini UK Limited  
Fulcrum  
Fusion Group Ltd  
Fusion Provida Ltd  
Future Energy Group  
Gas Measurement Instruments Ltd  
Gateway Storage Company Ltd  
Gemserv Ltd  
Generis Technology Ltd  
George Fischer Sales Limited  
George Wilson Industries Limited  
GPS PE Pipe Systems

Gridbee Communications  
GTC  
Halite Energy Group  
Harlaxton Engineering Services Ltd  
Humbly Grove Energy Ltd  
INEOS Group  
Inovyn Enterprises Limited  
Islandmagee Storage Ltd  
ITM Power Plc  
Itron Metering Solutions UK Ltd  
J Murphy & Sons Limited  
Landis+Gyr  
Lightsout Computer Services Ltd  
Lomax Training Services  
Lowri Beck Services Ltd  
Meter Provida Ltd  
MeterSIt SRL  
Mike Stratton & Associates Ltd  
Morland Utilities Ltd  
Morrison Utility Services  
Northern Gas Networks Ltd  
P N Daly Ltd  
Power Plus Communications AG

PSS Hire  
Radius Systems Ltd  
Sarco Stopper Ltd  
ScottishPower  
Secure Meters (UK) Ltd  
Sensus UK  
SGN  
Siemens  
Silver Spring Networks UK & Ireland  
Smarter Metering Services  
SMS Meter Assets Ltd  
SSE Homsea Ltd  
Storengy UK Ltd  
The Clancy Group  
The Murphy Group  
Tuffentech Services Ltd  
Utilities Academy Ltd  
UTL  
Wales & West Utilities Ltd  
Wolseley UK Ltd  
WRc plc



British Compressed Gases Association (BCGA)  
Cadent  
Calor Gas Ltd  
CNG Fuels Ltd

CNG Services Ltd  
Element Energy  
Iveco Ltd  
National Grid Gas (Transmission) plc  
Northern Gas Networks

Swagelok Manchester  
UKOOG  
Wales & West Utilities

Corporate

Gemserv



# Gas 2017

Wednesday 8th  
November 2017

National Brewery Centre,  
Burton-on-Trent

## ***The future role of gas in the UK***

Member rate £250 <sup>+VAT</sup>

Non-member rate £350 <sup>+VAT</sup>

For more information or to book see  
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