ENABLING THE NET ZERO TRANSFORMATION

ANNUAL REVIEW 2021

Presidential Year 2021-22 incorporating
summarised 2021 Financial Statement

IGEM
Engineering a Sustainable Gas Future

Ben Clarke

IGEM President 2021-2022

"Our efforts ensure we are in an extremely healthy place to continue to both support the profession and enable a sustainable gas future."

When I began my presidential year, there were three key issues facing us as an institution: externally, Covid-19 and climate change were and remain the dominant issues and then, internally, we were looking to recruit a new Chief Executive Officer following the retirement of Neil Atkinson.

Taking these last to first, I was delighted when Oliver Lancaster joined us at the end of August as our new CEO. The energy that he has brought in promoting the institution has been a breath of fresh air, especially during COP26, and his future of gas background will be key as we go forward. I would also like to extend my personal thanks and congratulations to the IGEM team for ensuring such smooth support for our members during this period.

Focusing now on climate change, COP26 obviously drew many of the headlines. However, I have been encouraged by IGEM's constant and consistent focus on this area throughout the year.

It was an absolute pleasure to chair the Henry Cavendish Lectures with speakers from the UK government's Hydrogen Advisory Council. These were all fascinating and I learned much from the discussions, not least from some of the excellent Q&A sessions with our members.

Our Annual Conference in October continued with the theme 'Leading the Energy Transition' and emphasised the role that the gas industry can play in a net zero future. If you didn't catch any of these sessions, I would encourage you to revisit them on IGEMtv.

IGEM has continued to play a critical role in developing new standards for the sustainable future, building on its long reputation for quality. It goes without saying that the development of these standards takes an incredible amount of collaboration, and this theme of collaboration is one I've been keen to emphasise throughout my presidential year as I believe it will be critical to our success going forward.

The ongoing impact of the Covid-19 pandemic has meant that the majority of the last year has had to remain virtual, and this curtailed my ability to go out and meet our members personally. Fortunately, as I write this, most commentators now believe that the worst of the pandemic may be behind us and hopefully my successors can all look forward to a less disrupted future and can meet more of our members in 3D.

Finally, it has been both an honour and absolute privilege to serve as IGEM's President, and I would like to thank everyone who has contributed and supported over the last year – from volunteers to speakers. Your efforts ensure we are in an extremely healthy place to continue to both support the profession and enable a sustainable gas future.

Oliver Lancaster

Chief Executive Officer

Thank you all for the very warm welcome I've received since starting with IGEM in the latter part of 2021. It has been a pleasure to get to know and work with the staff, Council and committees, as well as spend some time with our membership and get involved in some of our Section activities.

Although 2021 didn't quite turn out to be the year that we had hoped for due to the continuation of the pandemic and various restrictions, I am delighted that IGEM has delivered a great deal of value to our sector, including a vast range of work on standards in readiness for decarbonisation action.

Although our events agenda took another hit this year, we still put together a great online programme.

Our Equality, Diversity and Inclusion Advisory Group is now up and running, with an exciting year ahead planned, during which IGEM will invest in and participate in a variety of campaigns and events. Our call for Ordinary Member nominations deliberately promoted our desire to broaden the diversity of Council.

As you may have observed, a few staff changes have taken place this year including the heads of our finance and marketing departments, with the appointment of Wendy Cheung and Carl Stokes. I am really pleased they've settled in well and are having such a positive impact already.

It goes without saying that the greatest challenge of the year has been the very sad loss of our friend and colleague, Simon Trollope. He will be sorely missed by staff, members and the wider energy community, but very fondly remembered.

"I am delighted that IGEM has delivered a great deal of value to our sector, including a vast range of work on standards in readiness for decarbonisation action."

The policy landscape over the last year has been evolving significantly, with the role of hydrogen increasingly a subject of interest in Parliament, investment in hydrogen growing significantly in the UK and overseas, and demonstrators in progress or on the way for industry, power generation and home heating.

Biomethane in transport is moving very quickly and hydrogen buses, trucks and ships are coming faster than had been anticipated – even aviation is now pushing hard with it.

So much has been going on in our sector that I targeted a number of visits to projects and demonstrators during the run-up to COP26 in Glasgow. Not only did this help from a personal learning perspective, but it also aided the amplification across social media of the great things that our members are doing.

Glasgow itself gave us the perfect opportunity to catch up with a range of key stakeholders to voice the long-term position for gas on your behalf.

This engagement is continuing and helping to shape the future of the institution, its services to members and its role in delivering a secure, least cost, low disruption pathway to net zero.

Transitioning to **net zero**

As the transition to net zero ramps up, and our end-to-end supply chain is brought into the spotlight to deliver from production and storage through networks to a range of demand sectors, there's no better time to be working in energy and the gas sector. Much of the enabling activity needed will come from our members, who work in an industry that has a long history of innovation and transition in the face of challenge and opportunity.

It has become increasingly clear that, contrary to the views of some policy makers and an influential electrification lobby, the only way we can affordably and reliably decarbonise energy is to use gas. This means converting homes to green gases like hydrogen and biomethane, switching industry like steelworks in our industrial heartlands to hydrogen, providing for the needs of transport in moving away from fossil fuels, and continuing to support our friends in the electricity sector with power generation.

The inherent storage and flexibility that gas provides is the only way that the UK has been able to decarbonise the electricity supply – keeping the lights on, hospitals powered, home 'offices' working, EVs charging and Netflix streaming.

If the goal is net zero, we should be working diligently across all options available and designing the system and solutions that can deliver quickly to mitigate climate change. It's great to see that our sector is getting on with things and not weighing down heavily in negative campaigning.

Connecting biomethane and flexible power stations to backfill for low wind and solar has been fantastic to see. The pace at which industrial cluster action is arriving across hydrogen production, distribution, manufacturers and electricity generation, as well as hydrogen in transport applications, is extraordinary. The milestones being reached in preparing networks for hydrogen conversion and for hydrogen to be used in our homes has been staggering.

On the basis that we will be in receipt of a net zero supply of energy through the gas and electricity systems, buildings need to be prepared – or net zero ready. Interventions to building fabric and technologies are all key parts of the energy system and this, of course, is being considered for IGEM House – as we expect it is in your own company offices.

With the support of a building energy expert who works across gas and electricity systems, we have recently been considering our own net zero readiness. This has involved identifying ways to improve comfort and increase heating system efficiency to reduce costs and carbon through our existing heat pumps and boilers.

We've also been looking into new assets and building fabric interventions that could be added over time. Improvements have already been made to optimise the

heating system so that the heat pumps and boilers are not operating in conflict. Boiler settings, heating controls and radiator valves are set to be upgraded to help the system to be more efficient and hopefully reduce bills.

> Whether it's working with the gas sector on a macro, system-wide level, or if it's working with the bricks and mortar of our own building, we're delighted to be doing our best to mitigate climate change through energy policy and putting it into practice

One of our two boilers will need to be replaced in the relatively near future, so it is hoped that a hydrogen-ready boiler can be secured when early releases of this appliance are made available in the coming years.

In 2020, Council approved the installation of two electric vehicle (EV) charging points with bay markings, which will help visitors who drive EVs and provide charging options for staff and visitors who are considering an EV as their next car. These charging points were installed at the turn of the year.

We've also introduced a salary sacrifice scheme to enable a bike to be purchased at a discount to encourage active travel.

Unfortunately, due to the angle of the roof, as well as dormer and shading challenges, our building is unsuitable for the cost-effective installation of solar PV to generate our own electricity.

A thermal imaging building survey is being planned to identify options for consideration to reduce heat losses. We will look at an optimisation of any potential fabric interventions to help determine whether energy system transformation for net zero is likely to deliver a better customer cost outcome for us compared to over-investing in building transformation.

Whether it's working with the gas sector on a macro, system-wide, level or if it's working with the bricks and mortar of our own building, we're delighted to be doing our best to mitigate climate change through energy policy and putting it into practice.

THANK YOU TO OUR VOLUNTEERS

568

Volunteers

13,434

Hours of support

Keeping up to **standard**

IGEM has remained at the forefront of enabling the gas transition, despite the difficult circumstances posed by global events in 2021.

With the focus of enabling the net zero transformation, saw the Technical Services & Policy department rise to the significant challenge of managing the annual business plan for the revision of existing standards while at the same time managing the production of new standards for hydrogen. Support from members of expert panels and committees has also been significant, and all have embraced new ways of working as we continue to manage the governance process virtually.

Through committees, panels and working groups, members were involved in 151 meetings, resulting in producing 479 technical papers and publishing seven standards throughout the year, these were:

IGEM/G/11 Edition 2
Gas industry unsafe situations procedure and a new edition of the Gas Safety Book

IGEM/IG/1 Edition 2
Standards of training in gas work

IGEM/GL/1 Edition 3
Planning of distribution systems of MOP not exceeding 16bar

IGEM/TD/1 Edition 6
Steel pipelines for high pressure gas transmission

IGEM/TD/1 Supplement 2
High pressure hydrogen pipelines

IGEM/TD/13 Supplement 1
Pressure regulating installations for hydrogen at pressures >7bar

IGEM/TD/12 Edition 3
Pipework stress analysis for gas industry plant

Hydrogen

A focus on the strategic importance of hydrogen in pursuit of the government's net zero emissions target has seen significant activity for expert panels and working groups led by the Hydrogen Committee. IGEM members engaged through the Hydrogen Committee, chaired by Keith Owen of Northern Gas Networks (NGN). These members supported the production of two new hydrogen standards.

The IGEM LTS Futures Working Group and HyTechnical Steering Groups, chaired by Nancy Thompson of SGN, were set up to support targeted delivery and research into the scientific and engineering requirements for the production of new engineering standards to support innovation projects by the networks. HyTechnical was an NIA-funded collaboration project between UK gas networks and IGEM to develop standards to support both new and repurposed gas networks to use hydrogen. Five reports have been completed and are available on the Hydrogen Knowledge Centre:

Assessment of Operational Issues and Inspection, Maintenance and Repair for PRIs and Other Installations for H_2 & H_2/ NG Blends

IGEM/TD/1 Building Proximity Distances and Quantitative Risk Assessment

Impact Assessment on IGEM/TD/1 Parallel Pipeline Separation Distances

Review of IGEM/SR/25 for Use with Hydrogen

IGEM/SR/23 Review of Thermal Radiation and Noise for Hydrogen Venting

The project has led to the first ever standards for hydrogen pipelines being delivered. In November, IGEM published IGEM/TD/1 Supplement 2 *High pressure hydrogen pipelines* and

IGEM/TD/13 Supplement 1 *Pressure regulating installations for hydrogen at pressures >7bar*.

The department is also working to publish new below 7bar standards and is working with Pipeline Integrity Engineers (PIE) to develop new supplements and standalone standards, which continues to progress well. This will see the production of new supplements for <20 per cent mol hydrogen for IGEM/TD/3, IGEM/TD/4 and IGEM/TD/13 ⩽7bar. A standalone standard for 100 per cent hydrogen for new assets has been scoped, as has a repurposing standard for distribution networks.

Also during the year, work began with the HSE Science Division and DNV on phase two for IGEM/SR/25 *Hazardous area classification for hydrogen*. The new draft standard will be ready for industry comment in 2022 and will be accompanied by an extensive report detailing the scientific evidence base.

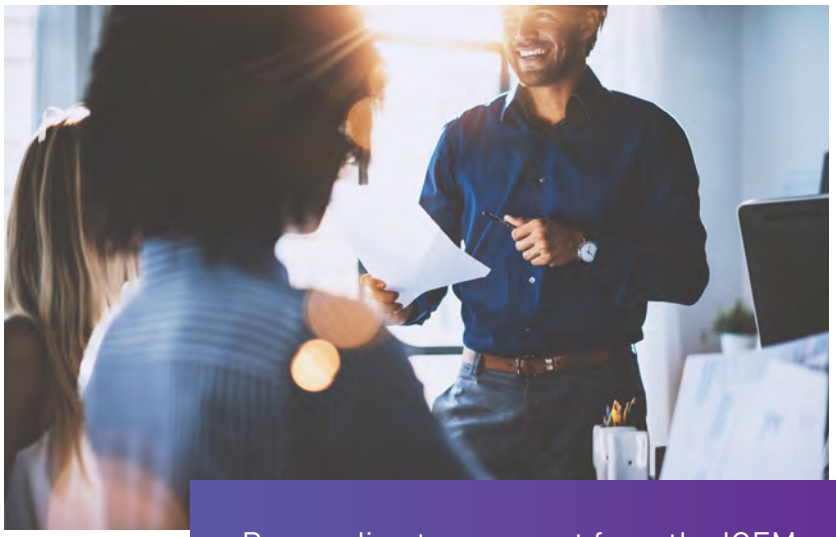
Towards the end of the year, an agreement was made with BEIS for the funding of hydrogen end user standards and the implementation of a competence framework, working in a consortium with Energy and Utility Skills. IGEM's proposal in the consortium is to develop three standards:

IGEM/H/1: Reference standard updated to new version with learnings and gap closures

IGEM/H/2: Enabling standard (domestic). Updated version of the interim standard with research and gap closure learnings

IGEM/H/3: Enabling standard (commercial). A comprehensive standard comprising elements of IGEM/UP/2 (pipework), IGEM/UP/1 (test and purge), IGEM/UP/16 (DSEAR) and metering (IGEM/6,8,7b - installations and hazardous areas). With (subject to scope) sections/appendices covering specialist areas e.g., catering, education and plant rooms

Responding to a request from the IGEM Hydrogen Committee, a new working group was set up to consider a UK standard for hydrogen quality. The group aims to ensure the development of a fully coordinated and appropriately governed joint industry standard that considers the essential characteristics of hydrogen quality. There have been five meetings of the group since the beginning of 2021 and the second working draft of the standard has been produced.



Responding to a request from the IGEM Hydrogen Committee, a new working group was set up to consider a UK standard for hydrogen quality

IGEM Gas Quality Standard

Safety evidence to support the new standard for gas quality in the UK was submitted to the HSE for review and their impact assessment. In February 2021, the following reports were also submitted to support changes to the gas quality specification:

IGEM/TSP/21/011 Gas quality specification draft for comment – Consolidated industry comment. Includes responses from panel to the industry comment period on the standard and the evidence report.

IGEM/TSP/21/012 Gas quality specification for conveyance of Group H gases of the second gas family. Fourth working draft after comment.

IGEM/TSP/21/051 IGEM Gas quality standard consultation document. Updated with panel comments from the industry wide consultation.

IGEM/TSP/21/052 DLC153_B Dutton revisited. Updated following HSE comments.

IGEM/TSP/21/053 DLC180_B Comparison of pipeline fracture propagation risks for natural gases of differing Wobbe indices.

In April, two further reports were submitted as part of the safety case file. These were:

IGEM/TSP/21/181 Updated slide deck on the assessment of the impact of widening the Wobbe index.

IGEM/TSP/21/182 DLC0189 Report on the impact of the widening the Wobbe index. Research into the effects on the performance on some oxygen depletion sensors was commissioned and undertaken by Kiwa. In June, two reports were submitted to the HSE:

IGEM/TSP/258 Project final report investigation of the performance of oxygen depletion sensors (ODS) Kiwa 30961

IGEM/TSP/21/239 A quantification of the risk likely to arise from a widening of the permitted UK Wobbe indices relating to the performance of ODS sensors

IGEM continued to work with the HSE, responding to their assessment of the evidence. In particular, Dave Lander Consulting (DLC) worked on the CO risk assessment with the HSE Science Division. Two further revisions to the report were made and submitted in October.

Following discussions between the HSE and IGEM in December, the HSE have agreed to accept a number of significant changes proposed by the new standard and will be consulting on the changes in 2022.

Competency for Building a Safer Future Working Group 1: Engineers

The development of the Higher Risk Buildings Contextualised Register (UK-SPEC HRB) and the consequential impact of Engineering Council/ PEI process continued throughout 2021. Recognising the diversity of engineering professions engaged in higher risk buildings, the contextualised register will be via a three-level approach, with competency demonstration aligned with each membership grade:

Level 1 – for all professional engineers registered with the Engineering Council. This specification (UK-SPEC HRB) will be owned by Engineering Council and will be similar in format to the current UK-SPEC. This only covers Parts A and B of UK-SPEC. It is considered that parts C, D and E remain appropriate to HRBs.

Level 2 – 3 Discipline Annexes (DAs) are being developed: fire safety, structural engineering and building services. Professional engineers will need to demonstrate appropriate competence against the relevant DA. For gas, this will be building services. These three DAs will be owned by the Engineering Council. Consensus amongst all participating PEIs within the DA working group will be required. A consistency check will be undertaken by the Contextualised Register Steering Group (with Deputy Chair, Ian Aldridge).

The building services DA working group consists of the following active members; IGEM (Ian Aldridge, Chair), CIBSE and the IET. Initial DA consensus between the IET and CIBSE is being developed and gas will leverage this work once agreed.

Level 3 – Numerous PEI specific schedules will be owned by the relevant PEI following guidance from the Engineering Council and alignment with BS 8670. A draft for an IGEM schedule has been completed but awaits agreement of the building services DA before the next iteration.

Additionally, IGEM participates in the Engineering Council Licensing Working Group, which is tasked with understanding and making recommendations associated with the implementation of a Contextualised Register.

At present, the implementation timescales of the new contextualised framework are unclear, although the Engineering Council is in discussion with the interim Building Safety Regulator.

Impacting **policy**

2021 was a pivotal year for energy policy, with the UK leading global climate policy negotiations at COP26 in Glasgow and the publication of several strategies designed to chart the UK's course to net zero carbon emissions by 2050 – including the UK Hydrogen Strategy, Heat and Buildings Strategy, Net Zero Strategy, Working Together to Reach Net Zero: All Wales Plan, Scottish Government Heat in Buildings Strategy, and the Hydrogen Action Plan.

It was a pivotal year for IGEM's policy role too. With an intensified focus on the potential of hydrogen to decarbonise heat, power, and transport, IGEM has been playing an increasingly important role in industry - government engagement and providing a trusted source of information and advice for policy-makers.

IGEM published its first policy white paper on 'Engineering a Sustainable Gas Future', outlining the current UK gas policy landscape, our stance and what contribution we are making as an institution to gas decarbonisation. This was the first in a suite of thematic papers designed to inform our members and stakeholders of issues impacting them and to share emerging research and knowledge from across the gas policy and technical landscape.

We strengthened our collaboration with the Royal Academy of Engineering's National Engineering Policy Centre (NEPC), supporting the production of two publications: *Rapid low regrets decision making for net zero policy*, providing an engineering perspective on how decision makers can identify immediate policy options to put the country on a pathway to net zero, and, *Six engineering ambitions for the UK Spending Review*, setting out the engineering profession's key policy recommendations for 2021. Our next collaboration with the NEPC will be a report looking specifically at the role of hydrogen in a net zero energy system, its value as an energy vector, the opportunities and risks it presents and our key policy recommendations.

We re-joined the All Party Parliamentary Group for Energy Studies (PGES), and continued to be involved in the discussions of the All Party Parliamentary Groups for carbon monoxide (APPCOG) and hydrogen (APPGOH). We have also played a key role within several influential groups, including the BEIS Technical Advisory Group and End User Subgroup, the BEIS Network Safety and Impacts Board, the NEPC Net Zero Working Group and the Gas Goes Green Advisory Board. These groups see us working directly with industry, academia and government to assess the evidence base and develop informed recommendations on how gas can contribute to a clean energy future.

Building on our previous work with Policy Connect on the Future Gas Series, IGEM sponsored and contributed to the publication of *Connecting the Watts*, a report setting out the case for an autonomous Net Zero Delivery Authority to lead a whole systems, coordinated transition to net zero. One of the upfront findings is the focus that needs putting on the interaction between electricity and gas supply and distribution infrastructure to meet demand from buildings, power generation, industry and transport.

We continued to amplify our member's voices through our responses to several consultations and policy announcements impacting our industry, including the Future Buildings Standards consultation, the Industrial Decarbonisation Strategy and the UK Hydrogen Strategy to name a few. These responses, and more, have been published on our policy and research hub, which has continued to grow its readership throughout 2021 and provide a trusted source of news and insights for our members and stakeholders.

Hydrogen Knowledge Centre

It is imperative that the gas engineering community builds the capability for delivering net zero and that supporting institutions, such as IGEM, provide a platform to learn and knowledge share. 2021 saw the launch of the Hydrogen Knowledge Centre – a digital repository, dedicated to the advancement of hydrogen learning globally and supporting the transition to a net zero carbon emissions future.

At its core, the Hydrogen Knowledge Centre enables learning to be shared with others, through a carefully curated, comprehensive and growing database of information from the widest possible range of sources.

The repository is managed by a dedicated team at IGEM and has grown to include

over 2,800 resources, from 320 credible sources, across 70 countries.

By the end of 2021 the platform had been accessed more than 14,000 times. At this scale and breadth of knowledge sharing, the Hydrogen Knowledge Centre is actively advancing the collective understanding of this vital energy vector and helping to bring us one step closer to net zero.

IGEM was delighted that this valuable resource that has been recognised by the Energy Innovation Centre (EIC) and shortlisted for an Energy Innovation Award 2022, alongside some other outstanding finalists The winners will be announced on 5 May 2022.

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Supporting **membership**

We're proud to have helped 131 gas industry professionals gain professional registration. This would not have been possible without the 120 members who generously volunteered their time and expertise as mentors, interviewers, and committee/panel members to support the membership processes and procedures.

One of our key focuses in 2021 was to continue to support the technician community and improve the Engineering Technician value proposition. Our EngTech working group significantly contributed to delivering a number of initiatives which resulted in a 6% increase in EngTech membership, whilst retention increased to 91%. We plan to continue this focus in 2022. We have also introduced an Experiential Learning pilot, which enables those with the required qualifications or evidence of knowledge and understanding for Incorporated Engineer to demonstrate that they meet the learning requirements for Chartered Engineer through this additional pathway. This is a great step forward for the institution and we are working on embedding this new process, which we hope will be available to all by the end of 2022.

Our annual CPD sampling exercise continued, and individual feedback was provided to those who submitted a CPD record to support them with their professional development journey. Those that did not submit a record will be provided with additional support in order to enable them to provide a submission for 2022. Only two members had to be removed from the register.

Additionally, we held a number of professional registration webinars which were open to all those interested in becoming a member or transferring grades, as well as in-house webinars with the support of our Industrial Affiliates (IAs). The introduction of a new online 1:1 booking system also proved to be popular for those wanting to discuss their individual pathway to membership and professional registration.

Revised standards for professional registration

Another key highlight was the effective implementation and transition to the Engineering Council's new edition of its internationally recognised standards of professional competence and commitment (UK-SPEC). The new edition aims for greater clarity, making the standard itself more obvious, while providing better examples of how applicants might provide evidence of having met the standard. An emphasis was placed on accessible language, clarity of structure and internal consistency with other standards documents.

Supporting the industry's bright young stars

We had another successful year with our scholarships, grants and awards scheme. The scheme continues to support the engineers of the future, and with such a high standard of applications, two post-graduate and four undergraduate scholarships were awarded to:

- Kate Lee
- James Howitt
- Elliot Saltmarsh
- Kate Lucas
- Chris Packwood
- Jennifer McGeeney

In addition, we received a record number of applications for our EngTech Development Grant and after a challenging review process, Lance Newhouse, Emergency Engineer for Cadent, was awarded this grant.

Over the course of the year, we've been shining the spotlight on our members with our series of case studies published in *Gi*, on the IGEM website and on our social media channels. We've covered numerous topics from gas safety to the future of the industry in our conversations with these members as they've shared with us their career journeys so far.

In June, the Women's Engineering Society (WES) announced that IGEM Chartered Member Kate Grant, Director of West Midlands network at Cadent Gas, was named as one of their Top 50 Women in Engineering.

Equality, Diversity and Inclusion

In 2021, we were able to make great strides in terms of our commitment to equality, diversity and inclusion (EDI). In March, we published our first EDI membership survey, which received 230 responses, allowing us to further understand our membership, while also using this data for the submission of the 2021 Royal Academy of Engineering Progression Framework Benchmarking exercise in April. The results from both these activities were published in the September edition of Gi. Celebrating Pride Month in June, *Gi* published a three-page article on Cadent's LGBTQ+ networks and how they support their employees. This was complemented with messaging on our social media channels. We also saw the launch of our equality, diversity and inclusion online training, which is available as part of our elearning courses.

In November, the Diversity and Inclusion Advisory Group was formed, including members and volunteers - Lucy Ritchie, Sheila Lauchlan, Ben Smith, Alex Pender, and Adrian Parrot. The working group allows for further commitment to our EDI programme moving into 2022.

Large Business Forum

The Large Business Forum (LBF) remained resilient and robust during 2021, with well-attended meetings via Microsoft Teams, and it continues to develop into 2022. There are 19 voting members and six permanently invited guests which maintain our membership numbers.

The forum has debated, challenged, and proposed solutions to many issues in the downstream gas industry, engaging with the standards setters and regulatory bodies. Highlights include working with Gas Safe Register to develop Technical Bulletins (TBs), the Standard Setting Body (SSB) to implement training and assessment standards including for hydrogen, and suggesting improvements to regulatory processes via the HSE.

The forum still holds its place as a valued, well-respected and highly professional group of the industry's top downstream compliance managers. Its members are decision-makers who frequently share their opinions on industry proposed changes. The forum's webpage has been fully refreshed, including the risk assessments and guidance for property repairs and refurbishments issued by the group.

Members are involved with supporting the Gas Utilisation (GU) Conference to make it a great success in 2022. Finally, an article on IGEM's LBF was included in both *Gi* and a recent edition of Gas Safe's *Registered Gas Engineer magazine*, which will help promote IGEM and the forum.

Industrial Affiliates

For our Industrial Affiliates (IAs), 'challenging' is a word to describe 2021 – another is 'opportunity'. Broadly, the Covid-19 pandemic has caused operational issues and hydrogen has created valuable opportunities to grow and develop.

Overall, in 2021, IA membership grew by over eight percent, with growth coming from the UK, primarily driven by interest in hydrogen and increased communication.

In June, a new membership grade, Housing Partner, was launched. This unique membership package is aimed at supporting social housing providers to plot a course through some tricky times – this was achieved by the hard work of the Social Housing Working Group set up by the IA Committee in 2020.

We delivered a programme of well-received webinars, covering practical subjects such as IGEM/G/5 *Gas in multi-occupancy buildings*, RIDDOR and DSEAR, and

culminating in December with a Gas Goes Green Roadmap to Net Zero webinar, which gave access to some highly knowledgeable speakers.

Our exclusive members weekly IA newsletter continues to go out weekly to over 700 company contacts, and contains information about current industry developments, events, training, standards, publications and more.

This was all delivered while also maintaining vital contact with members, using a hybrid approach of online meetings and onsite visits wherever possible.

INDUSTRIAL AFFILIATES 362

IA Membership growth 8%

New members 45

INDIVIDUAL MEMBERS 3,358

New members 288

Membership assessments 176

Became professionally registered 131

New Engineering Technicians 96

New Chartered Engineers 25

New Incorporated Engineers 10

Staying **connected**

Technology enabled us to remain connected delivering training, webinars, keynotes and conferences to a global audience.

Despite ongoing challenges with the Covid-19 pandemic preventing face-to-face gatherings, our training courses, conferences and other events successfully continued virtually. We welcomed delegates from all over the world including Uruguay, Spain, France, Greece, Saudi Arabia, Australia and the Far East.

We ran a brand new training course in 2021, IGEM/TD/3 Design and Planning, which was developed for those involved with feasibility, FEED, detailed design and engineering of below 7bar pipelines and focused on the primary deliverables required to deliver a successful design and plan for construction activities within the UK gas network. We also ran the highly anticipated IGEM/G/5 Gas in multi-occupancy buildings course, which offers an overview of the industry standard IGEM/G/5 Edition 3, addressing best practice for the design, installation, operation and maintenance of gas installations for multi-occupancy buildings.

In March, the Hydrogen Knowledge Centre launch event broke IGEM's event attendance record, with over 500 virtual guests being

introduced to the award-shortlisted platform and with updates from Dr Mark Taylor FIMA, Deputy Director for Energy Innovation at the Department of Business, Energy and Industrial Strategy (BEIS), Dr Stuart Hawksworth, Head of the Centre for Energy & Major Hazards at the HSE, and President of the International Association for Hydrogen Safety, and Keith Owen, Head of Systems Development and Energy Strategy at Northern Gas Networks.

Later in the month, the Sir Denis Rooke Memorial Lecture was delivered by Lord Browne of Madingley, former Chief Executive Officer of BP. In the lecture, he discussed how the fossil fuel industry can adapt to a net zero future, emphasising that he believes it is essential for leaders to tell positive stories about the path to net zero.

The Gas Industry Awards took on a revised format due to Covid and was delivered 100 per cent virtually with a live, feature-rich event, celebrating winners and runners-up and streamed globally. We also ran a series of webinar events both before and after the awards.

Safety is paramount for every gas engineer and underpins much of what we do at IGEM so, in June, we held our first ever Safety Conference. The virtual event, which bought together health and safety professionals from across the industry, was split into three sessions: session one focused on regulation, session two had two streams – one focusing on gas network safety, while the other focused on carbon monoxide, and session three focused on best practice.

September presented a rare opportunity for the IGEM team to be present, in person, at the Installer Show. We had a stand at the event for three days and four presentation slots, which proved to be a success for staff and volunteers engaging with downstream engineers, manufacturers, students and networking with industry.

2021 saw the launch of IGEM's Henry Cavendish Lecture series. The series featured key players from industry and academia who shared their views on how a UK hydrogen economy can support our ambitions to reach net zero emissions by 2050. It kicked off in April with Paul Bodgers, Vice President for Hydrogen at Shell Plc. Professor Nilay Shah FREng, Professor of Process Systems Engineering, Centre for Process Systems Engineering (CPSE), Department of Chemical Engineering, Imperial College London, delivered the second lecture in June, while Richard Halsey, Capabilities Director, Energy Systems Catapult, delivered the final lecture of the year in November.

IGEM's 2021 Annual Conference, Road to 2050: Leading the Energy Transition, took place in October, focusing on Britain's Hydrogen Network Plan and the steps we need to take to ensure a just energy transition. The conference brought hundreds of like-minded gas professionals together online over two days. With each day split into three sessions, day one consisted of sessions on Ensuring People's Safety, Maintaining Security of Supply and Policy into Practice, while day two included sessions on Focusing on People's Needs, Delivering Jobs and Investment and Networks' Collaboration.

In December, the YPPC Final went virtual for the second year in a row, bringing together the competition's ten amazing finalists to battle it out for the winning title and top prize.

Hosted by IGEM's Young Persons Network (YPN) Chair George Brookfield, the YPPC Final was a close competition but there could only be one winner: Dexter Hong, Engineer at the Hong Kong & China Gas Co with a paper entitled 'Development of a Smart Control Device for Domestic Cooking Appliances'. On winning the competition, Dexter said: "It was my first time joining this international competition and I was so surprised about winning as the other competitors did so well. My team and I have worked on this project for nearly two years and this award is a great honour and affirms our efforts. Thank you IGEM for organising such a great virtual event and for giving me the opportunity to learn from other impressive projects."

In second place was Michael Sinclair, Graduate Engineer at Cadent Gas.

Michael's presentation was titled 'Hydrogen Powered Construction Site' and looked at the innovative trial that was put in place to help decarbonise Cadent's construction activities.

For the first time ever, and proving just how tight the competition was, third place was awarded to both Suki Ferris, Hydrogen Market Strategy Lead at National Grid, who's presentation looked at Hydrogen Guarantees of Origin, and Luke MacDonald, Engineering Manager at SGN, with his presentation titled 'A New Smell in the Hebrides...'.

Events Hosting Service

With ambition to provide our membership with a reporting service, we have also explored the opportunity to provide a service through hosting sector events. In September 2021, we were asked to support the launch of East Coast Hydrogen for National Grid, Cadent, Northern Gas and KPMG.

The following week, IGEM hosted the launch event, attended by over 250 key stakeholders, providing a digital delivery platform for our members. Feedback was quick and positive and, as a result, we decided to make this an official service offering. In November, a second East Coast Hydrogen webinar was hosted, prior to the official launch of the industrial cluster in Parliament.

Also in 2021, IGEM hosted the UK International Conference on Gas Decarbonisation, organised by National Grid and BEIS, which attracted a global audience.

Sections

Our Sections also continued to organise events, both virtual and in person, offering our members insight into a variety of areas.

Far East District Section

In 2021, the Far East District Section (FEDS) organised several webinars and technical visits to share green energy projects in Hong Kong with members.

In March, the FEDS held a webinar on 'Decarbonisation Journey of CLP Power Hong Kong Limited and Operation Experience of New Combined Cycle Gas Turbine Unit D1' to introduce a variety of measures taken by CLP to decarbonise Hong Kong's electricity generation in order to help Hong Kong achieve its decarbonisation goal.

Another webinar, 'Initiative on Food Waste and Sewage Sludge Co-digestion to Harvest More Renewable Energy', was held in October to share the pilot project run by the drainage services department of the HKSAR government to enhance biogas production.

In December, a technical visit to explore the innovative gas and solar thermal desiccant dehumidification for better indoor air quality at H Zenter took place. This energy saving project was awarded the 2021 Innovative Energy Project of the Year award by Association of Energy Engineers.

Irish Section

The Irish Section hosted guest speaker Derek Muckle, Director of Innovation & Technology at Radius Systems Ltd, for their April webinar, 'Hydrogen Distribution Through Polyethylene Pipe: A Probable Future Scenario'.

In May, they were joined by speaker David Surplus OBE, Director, B9 Energy Storage Ltd, for a webinar looking at the Belfast power to gas project.

London, Southern & Eastern Section

In September, the London, Southern & Eastern Section hosted 'An Audience with Steve Holliday', during which the former National Grid CEO spoke and reflected on his time at National Grid and shared his views on the challenge of the energy transition. The event was recorded and is available to view on IGEMtv.

In October and November, the Section hosted a series of four hydrogen-themed webinars. The webinars covered various topics within the hydrogen realm, including appliances, hydrogen billing, metering and gas quality – along with covering hydrogen projects such as H100 Fife, Hy4Heat and Project Cavendish.

Midlands Section

Following the AGM in May, the Midlands Section held a webinar looking at the implications of net zero on workforce resilience with speaker Rob Murphy, Energy & Utility Skills' lead on labour market intelligence and strategic workforce planning services.

North East & Yorkshire Section

The pathways to net zero has a hydrogen gas network at its core and it's important to consider decarbonisation across energy and wider utilities such as water and communications. In October, the North East & Yorkshire Section enjoyed a visit to Northern Gas Networks' (NGN) InTEGReL site to see first-hand the new 100 per cent hydrogen appliances installed and in use in the hydrogen homes.

North West Section

The North West Section looked at hydrogen boilers in February, hosting a webinar entitled 'The Development of

Baxi Hydrogen Boilers', with guest speaker Jeff House, Head of External Affairs at Baxi Heating.

In March, the Section held a joint webinar with the Yorkshire Gas Association on HyNTS/FutureGrid.

In June, members were joined by Chris Barron from Costain, for a webinar on 'Decarbonising New Zealand's Gas Network: A Pathway to Net Zero'.

In September, the Section hosted speaker David Parkin, Project Director for HyNet, for an event on 'HyNet North West: Delivering Net Zero'.

To end the year of events, the North West Section looked at various perspectives on hydrogen infrastructure with speakers from Fastflow, TWI and Progressive Energy.

Scottish Section

At the Scottish Section's AGM, which took place in April, attendees were treated to a presentation from Sarah Milburn, Programme Manager and Communications Lead at Solutions for the Planet. Sarah shared some insight into Solutions for the Planet's incredible work, including their Big Ideas Competition, which encourages young students in STEM subjects to look at solutions for sustainability. Presentations in their 2021 competition included a range of ideas, from a community food garden to window applicable solar panels.

South West Section

In 2021, the South West Section held a number of technical webinars looking at a range of areas. These included a presentation on Mapress Gas with speaker David Palmer, Geberit's Business Development Manager, Industrial South; a review of trenchless solutions with Gmac, in their webinar, 'HDD – Trenchless Technology; an Introduction to SMART Torque', with guest speaker Martin Ford from Sunbelt Rentals UK Ltd; and a webinar on 'Techniques for Dealing with Stubs', with speakers Sean Noonan, Operations Director, and Rich Ditte, Senior Development Manager at Steve Vick International.

Welsh Section

Throughout November, the Welsh Section hosted a mini-series of four webinars on the South Wales Industrial Cluster (SWIC). The first webinar looked at the whole picture and vision for the decarbonisation of the region, while the second focused on production, the third on transport and distribution, and the fourth and final one on utilisation and end-use.

Keeping you **in the loop**

IGEM continued to keep members updated with all the latest industry updates from across the sector, as well as evolving in the digital space with new offerings and developments.

While meeting in person wasn't a consistent option, IGEM continued to keep the industry informed.

Our IGEMtv platform has proven itself, once again, to be indispensable in delivering webinars and activities throughout the year, allowing collaboration and accessible learning for all our members.

Along with publishing ten editions of our journal, *Gas International (Gi)* in 2021, we also launched our *Hydrogen Supplement*, which explores and celebrates all things hydrogen, and *Gas Utilisation (Gu)*, a sister publication to *Gi* with a specific focus on the downstream gas sector.

Flame, our weekly e-newsletter, also continued to keep our members up to date with IGEM events, activities and the latest news.

In late 2020, IGEM undertook a consultation of its IT infrastructure, interviewing across the organisation and identifying key areas that needed addressing and establishing a plan.

One of the areas identified that needed urgently addressing was the outdated IGEM CRM system and website – both of which had significant negative impact on the secretariat and membership experience.

In 2021, IGEM set out to draft a Request for Proposal (RFP) from a number of providers that could ensure a scalable and integrated solution was delivered in an ambitious timescale of early 2022.

The Digital Evolution and Engagement Project (DEEP) commenced and the steering group in IGEM selected a vendor, PIXL8, who could provide a solution for CRM, CMS (the website) and offer value added benefits within the budget.

Due diligence and governance underpins the DEEP project, with external project management helping to guide the internal team through the project and avoiding pitfalls learnt from previous projects and applying best practice.

From August to November, the secretariat entered the Discovery Phase, ensuring we captured the wants and needs for the organisation's new solution. This allowed us to identify the must-haves and nice-to-haves and ensure that the Minimum Viable Product (MVP) was available within budget and ensure that members had a much-improved experience and the secretariat looked to gain efficiencies from reducing admin heavy tasks.

Development sprints began in November, with the vendor creating solutions that met our needs, and, between sprints, IGEM departments tested the standard and developed solutions of the website, CRM and integrated solutions for event management, and technical enquiries.

Progress made so far is thanks to the IGEM team for their insight, challenge and support to date, and our external project support from Peter Barnes, Peter Harper and David Sheppard, Council sponsor, Paul Denniff, and the team at PIXL8.

Digital

In 2021, we reviewed the content, design and format of all of our social channels in order to identify improvements that allow us to reach a wider audience than in previous years. We implemented a new strategy into content and comms that is both visually and verbally improved, and placed at the front of the comms plan to ensure we "communicate beyond our membership", an area identified that IGEM has been guilty of only talking to the converted.

As part of the revision, we relaunched the IGEM YouTube channel in March and have plans to grow reach using new and repurposed content, with over 30 videos already uploaded this year. We also launched an Instagram channel in September, allowing us to further tailor content per channel and audience, which in turn has increased engagement across all channels.

SOCIAL MEDIA

1,089
page followers
+9%

3,302
followers
+8%

7,613
page followers
+59%

169
followers
Sept - Dec

191
subscribers
+62%

7,936
YouTube views
+58%

WEBSITE

+28%
users
Aug vs Jan

+16%
pages viewed
Aug vs Jan

+277%
social referrals
Aug vs Jan

A look **ahead**

We are keen to continue working with you on the innovation front as we help to enable sector-critical hydrogen demonstrators and train and prepare our members for the energy system transformation

It's an exciting time for both IGEM and the industry as a whole - here, we're outlining what you can expect from us in the year ahead.

Looking to 2022, we are keen to continue working with you on the innovation front, across technical standards, skills and safety, as we help to enable sector-critical hydrogen demonstrators and train and prepare our members for the energy system transformation – please do reach out if IGEM can add value to your future projects.

You can also expect to see us partnering in flagship projects that aid decarbonisation to accelerate and collect learning for our industry.

From a technical perspective, looking to the next year and the continuation of the focus on enabling a safe net zero future, IGEM has been working with a steel manufacturer in South Wales on an innovation project that will commence in 2022. The study itself could be utilised to assess other steel and non-steel applications for converting to zero carbon fuel sources, and carry learning out beyond the boundaries of industrial sites and into the gas networks.

In terms of membership, the equality, diversity and inclusion (EDI) programme will be pushed out further in 2022, with plans for an EDI webinar series, member case studies and several events for members to attend taking place throughout the year.

For our Industrial Affiliate Section, we aim to build on the gains we've already made so there will be more of everything with an increased focus on sharing knowledge of the next steps in decarbonising the gas networks. There will also be more opportunities for company members to share their expertise through our webinar programme and, hopefully, we will see the return of live events.

In seeking to bring more service offerings and to help diversify our income streams, we have begun to offer an events service, which will officially launch on the new website, and in the meantime, any enquiries can be made to events@igem.org.uk. Due to the platforms available to IGEM, we can host simple hour-long webinars through to multi-stream, multi-day pure digital or hybrid events.

We are also setting up the offer of a peer review and report publishing service. This is while we maintain progress with the Hydrogen Knowledge Centre, grow our Housing Partner initiative, continue to make a compelling case for gas, and recruit, train and equip more members by reaching out to different parts of the energy system.

Financial **summary**

IGEM had a successful financial year and exceeded budgeted expectations

Take a look at a summary of IGEM's financial activities ending December 2021 and how this compared to the previous year.

Operationally, IGEM overachieved on budgeted expectations for the year, delivering a surplus of £89,963. Total income of £2,118,931 has been generated before the returning of the Job Retention Grant, which is 12.3% greater than budget, the growth being from operations and investment gains. Overall expenditure has increased by 17%. This is mainly due to the development and research costs. Valuation of investment portfolios has increased and so there are investment gains of £472,235. Total net movement in funds is £272,915.

The total balance carried forward at the end of the year is £5,873,975 of which £1,803,973 is the Restricted Fund balance.

Consolidated Statement of Financial Activities for the year ended 31st December 2021

	2021				Prior year			
	Unrestricted Funds	Designated Funds	Restricted Funds	TOTAL	Unrestricted Funds	Designated Funds	Restricted Funds	TOTAL
Incoming Resources								
Donations & Legacies:	(52,382)	0	0	**(52,382)**	52,382	0	0	52,382
Sponsorship Income	0	0	0	**0**	0	0	0	0
Charitable Activities	1,784,040	38,201	183,953	**2,006,194**	1,584,519	12,341	433,864	2,030,724
Trading Activities	27,968	0	0	**27,968**	24,458	0	0	24,458
Investment Income	53,839	2,206	28,725	**84,770**	48,933	791	25,515	75,239
Total Incoming Resources	1,813,465	40,407	212,678	**2,066,550**	1,710,292	13,132	459,379	2,182,803
Expenditure On:								
Raising Funds								
Investment Mgr Fees	5,191	0	2,775	**7,966**	3,270	0	1,734	5,004
Trading Expenditure	3,022	0	0	**3,022**	12,226	0	0	12,226
Charitable Activities	1,735,781	135,319	383,782	**2,254,882**	1,629,045	43,512	240,211	1,912,768
Total Resources Expended	1,743,994	135,319	386,557	**2,265,870**	1,644,541	43,512	241,945	1,929,998
Net gains/(losses) on Investments	306,679	1,494	164,062	**472,235**	121,245	(2,758)	64,873	183,360
Net Income/Expenditure	376,150	(93,418)	(9,817)	**272,915**	186,996	(33,138)	282,307	436,165
Transfer between Funds	(372,561)	372,561	0	**0**	(209,654)	120,654	89,000	0
Net Movement in Funds	3,589	279,143	(9,817)	**272,915**	(22,658)	87,516	371,307	436,165
Total Funds Brought Forward	2,140,758	1,798,084	1,662,218	**5,601,060**	2,163,416	1,710,568	1,290,911	5,164,895
TOTAL FUNDS CARRIED FORWARD	2,144,347	2,077,227	1,652,401	**5,873,975**	2,140,758	1,798,084	1,662,218	5,601,060

Consolidated Balance Sheet as at 31st December 2021

		2021		Prior year	
Fixed Assets					
Tangible		**1,244,347**		1,240,758	
Investments		**4,269,320**		3,791,530	
		5,513,667		5,032,288	
Current Assets					
Debtors	268,286		628,952		
Short Term Investments	756,642		621,728		
Cash at bank and in Hand	213,494		146,489		
	1,238,422		1,397,169		
Creditors	(878,114)		(828,397)		
Net Current Assets		**360,308**		568,772	
Total Assets less Current Liabilities		**5,873,975**		5,601,060	
FUNDS					
Unrestricted		**2,144,347**		2,140,758	
Restricted		**1,652,401**		1,662,218	
Designated		**2,077,227**		1,798,084	
		5,873,975		5,601,060	

Council Statement on the summarised financial statements:

These summarised financial statements are based on information extracted from the statutory Council's report and consolidated financial statements approved by Council on 23rd March 2022. They may not contain sufficient information to allow for a full understanding of the Institution's financial affairs. The full Consolidated Financial Statements, the Trustees Report and the Auditor's Report should also be consulted. Copies can be obtained from our website www.igem.org.uk or from the finance department by email to **finance@igem.org.uk**.

Institution of Gas Engineers & Managers
IGEM House
26 & 28 High Street
Kegworth
Derbyshire
DE74 2DA

t: +44 (0)1509 678 150
e: general@igem.org.uk
www.igem.org.uk

Registered Charity 214011

IGEM
Engineering a Sustainable Gas Future