CONTENTS

Click the relevant chapter to navigate

01
President’s review of 2016

02
Leading as the qualifying body for a broad spectrum of engineering activity

03
Providing members with professional, ethical standards, life-long learning and continuous development through knowledge

04
Inspiring, training and educating the next generation of engineers

05
Promoting the role, importance and value of engineering

06
Acting as the focus to which the world’s organisations turn for help, advice and informed opinion on mechanical engineering to tackle global challenges

07
Encouraging innovation, research and entrepreneurship in engineering

08
Investing in the future: digital transformation, financial stability and employees
President’s review of 2016.
IMPROVING THE WORLD THROUGH ENGINEERING

The Institution of Mechanical Engineers’ mission is “To be the recognised authority in mechanical engineering supporting a global Engineering Community”. This is a bold and ambitious mission, but one that is important and compelling.

When I became President, I was keen to support professional engineers as they improve the world. This includes professional registration, life-long learning, inspiring young people and more. The Institution acts as a focus for engineers to share experiences, keep up-to-date with developments and transfer technologies between sectors. It is also an important voice for our profession; influencing policy makers and Government to ensure engineering is thriving.

Innovation is vital in all areas of engineering. This has been championed through the Institution’s Stephenson Fund which invests in smaller businesses to give an ‘impulse to invention’. I am committed to helping companies overcome the investment hurdle between R&D and bringing a product to market, as well as to provide access to the knowledge network of our membership. We all have a duty to support and encourage the innovators and entrepreneurs around us.

The governance of the engineering profession has been a concern for many years which led to the initiation and our involvement in the Uff Review. It is an independent review, sponsored by the IET, ICE and IMechE, examining specifically the roles of the Royal Academy of Engineering, the Engineering Council, Engineering UK and the Professional Engineering Institutions in relation to the needs of members, employers, academia, governments and society.

This positive, collaborative approach reflects innovation within the Institution, and our firm commitment to supporting the future and relevance of the engineering profession.

I would like to thank all our members, volunteers and employees with whom I have worked this year. They are creative, responsive and hardworking, and dedicated to the Institution and its aims.

Jon Hilton BSc(Hons) CEng FIMechE
President
Leading as the qualifying body for a broad spectrum of engineering activity.
MEMBERSHIP GROWTH

The Institution represents mechanical engineers all over the world, working in a wide range of industries; from transport, to healthcare, to space. With such diversity comes a unique strength, and our members can be confident that their Institution continues to support and represent them effectively.

For the fifth consecutive year, the Institution was the top performing Professional Engineering Institution for new professionally registered members and for the first time ever, for registrations in all main categories, up 5% on 2015. The membership continued to grow and broaden, with total membership numbers at the end of the year at 117,751, ahead of the 2016 target of 115,000. 2016 also saw a record 22% growth in new EngTech elections to 2,160, up from 1,776 in 2015. The Institution accounted for 28% of all new registrants with the Engineering Council.

International membership continued to grow, demonstrating the demand for professional registration all over the world. At the end of the year, international membership stood at over 24% of the total membership, spread over 140 countries. This represented an increase of 8.3% over 2015.

India saw a significant increase in elections, up 27%, while Hong Kong and Malaysia remained strong and new areas emerged including Pakistan and the Middle East. We have bases in India, Hong Kong and Oman and new partnerships with the IChemE in Malaysia and IMarEST in Singapore.

117,751 Members

+5% Professional registrations
MEMBERSHIP GROWTH 2012–2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>101,751</td>
</tr>
<tr>
<td>2013</td>
<td>106,277</td>
</tr>
<tr>
<td>2014</td>
<td>111,467</td>
</tr>
<tr>
<td>2015</td>
<td>113,884</td>
</tr>
<tr>
<td>2016</td>
<td>117,751</td>
</tr>
</tbody>
</table>

ENGTECH GROWTH 2015–2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1,776</td>
</tr>
<tr>
<td>2016</td>
<td>2,160</td>
</tr>
</tbody>
</table>

ENGTECH 22% increase in 2016
INTERNATIONAL MEMBERSHIP

TOTAL 26,285

EUROPE 4,644

OCEANIA 1,888

SOUTH ASIA 6,756

SE ASIA 3,658

NE ASIA 4,103

MIDDLE EAST AND AFRICA 2,812

AMERICAS 2,418

INDIA 27% increase in 2016

SOUTH ASIA 6,756

OCEANIA 1,888

08
Providing members with professional, ethical standards, life-long learning and continuous development through knowledge.
MEMBER ENGAGEMENT

Members’ volunteering efforts and regional events remain a great strength of the Institution. For many members, the regional activities represent their main link with the Institution. Overall, our Division, Group and Regional members in the UK and Republic of Ireland organised 1,200 events, attracting 55,000 attendees. A total of 476 events were held across the international network with 19,000 delegates; an 11% increase.

The Institution delivered an online tool, Career Developer, to enable members to monitor and record their continued professional development. It was trialled by more than 1,000 volunteers, in preparation for the Engineering Council’s mandatory audit in 2017.

The Developing Engineers Programme was launched to support Associate members. This online resource combines tools, guidance and support to ensure Associate members, who have recently graduated, are able to achieve their goal of professional registration.

Our library services continued to serve members all over the world, with over 300,000 user sessions and 288,000 downloads, up 19% on 2015. This is in addition to over 17,000 visits to the library blog pages. 5,000 new journal and book titles were added to the vast collection this year. The new Virtual Archive launched in 2016 with over 24,000 individual archive items now available online. The archive has already received over 27,000 visits.

READ MORE
Career Developer

1,676
Events

74,000+
Attendees

288,000+
Downloads

5,000
New titles
EMPLOYER AND ACADEMIC ENGAGEMENT

The Institution continues to build long-term relationships with companies and education establishments to support engineers and encourage professional registration.

Membership webinars were introduced in 2016 for Associate members to upgrade to CEng or IEng and for Member to Fellow upgrades. Approved and Accredited schemes remain an important offering for companies to enable their engineers to become professionally recognised. 105 schemes were approved in 2016, and activity with existing schemes remains high.

Trailblazers, the Government’s employer-led program of apprenticeship reform, is still evolving. In 2016 the announcement of an apprenticeship levy across the UK focused the minds of many employers on delivering the new programmes, but with uncertainty around the practicalities. The Institution collaborated with employers, other PEIs and Government to embed EngTech level requirements into many new standards and is involved in the assessment of apprentices across many advanced manufacturing apprenticeship programmes.

UK business development highlights 2016

<table>
<thead>
<tr>
<th>Category</th>
<th>2016 Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of industrial visits</td>
<td>1,295</td>
</tr>
<tr>
<td>Regional professional registration events</td>
<td>93</td>
</tr>
<tr>
<td>Company Based Registration Schemes launched</td>
<td>247</td>
</tr>
<tr>
<td>New companies/sites engaged</td>
<td>178</td>
</tr>
<tr>
<td>University first year/affiliate presentations delivered</td>
<td>78</td>
</tr>
<tr>
<td>Apprenticeship EngTech/affiliate presentations delivered</td>
<td>99</td>
</tr>
</tbody>
</table>
Inspiring, training and educating the next generation of engineers.
LEADING THE CHANGE

The Institution has a comprehensive approach to addressing the engineering skills gap and inspiring the next generation of engineers. The activities of the Institution towards young people can be divided into five objectives:

INSPIRE
Igniting enthusiasm in young people from an early age.

INFORM
Providing access to advice and information that can help shape their future.

TRANSFORM
Enhancing the practice, skills and knowledge of educational professionals.

UNDERSTAND
Gaining greater insights into the ways young people learn and develop their attitudes to engineering, while finding out which interventions work best.

INFLUENCE
Working with those responsible for shaping education policy throughout the UK.

WATCH
Inspiring the next generation
EDUCATION ENGAGEMENT OUTREACH

The Institution is keen to support employer and school interaction, and is actively supporting Engineering UK as they seek to co-ordinate the network of STEM ambassadors through the Tomorrow’s Engineers initiative.

The Institution’s STEM Ambassadors supported over 3,500 activities, from classroom sessions and career days to local competitions.

We continue to support the Bloodhound Project, the world land speed record attempt. Institution Bloodhound ambassadors have been busy working with over 18,605 school pupils with the popular Bloodhound education toolkits.

2016 was another highly successful second year for the Engineering Education Grant Scheme (EEGS) – jointly funded with the IET. The review panel funded 34 projects across the UK.

Our partnership with the Insight into Industry initiative (formerly known as Teachers Industrial Partnership scheme) placed 62 teachers into companies for five or ten days, as a proven way of improving careers provision in schools. The Institution’s scheme has seen 75 teachers complete their placements in leading engineering companies.

18,605 School pupils engaged by our Bloodhound Ambassadors

75 Teachers completed placements in leading engineering companies
Institution Bloodhound ambassadors have been busy working with over 18,605 school pupils with the popular Bloodhound education toolkits.
Our “Challenges” programme remains a fantastic vehicle for young engineers to demonstrate their skills and appreciate the potential of an engineering career. The programme of undergraduate competitions continues to grow with 432 students from 61 university teams competing in the Unmanned Aircraft Systems, Design, and Railway challenges. The Design Challenge expanded internationally with the University of Shanghai hosting the first running of the competition in China.

432 Students
61 Universities
Competed in our undergraduate competitions
Formula Student had a record-breaking year with 4,000 students from 32 countries taking part. There were over 5,000 attendees including students, volunteers, spectators, partners, sponsors and VIPs compared with 3,500 in 2015. Thanks are due to the volunteers who help run the challenges, support the young engineers and embody the spirit of the Institution.
33 COUNTRIES

Students

4,000
STUDENTS

40%
OF TOTAL ENTRIES

Technology

130 UNIVERSITIES

32 ELECTRIC CARS
20% OF TOTAL ENTRIES

Participation

159 TEAMS
26% increase in 2016

Attendance

6,000 ATTENDEES
40% increase in 2016
Promoting the role, importance and value of engineering.
The Institution is committed to raising the profile of engineering and providing expert commentary and advice to media organisations across the world.

During 2016 we commented in the media on a diverse range of topics such as: sports technology at the Rio Olympics, the rail crash in Bavaria, the dangers of drones, the Colombia plane crash and the UK electricity gap supply, to name a few. Our reports and policy statements address vital engineering issues in society and promote the work of the Institution and our members. They are regularly picked up by major media outlets and drive the news agenda reflecting the breadth of mechanical engineering in the world today. A record-breaking £49 million worth of media coverage was achieved.

The Institution’s publications set the engineering agenda in key areas in 2016:
- Manufacturing Prospects
- Brexit Report
- Automated Vehicles
- UK Freight: In for the long haul
- Industry 4.0
- Challenges for Water in UK
- Big Ideas report
- Engineering Solutions for NHS Healthcare
- Food and Drink
- Onshore Well Integrity
- Diversifying the Talent
- Engineering the UK Electricity Gap
- Autonomous Vehicles
- Integrated Transport

£49 million
A record-breaking amount of media coverage in 2016
Acting as the focus to which the world’s organisations turn for help, advice and informed opinion on mechanical engineering to tackle global challenges.
SETTING THE AGENDA

The Institution is a leading player in informing government policy in areas concerning mechanical engineering. With members from all over the world and in a wide range of industrial sectors and academia, the Institution is in a uniquely balanced and informed position to advise government and policy makers, in the UK and further afield. The Institution recognises that a co-ordinated approach between the bodies that represent engineering is powerful and effective, and is keen to continue leading this co-operative action.

The UK political landscape for most of the last year was dominated by Brexit. The Institution was keen to inform the debate and surveyed its members, ahead of the referendum. The results found the majority supported the UK staying in the EU, however the key message from members was clear: whatever the outcome, the decision should not damage the UK’s vital engineering and manufacturing sectors.

In response to the result of the EU referendum, the Institution has taken a leading position to ensure that issues impacting on engineering in the UK are strongly represented to Government. We collaborated with the Royal Academy of Engineering to develop a cross-industry response representing over 450,000 engineers to Government. With engineering contributing at least £280 billion in gross value added to the economy, 20% of the total, work continues to ensure that UK industry continues to have access to the standards, skills and markets necessary to thrive.

In April, the Institution launched the Big Ideas: The Future of Engineering in Schools report with Neil Carmichael MP, Chair of the Education Select Committee, chairing an event attended by over 40 influential parliamentarians and educationalists. Recommendations within the report have generated a range of partner projects to bring about change in STEM education.

Our Chief Executive provided evidence to a Parliamentary Select Committee inquiry on apprenticeships, and urged policymakers to embed professional registration into apprenticeship schemes.

We also hosted three parliamentary events in Westminster, Holyrood and at the Welsh Assembly to address the changing nature of careers awareness and promoting local links between education and business.

The STEM Insight programme received written commendation from Justine Greening, the Secretary of State for Education as a ‘fantastic’ scheme.

450,000+
Engineers represented through our collaboration with RAEng
In April, the Institution launched the Big Ideas: The Future of Engineering in Schools report with Neil Carmichael MP, Chair of the Education Select Committee, chairing an event attended by over 40 influential parliamentarians and educationalists.
Encouraging innovation, research and entrepreneurship in engineering.
As an organisation at the forefront of the profession, the Institution is in a unique position to identify and invest in innovative companies and technologies. Our investments are not just about providing monetary investment, but also about connecting companies to resources, knowledge and an expert network.

The Stephenson Fund fulfils the Institution’s original purpose to give an impulse to invention and innovation. By helping companies overcome the investment hurdle between research and bringing a product to market, the Institution provides practical support to entrepreneurs. During 2016 investments were made in two companies:

Silicon MicroGravity, which has developed novel sensor technology sensitive enough to measure one billionth the level of Earth’s gravity and are small and robust enough to be sent deep into boreholes to distinguish oil from water. They can improve yields on conventional reservoirs by up to 2%, representing significant increases in production and revenues.

Proxisense, which has developed proximity sensors and fluid contamination systems for use in extreme environments, such as jet engines. They are used to monitor the health of turbine blades and lubrication fluids and can extend component lifetimes, increase efficiency and reduce maintenance and downtime costs.

The Stephenson Fund currently supports six companies and looks to grow further in 2017.

6 Companies are currently supported by the Stephenson Fund
Silicon MicroGravity, which has developed novel sensor technology sensitive enough to measure one billionth the level of Earth's gravity and are small and robust enough to be sent deep into boreholes to distinguish oil from water.
This year’s award winners demonstrated the depth and breadth of engineering activity amongst our members and their outstanding contributions to engineering.

The 2016 Prestige Award winners were:

— James Watt International Gold Medal: Professor Dame Ann Dowling
— James Clayton Prize: Anne Neville
— The Alastair Graham-Bryce Award: Paul Stinchon
— The Thomas Hawksley Gold Medal: Hiroshi Yabuno
— The George Stephenson Gold Medal: Bridget Eickhoff
— Award for Risk Reduction in Mechanical Engineering: Seibum Choi

The 2016 Vision Award winners were:

— Modern Day Visionary 2016: Suzi Gray
— Undergraduate Visionary 2016: Katie Winkle
— EngTech Visionary 2016: Keith Wylie
— Young Member Visionary 2016: Matthew Marson
— Whitworth Visionary 2016: Sophie Morrison
Investing in the future: digital transformation, financial stability and employees.
The Institution is committed to being a modern, relevant organisation that will appeal to current and future generations of engineers and support the growth of international membership. We have started a £3M investment programme to overhaul our technological infrastructure and way of working to become ‘digital by choice’ and support our members more effectively, wherever they are in the world.

The project includes the replacement of the technology infrastructure, using cloud technology to create a robust and flexible working environment. The aging database will be replaced with modern fit-for-purpose CRM that will create a single source of information for members and customers, improved booking and e-commerce functionality.

New digital product innovation to improve the Institution’s digital offering, and the Institution’s operating model will evolve to create a suitable environment for an agile workforce.

All of these changes will be delivered with the membership in mind, through digital inclusion, to ensure our members can still access the full benefits of membership.

The new website was launched at the beginning of 2016 and social media, including Twitter, Facebook and LinkedIn, is increasingly popular, both in the regions and internationally and is rapidly becoming the channel of choice for many members. Facebook interactions notably went up from 8,383,843 (2015) to 20,243,988.

Online applications continue to grow year-on-year demonstrating the appetite for advanced online facilities. 66% of CEng applications were online, and at least 80% of all student and Associate applications are received online.
30 applications were made online

66% 80% CEng Student & Associate applications were made online
Over the last few years the Institution has made several acquisitions in companies that specialise in learning and development for engineers. These investments will both ensure the financial stability and meet the objective of improving the world through engineering. Despite a challenging year, with Brexit and the drop in oil prices, these businesses have still met their long-term financial targets. The Institution will continue to invest in its learning and development activity, and the long term plan is for these commercial activities to contribute an increasing proportion of our revenues.

The Engineering Training Centre in Sheffield has been open for a year, and acts as a hub for hosting local member activities, meetings, conferences and events. Engineering Training Solutions (ETS) continues to thrive in the Non-Destructive Testing (NDT) and Inspection global market despite challenging external factors. The launch of the online NDT learning development programme for a key NDT technician qualification was particularly successful, reducing classroom time and improving the learning experience significantly. Sonaspection, a manufacturer of flawed specimens for training and examination, secured new and repeat contracts from China, South Korea and the United States. The recent decision to develop the Hinkley Point site will lead to significant work for this business.

Demand for In-Company Training and public programmes remained steady, reflecting the wider business climate with an evident reluctance to commit training spend against a difficult macro-economic backdrop. A new approach to blended learning using the Institution’s technology platform was established, cementing the relationship with a key single client.

Amber Train was acquired in November 2015 and was in the business of certifying students for work on the railways. In 2017, as a part of the new Managing Director’s review of the business, it was discovered that apprentice review meetings required under the terms of funding agreements were not taking place and had not taken place for some time and well before the business was acquired by IMechE. Following an internal investigation this was disclosed to the Colleges through which funding is provided, and the matter was reported to the Charity Commission. The Colleges are seeking to claw back all funding that has been provided under the agreements with them. As a result Amber Train is insolvent and following legal advice was placed into liquidation on 24 July 2017.
The Engineering Training Centre in Sheffield has been open for a year, and acts as a hub for hosting local member activities, meetings, conferences and events.
EMPLOYEE ENGAGEMENT

The Institution is an equal opportunities employer which aims to recruit a diverse range of talented people. It recognises that future success depends on the skills, professional fulfilment and continuing development of all employees. The Institution gained a silver accreditation by Investors in People.