

# The Woman Engineer



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## From the editor's desk

*I am delighted to present readers with a truly positive start to 2022, through the enormous efforts and achievements of the many inspirational engineers featured in this issue of The Woman Engineer.*

From the archives we can appreciate the impact that Dame Caroline Haslett had on engineering and the promotion of women in the sector, and we are pleased to be able to celebrate more quirky information about her (see opposite). Such was her impact that to this day we acknowledge her with the annual *Caroline Haslett Lecture*, where equally impressive women recount their experiences and offer us further motivation for the future. In December, this year's presenter of the Lecture, Dame Jo da Silva, said that we "all have the potential to be brave." This really struck a chord with me, and I am sure with countless others who have oft considered themselves to be navigating a playing field that was less than balanced. Thankfully, the pages of this issue of *The Woman Engineer* are packed with "brave" women (and men) who are trailblazing – sadly that word is still needed, but soon, amongst the



Lynn Postle, FICME

wider mindset, women engineers will no longer be considered as pioneers but as commonplace.

We can see how women of all ages are progressing throughout their engineering careers and indeed retraining to come into the profession – a profession that is set to continue to drive innovation, comfort, and safety for the people of the world.

I would like to congratulate all the award winners and nominees featured in the following pages and all the engineers who have achieved "firsts" in their families, companies, and societies.

We are always looking for YOUR stories so let me know if you want to share, [editor@wes.org.uk](mailto:editor@wes.org.uk)

Next issue: Summer 2022, contribution deadline – 10 March 2022



## President's Message

It has been an exciting few months since the last edition of *The Woman Engineer*. We have had several key events, welcomed new staff to the team, and had our first board meetings with our new Trustees – all within the constraints of an ongoing global pandemic!

One of the few 'in person' events that I have been to over this period was COP26 to support our Climate Emergency Group at their panel event '*Using the SDGs to tackle the climate emergency: here's how!*' Huge congratulations to Sally, Ioana and Dawn Bonfield for not only getting onto the agenda in the first place, but also delivering a great session which was one of the best attended, both in the room and virtually.

Whilst there is still an element of frustration that we cannot carry out more events face to face; we continue to enable wider participation with our virtual events and December's *Caroline Haslett Lecture* was no exception to that with attendees from around the globe. Very fitting with Dame Jo da Silva delivering a stunning lecture on her remarkable career focussed on sustainable development and creating resilient communities. It was also fabulous to 'meet' all the worthy award winners for this year – always an annual highlight!

As we launch into 2022, we are planning the year's agenda and trying to hedge our bets in terms of planning for face to face or virtual content – it will be a difficult judgement call and I have no doubt that we will not get it 100 per cent correct so please do stick with us. If you want to influence what we plan then do join one of the Directors' Committees, clusters, or other boards – or simply get in touch and let us know!

Best wishes to all for a healthy, happy, and productive 2022!

Dawn Childs FREng

# don't miss

*International Women in Engineering Day*

23 June 2022 – Globally

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

Check the WES website for events and updates at:

[www.wes.org.uk/events/wes-events](http://www.wes.org.uk/events/wes-events)



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## MV Dame Caroline Haslett – collier and cable ship

*Dr Nina Baker recounts a fascinating tale.*

WES Members with an interest in our history will be familiar with the name of our founding General Secretary, Dame Caroline Haslett, and her many years of work setting up and running our sister organisation, the Electrical Association for Women.

Unless you have read Henrietta Heald's book, *'Magnificent Women'*, or the biography of Caroline Haslett, *'Doors of Opportunity'*, by her sister, you may be less familiar with her work in the electrical industry more widely. She was the only woman member of the British Electricity Authority (BEA) from 1947-1956 and in 1953 became the first female Chairman of the British Electrical Development Association. This work, following her decades of involvement with both women's domestic concerns and training and with the industry, was what led to the honour the BEA paid to her in naming one of their new-build motor collier (coal carrying) ships after her in 1949. Not long after she launched the ship in Aberdeen in 1950, Haslett was attending the *5th International Congress of Business and Professional Women* at County Hall in London, when a visit to Battersea Power Station was arranged for delegates. By good fortune, the Dame Caroline Haslett was berthed at the time and Haslett was able to take her colleagues to meet the ship's master, Captain Russell, and visit her ship.

If the constant ferrying of coal from the English and Welsh coal fields to London power stations was helping keep the capital's electricity flowing, it was MV Dame Caroline Haslett's role as a cable layer that assured her place in history. It was decided that the varying supply and demand levels of the UK and French power systems would benefit from sharing power supplies. A Joint Anglo-French Technical Committee undertook years of testing and development of cable types, eventually deciding that each country would provide 'their half' of a parallel pair of cables, meeting mid-Channel to give a 200kV Direct Current (DC) system.

The ship had to be converted from collier to cable layer, so steel bed plates were welded to the ship's deck, to which modular cable-handling equipment was bolted, and wooden cable frames built in the holds. In 1958 the ship undertook trials of methods for laying

the cables, including grappling for the cables for jointing or repair purposes. In the summer of 1961 the French cable ship d'Arsonval, started to lay its half from Boulogne, the British from Dungeness and the mid-Channel ends were secured to a marker buoy for the jointing operation. MV Dame Caroline Haslett laid the British cable on 9 June 1961. Mid-Channel testing and jointing of the two parallel pairs of cable was undertaken by the French, completing the work on 22 June 1961. Final tests were carried out and the inauguration of the first Cross-Channel Interconnector took place on 8 December 1961.

Although the intention was for MV Dame Caroline Haslett to return to her regular collier work, with only occasional cable repair voyages, in the end there were so many repairs needed that in 1966 she was fitted out permanently as a cable layer and did very little more coal work. In 1982 the Dame Caroline Haslett was sold by the CEGB to the Panamanian registered company, Air-Land Corporation, renamed as just the Dame Caroline and converted to a dry cargo vessel.

That was almost the end of the story for both the ship and the cable as the ship was scrapped at W G Readman Ltd in Middlesbrough in March 1984 and in 1984 the interconnector itself was disconnected from the transmission system, with a new and more powerful interconnector being brought into use in the following year.

It is not given to many of us to experience the honour of having a ship named after us. Of those ships named after real people, the vast majority were either the nobility or family members of the ship's owners, so I feel that the naming of the Dame Caroline Haslett can be seen as not only honouring her decades of work but also that of the Electrical Association for Women whose centenary arises in 2024.



# Recognising the potential to BE BRAVE

## The 2021 Caroline Haslett Lecture and WES Awards Ceremony

WES was honoured to welcome Dame Jo da Silva, Global Director of Sustainable Development at Arup, to present the 2021 Caroline Haslett Lecture on Thursday 16 December. One of the 2021 WES Top 50 Women in Engineering, Dame Jo gave a fascinating insight into her experiences in disaster relief work and highlighted the essential role that engineering plays in transforming lives and building a sustainable future.



She explained that as her career has progressed over the last 30 years, it has been increasingly focussing on applying engineering expertise to reduce vulnerability and improve lives.

Having graduated as a structural and civil engineer, she noted that her honorary doctorate was awarded for being a humanitarian engineer. She gave the *Caroline Haslett Lecture* during a virtual session one day after she was presented with her damehood at Windsor Castle and humbly surmised: "These accolades simply reflect the growing recognition of the vital role engineering plays in society. To recognise a problem and dare to be part of the solution, as highlighted at the *WE50 Awards*. We all have the potential to be brave."

She spoke of how engineers are "at the forefront of battles" against a range of enemies, such as climate change and enthused: "Engineering is simply essential to building a sustainable future. We must design infrastructure that underpins economic development and wellbeing. Engineers create a stage set on which life plays out."

Despite that responsibility and indeed achievement, she said: "serving society is not often how engineers are portrayed in the media or how we see ourselves."

She applauded WES for helping to change the conversation and went on to explain how 'society' was very much "on the agenda" from her university days, but that it was not until the late 1990s that the environment became a key consideration. She went on to detail how her personal experiences around the world, beginning in north-west Tanzania had a great impact on her.

She warned: "We need to recognise that inequity, complexity and uncertainty are the three things that define the 21st Century.

"We must secure our future through resilient infrastructure." She urged those listening to visit the website of The Resilience Shift.

She spoke about the need to create a better world and to try to make systematic change, highlighting the fact that: "The built environment – the buildings and infrastructure – that we rely on contributes to 40 per cent of global emissions."

### KAREN BURT MEMORIAL AWARD

The annual event also celebrated the winners of this year's *Karen Burt Memorial Award*, *Amy Johnson Inspiration Award* and *Men as Allies Award*.

Eleanor Earl, recipient of the *Karen Burt Memorial Award*, gave an inspirational presentation on her professional journey as a civil engineer specialising in sustainable drainage projects and spoke about the importance of continued learning and growth.



### AMY JOHNSON INSPIRATION AWARD

The *Amy Johnson Inspiration Award* was received by Rose Russell of the Ursuline Academy, Ilford. An Art and D&T Technician, Rose has worked tirelessly to inspire and encourage girls of all ages to pursue STEM through extra-curricular activities, creating a support network of aspirational role models and playing an instrumental part in the Ursuline Academy's improvement plan to remain a Centre of Excellence for STEM.



### MEN AS ALLIES AWARD

This year's recipient of the *Men as Allies Award* was Dr Andy Palmer, Executive Vice Chairman and Chief Executive Officer at Switch Mobility. A world-renowned automotive leader, Dr Palmer has championed apprenticeships, acted as a mentor to female engineers, and has driven cultural change in the automation industry through his progressive approach and work on intersectional issues affecting gender.



# Serving Society

## WES Student Conference 2021

Charlotte Turedi of the WES University Groups Board reports on an inspirational day spent with women engineers who are excelling in their chosen career paths. The following is based on the presentations Charlotte attended, a number of additional presentations were also held during the event.

In recognition of the restrictions on gatherings and, the WES Student Conference was held virtually in 2021, thanks to the Hubilo system, which enabled delegates to not only watch talks, but also network through the on-line lounges during break-out sessions. The lounges included dedicated spaces for many of the companies presenting and one for the WES University Groups Board.

The conference theme of 'Serving Society', encouraged presenters to talk about what they do, and how engineering can be adapted for the best of the society and the world, in a time where action needs to be taken quickly to minimise the effects of climate change.

Another significant theme was advice on how to advance a career as a woman in the industry. There was a good deal of recurring advice, which highlighted how women can be prone to holding themselves back and to feeling like they are not good enough or achieving enough in their roles.

### SUSTAINABILITY AND ETHICS

There was a large focus on sustainability and ethics in the panel discussion. Professor Hua Dong, Professor in Design, Dean of Brunel Design School, Brunel University, highlighted the importance of redistributing resources and using organic materials in design. She spoke of how "designers are always looking to make the world better, more sustainable" and of how they use their "heads, hearts and hands" to do so. She also highlighted some of the examples of new technologies originating from the students at Brunel.

Engineering Doctorate Student at Swansea University and icmPrint, Caitlin McCall, spoke about the importance of making sustainability "trendy" and using effective marketing to drive this, as well as companies instigating proper processes to "effectively and sustainably" use resources.

Mara Tafadzwa Makoni, Association of Black Engineers (AFBE), was highly engaging with strong advice to "be bold, be fair, be collaborative". In terms of driving the direction of engineering, she asked delegates to consider: "where are people like me, having these conversations?", making sure we can speak to like-minded people to get our voices heard and drive the change that is needed.

Dr Larissa Suzuki, Head of Data and AI Practice, Google Cloud, discussed how more people will be living in cities in the future, how pollution in cities is detrimental to health and cognitive function, and what needs to be done to adapt cities for the rise in inhabitants. She emphasised the importance of building diverse teams, with different voices and different ideas being vital for progression. A key quote being: "Engineers are doctors for the world".

### PERFECT PRACTICE

In his presentation, 'Perfect Practice: Charterships', Adam Parnell, Professional Registration Account Manager, Institution of Engineering and Technology, gave an overview of applying for IEng and CEng, highlighting the 'competence development tool', which enables individuals to keep track of their progress towards the accreditations. He advised that a person should start keeping track of evidence from the moment they finish university, and the importance of being accredited in terms of salary; "Those professionally registered earn on average £11,500 more than their unregistered counterparts," he explained.

Paula McMahon, Structures Engineer, Sir Robert McAlpine, ran through skills for effective leadership in her presentation 'Perfect Practice: Developing your leadership skills', including having a vision and being ethical. She gave advice on how to: "push yourself, by just taking the opportunity and getting on with it, while also not taking yourself too seriously". There were several key points but the two pieces of advice that stood out were: "perfection doesn't exist" and "practice will build confidence", the latter especially useful for overcoming fears in presenting or writing reports.

### KEYNOTE SPEAKER: SERVING SOCIETY

Chi Onwurah MP, Shadow Minister, Digital, Science & Tech, gave an impassioned and thought-provoking keynote address at the conference. She offered delegates an insight into her career path and her motivations for going into public service. Having worked in engineering as a black woman in a white male dominated industry, sometimes the only female in her workplace, she wanted to "change gender disparity in engineering". The key pieces of advice she gave were "if you are not in the room when it happens, you are not going to be heard" and to "speak out and speak up".

### LIFE LESSONS FROM ENGINEERING

A number of speakers had been asked to discuss their life lessons from careers in engineering. Drilling down into their experiences was a fascinating reflection of what women engineers experience.

In her presentation, 'Life Lessons from Engineering', Klara Svedberg, Senior Director, Strategy and Transformation, Ball Corporation, spoke about being "micro ambitious", setting up small and achievable goals, and advising: "there is no straight path to where you want to go". She discussed how it was important to say 'yes' more than you say no in terms of opportunities, but also say no to the things that are not important.

Maria Sabatini, Engineering Manager DSP, Dialog Semiconductor, reaffirmed several points which

were being raised in the conference, including not being afraid to ask questions and to "accept that you will not be able to know everything". She highlighted the importance of leaving your comfort zone, "you learn and develop when you stretch yourself" and that "you'll never be ready until you go out and do it".

Farai Mwashita, International Project Engineer, CBRE, discussed serving society and global challenges, including climate change but also skills and staff shortages, especially a lack of female engineers. She advised: "find your passion and purpose and use this as a foundation for your career".

Liz Johnson, Account Director, CBRE, spoke from a viewpoint of an engineering career without the technical background. In terms of working in a male dominated environment, she said it was important to call something out if it made you uncomfortable, rather than just trying to fit in.

### BUILDING RESILIENCE

In her presentation, 'Building Resilience: Maintaining Motivation', Dr Courtney Depala, Executive Support Specialist, National Grid, spoke about staying motivated, discussing Maslow's Hierarchy of Needs and the importance of looking after yourself but also making sure you are staying connected to others. Knowing when and how to rest, and to find a network of people who can support you but also let you know when you need advice.

In terms of 'Building Resilience: Work/life Balance and Working Part-time' Andrea Pearson, Technical Operations Manager, FUJIFILM Diosynth, discussed flexible working, her route to getting into a part-time role, and how companies are becoming a lot more flexible. It was a relatable and interesting discussion, reaffirming the fact that it is possible to fulfil a role well on a part-time working week.

### KEY LEARNINGS

There were some pieces of advice which came up several times within the conference, and these seemed to be aimed around giving women engineers more confidence in the workplace and the understanding that they are not alone in how they feel.

- Do not be afraid to ask questions, they can be helpful to yourself as well as others and you cannot expect to know everything.
- Perfection does not exist, perfect will be different for each person and will change over time, however, do try to be a little better each day.
- Ask for help, and learn from your mistakes, asking for help does not make you weak.
- Embrace change, growth happens when you are not in your comfort zone.
- Be present, if you want to be part of change, you must make yourself heard and make sure you are in the right places.

The conference was highly engaging and very useful in terms of personal development. The virtual aspect worked well using Hubilo as a platform and it was a great opportunity to network with peers and hear from industry experts.

WES would like to thank all those speakers and delegates who took part in the WES Virtual Student Conference 2021. We are also most appreciative of our sponsors for the event: BAE Systems, Ball, CBRE, CityFibre, Dialog Semi Conductor, McLaren Racing, SME Graduate Employment.

## New Members

WES welcomes the following new members:

Joanne Aberdeen, Neelam Bala, Christy Baldwin, Eve Berry, Maisie Brook, Una Brown, Hanna Burton, Lucy Davies, Fidegnon-Edoh Floriane, Sana Hafeez, Rochelle Heyhoe, Abigail Holmes, Sacha Holt, Emma Hunter, Paula Iniguez de Ciriano Monasterio, Eylul Karakus, Noor Mawas, Ciara McGrath, Aine McGreeghan, Ellen Meehan, Saheela Mohammed, Ropafadzo Muswere, Karmen Nagy-Stephenson, Givette Kristine Novacescu, Maya Patel, Rosanna Plant, Claire Price, Rebekah Reavell, Michelle Robinson, Phillipa Rodney, Isobel Ronan, Cecile Searle, Dilani Selvanathan, Daisy Shearer, Susan Shirling, Allison Strachan, Charlotte Turedi, Kate Wardle, Charlotte Winship, Miranda Brawn, Atefeh Mirzaeiefat, Sanal Sunny, Lionel Yafele

## MORE SUPPORT during our growth period

Jennie Diston joined the WES team in the fourth quarter of 2021 as the new Operations Officer.

Jennie is a Chartered Management Accountant with 30 years' experience working in finance and project management roles. Enjoying working for organisations that provide a service and aim to make a difference, she has worked mainly in the public sector within the NHS and the police service, but also has commercial experience from running her own transport/courier company.

She brings a wealth of knowledge and experience in finance and support roles, and says she is looking forward to supporting WES during this period of growth.



## New Fellows

WES congratulates the following new fellows:

Lina Mohjazi, Seemal Asif, Krystina Pearson-Rampearee

## WES Annual Conference 2022 28-29 April 2022

The WES Annual Conference is one of the major events in the WES calendar. It is a live or virtual meeting place and knowledge-sharing opportunity for WES Members and professionals from engineering and allied professions and takes place in spring each year.

The conference attracts high-profile speakers and industry leaders from a range of disciplines.

Drawing an audience of around 200 early career and established professionals, the conference offers a range of talks, panel discussions and interactive workshops, focusing on professional and personal development, alongside topics of pressing interest to engineers around the UK and internationally.

Save the date for this year's WES Annual Conference – 28-29 April 2022 – more details will be publicised on the website in the coming weeks, [www.wes.org.uk](http://www.wes.org.uk)

In addition to the excellent networking opportunities and informative and inspirational presentations, there are also a range of company sponsorship options available. Anyone wishing to get involved in sponsoring WES events and conferences, should contact: [partners@wes.org.uk](mailto:partners@wes.org.uk) for more details.

## New CRM Database

As part of the WES Strategy, we have been working on a replacement for the membership database that has been in use for several years. We are delighted to be able to announce this new system went live in January 2022.

The new CRM database is a vital part of our work to transform the customer service experience of membership and allow us to focus on improving the membership offering. It will allow us to closely track our interactions with you, the Members, so that we can quickly help when you get in touch and give us better data to make sure you are getting the support and benefits you need.

As part of this change, we will be moving membership payments by card from Sage Pay to Stripe. Those who renew their membership by card will be offered the opportunity to pay by Direct Debit or make a one-off card payment or an annual recurring card payment. Those who pay by Direct Debit will have their membership payment taken as usual. You will be sent a login for a new Members area where you can manage your WES membership.

More details will be emailed to you as and when you are due to renew. In the meantime, if you have any queries contact the membership manager Tristan Holland, email: [Tristan.Holland@wes.org.uk](mailto:Tristan.Holland@wes.org.uk)

## Electrifying Women International

How can we ensure that the histories of women's careers in engineering or science are recorded? So many of women's contributions to these areas are either never acknowledged, forgotten or obscured. The Electrifying Women International project has been in conversation with WES and INWES about how to help set the historical record straight by making these stories better represented and more readily accessible.

We're building a network that looks to bring together histories of women in science and technology from around the world. Specifically, we're building upon the Electrifying Women project (AHRC-funded/University of Leeds), which partnered with WES to celebrate its centenary in 2019 with the website [www.electrifyingwomen.org](http://www.electrifyingwomen.org). As the project developed, we found that connections between

WES and professional women have flourished across the world over the last hundred years.

But prompted by a group of WES students from African nations who wanted to know more about their own histories, we realised that a more inclusive global approach was needed. And we were particularly stimulated by the long-running International Conference of Women Engineers and Scientists (ICWES) which started in New York, 1964. Archival materials from those conference's proceedings have helped us to find out more about the women who attended the early ICWES gatherings (the second of which was organised by WES in 1967 and held in Cambridge) and those women's professional lives. Moreover, in archives of *The Woman Engineer* we found evidence of African women engineers and

scientists (trained in the UK) presenting papers at ICWES 2 in 1967 (UK) and ICWES 3 in 1971 (Italy).

We are now looking beyond the small number of women whose participation is recorded at early ICWES meetings and want to find out more about the broader networks of women in engineering and science that did not make it to an ICWES meeting. For this, we think that the broader WES networks could be helpful for reaching out to members and associated companies to learn about their histories.

If you or your organisation would like to be involved in this project or feel you have something to contribute, please contact our Heritage Officer Helen Close in the first instance at: [helen.close@wes.org.uk](mailto:helen.close@wes.org.uk)

## North and South - we've got you covered

WES is delighted to introduce two new members of the team, who will be working closely with our partners throughout the UK.

Kathryn Tighe, who is based in Lancashire, has joined us as the new WES Partnerships Manager for the North of the UK.

She is passionate about people and empowering women to believe in themselves to follow their dreams. With an inner fight for justice, Kathryn believes that all people should be treated equally and well, especially women.

Kathryn has a wealth of experience from a previous career in the events industry, working in Australia for a fitness association creating a Partners and Sponsorship strategy, and more recently developing corporate partnerships with a shared purpose for a children's charity. She is driven to ensure our Partners will make an impact by working with WES, not only within their company but the wider industry to support more women in engineering.

Kathryn can be contacted on: [kathryn.tighe@wes.org.uk](mailto:kathryn.tighe@wes.org.uk)



Richard Moore, who is based in Hertfordshire, has joined us as the new WES Partnership Manager for the South of the UK.

Richard says: "I am passionate about helping to create a fairer society where everyone gets the opportunity to fulfil their potential at work and in life.

"I am looking forward to helping WES to support engineering and technology employers to increase diversity and to enable women in the UK to take up opportunities in engineering."

Richard joins WES having previously worked in the private, public and third sectors.

Richard can be contacted on: [richard.moore@wes.org.uk](mailto:richard.moore@wes.org.uk)



## Early Careers Board

Happy to offer advice and support, the WES Early Careers Board launches the first in a series of Engineering Agony Aunt columns for The Woman Engineer readers.

### Engineering Agony Aunt

**Question: How do you overcome imposter syndrome?**

Imposter syndrome can be defined as "the inability to believe that one's success is deserved or has been legitimately achieved as a result of one's own efforts or skills"; sufferers of the syndrome often experience feeling like a "fraud".

The Engineering Agony Aunt is here to give you tips on how to tackle imposter syndrome.

#### 1. Talk about it!

Talking about how you're feeling can help normalise and reduce the shame. Most people go through imposter syndrome at some point in their lives. Reaching out can also help you get support.

#### 2. Strive for progress over perfection

It is great to strive to be the best you can be. However, mistakes happen. Reframing failure as a learning opportunity aids in your development and eases the pressure of holding unrealistic standards for yourself.

#### 3. Be self-compassionate

Being overly self-critical can heighten levels of imposter syndrome and increase stress. Try reframing thoughts like "I don't belong here; my work is not good enough" to "I will continue to learn and develop as I allow others to do so".

#### 4. Recognise your accomplishments

It's easy to forget your accomplishments in the day-to-day busyness of life, however taking notice of your successes, can help you realise all your past achievements and reduce negative self-talk.

#### Submit a question to be answered in the next issue:

Do you have a question that you would like to be answered? It could be on interviews, chartership, or anything else that's on your mind. The Early Careers Board is here to help! Submit your questions at [ecb@wes.org.uk](mailto:ecb@wes.org.uk) or through the website [bit.ly/agnyauntwes](http://bit.ly/agnyauntwes) and we will set about answering them in the coming issues.

### WE50 2022 – INVENTORS AND INNOVATORS

Nominations are open for this year's Top 50 Women in Engineering #WE50 Awards.

The theme for this year is *Inventors and Innovators*, as we celebrate women engineers who have created or improved a product or process and supported other women in engineering to do the same.

Dr Bola Olabisi, CEO of the Global Women Inventors & Innovators Network, will be the Head Judge.

Nominations must be received by 28 March and the winners will be announced on *International Women in Engineering Day (INWED)*, 23 June 2022.

For more information, including tips on writing an awards application visit: [www.wes.org.uk/WE50](http://www.wes.org.uk/WE50)



## Partner News

WES is delighted to welcome our new Company Partners: Frazer-Nash Consultancy and Thames Water Utilities. We are also grateful to our renewing Partners, which include Airbus, AstraZeneca, Alexander Associates, Allianz Engineering Inspection Services, BAE Systems, Burns & McDonnell, Cordant People, Coventry University, Cundall, EPSRC Centre for Doctoral Training in Sustainable Hydrogen (SusHy), FCDO Services, Firstco, GCHQ, Glasgow Caledonian University, Gratte Brothers, Henry Royce Institute, Imperial College London, Leonardo, KONE, Konecranes, Metis Consultants, MOD Defence & Equip Support, NMITE, Open University, Ramboll, Royal Academy of Engineering, RSK, SME Graduate Employment, Two Sigma International, University of Birmingham, University of Edinburgh, University of Surrey and University of Warwick.

Partnership enquiries, contact: [partners@wes.org.uk](mailto:partners@wes.org.uk)

# Anything is possible – ACHIEVING DREAMS AND 'FIRSTS' throughout the decades

*Continuing our series where WES Heritage Officer, Helen Close, delves into the trailblazing past of some of our members.*

One of the most senior women in the global engineering sector and boardroom is not an engineer, but she is a champion of encouraging girls and women to follow their dreams and prosper in male dominated professions.

With a background in banking and law, Miranda Brawn, who jokes that she is “forever 21 in the body of a 40 something year old,” is well equipped to understand how to steer companies to success. “I have joined the board of a global engineering company focused on electrical vehicles. My role is to provide supportive guidance using my transferable skills and knowledge from other sectors such as banking, technology and law,” she says.

“I have a portfolio career which includes being a non-executive director for global boards from the legal, finance and STEAM sectors, and am the Founder, President and CEO of The Miranda Brawn Diversity Leadership Foundation (TMBDLF) helping to diversify the global workforce including the engineering sector. Additionally, I have just joined Bloomberg News as one of their television contributors alongside being an international public speaker on a range of topics.”

It would be easy to think that this high-flyer had achieved many of her goals, but Miranda is delighted to now be a part of the engineering community. “My father was an engineer. I have family members and friends who have also worked in the automotive industry. It is wonderful to be the first woman in my family to become part of the engineering industry.”

Having qualified as a barrister-at-law, completing her bar studies at the University of Law in London, Miranda was Called to Bar at the Honourable Society of Lincoln's Inn. She is also a banker and former hedge fund sales trader where she completed several banking exams to be FCA (Financial Conduct Authority) qualified to market financial products.

Miranda's “first” brought her to the engineering sector, and she is particularly proud to explain. “I was actually one of the first women of colour on London's investment bank trading floor in the 1990s. Thereafter and more recently, I have been called the ‘Queen of EV - electrical vehicles’ after becoming the first female independent non-executive director to join the board of directors at Switch Mobility Limited, a global electrical vehicle company. As a result, I am now one of the most senior women in the global engineering sector and boardroom.

“This is significant because I would like this wonderful step in the right direction for the sector to encourage and inspire more women to enter this industry. This should be the case even if you have initially qualified in another industry. This should prove that you can enter the engineering industry at different stages of your career, even if you are not a qualified engineer. We need more women and other strands of diversity across the board and of course in the boardroom.”

Having made the transition from other sectors, Miranda is keen to promote the possibility to others and offers support and encouragement as a mentor, especially to younger people who are being deterred from following their preferred career path. “We need to get the educational sector to become part of this mission to get more girls into engineering. I have mentored hundreds of girls, and some have come to me in tears where their own teachers have laughed at them or told them directly that they cannot achieve their dreams in a male dominated industry. This must stop and we need to encourage girls (and boys) of all races and social backgrounds to support their dreams from an early age.

“I would like to tell people to never give up and you will achieve your goal. This is regardless of what stage you are at in your career, whether you



are still at school or have been working for a few decades. It is never too early and never too late to start! It may take one year or even ten plus years, but never ever give up on your dream.”

Miranda has been impressed with WES and our quest and is particularly keen to promote the importance of meeting like-minded people. “It has been inspiring to see all the women engineers on board at WES and I have worked with the Society to introduce future women engineers to WES benefits. She advises to: “network with other engineers or those working in the industry to learn from them. Who knows they may be able to help you achieve your goal!”

TMBDLF provides annual educational scholarships and hosts a history-making annual diversity leadership lecture every year on 1 October. For more information visit: [www.tmbdlf.com](http://www.tmbdlf.com)

For 25-year-old Monica Chandran, the dream of becoming an engineer seemed impossible. “I wanted to become an engineer because it was a goal that I never believed I could achieve,” she says. “Usually, people would like to become a doctor or engineer. In that case by comparison, when you become a doctor, you can engage with only 100-200 patients per day which is the maximum approximate value, but when you go for engineering, you could engage with millions of people per second with technology. One day, I hope to come up with some innovative idea, that will make a real difference – that is why I decided to be an engineer.”

Her ambition is to be applauded and, as an Industrial Placement Engineer (Civil Engineering & Highways), she is well on her way to making a difference. “I am working for Jackson Civil Engineering on highway maintenance and improvement projects such as bridges, joint replacement etc.,” she explains. “I support my project manager as a part of team by dividing tasks to increase the team productivity. I monitor and record daily activities on-site and communicate with site personnel, head office and client representatives. I visit and oversee sites during construction, ensuring all the work meets quality, project parameters, adheres to HSE and local laws, and is completed on schedule. I am also a STEM ambassador, which involves giving career talks to young students on a regular basis.”

Monica completed her Masters in Structural Design & Construction Management at Kingston University in September 2021, having already completed a Bachelor's Degree in Civil Engineering, in her home country, India. “I'm a competent person in industry with CSCS card, SMSTS, First-Aid, Fire Marshall, SEATS, Asbestos Awareness, and NRSWA Unit 1,” she enthuses. “As an international student, I am proud to say that I achieved all these qualifications in less than two years in the United Kingdom.”

Monica was the first woman in her family to study and secure a job abroad and she is thankful for the opportunity, such that she wants to spread the word. “In my country, women are not accepted at every educational institution,





and are not encouraged to seek a profession in a male-dominated sector. That is why I feel compelled to motivate and encourage the next generation of young students into engineering. To achieve this, I have registered myself as a STEM Ambassador to work with school students and have started to give career talks and motivational speeches to young people.

"I was also the first woman to win an *Outstanding Contribution to Student Experience in Academic Impact Award* from Kingston University. I have been nominated by my peers and staff for this award due to the impact of my career talks. This has motivated me to do more."

Monica was also one of the first women to win the *Best Project Award* in her Bachelor's Degree. She explains the concept behind her project. "During my final year, I did a project to replace the glass with an alternative construction material – optically transparent wood. Everyone knows wood is not optically transparent, but I attempted to make it so. My experiment used balsa wood treated with sodium hydroxide, sodium sulphate, hydrogen peroxide and epoxy resin chemicals. In conclusion, the expected result was obtained."

Monica explains why her achievements have led to a deeper meaning for her. "It is fairly popular these days for a woman to pursue a legal career, and there are many female students who study overseas but are not successful in life. I am proud that I am making advancements in my career. Engineering is a fantastic career for women, and there are hundreds of women engineers accomplishing incredible things. Most importantly, employers want women engineers, and we can make a difference in the world. Also, women working in STEM tend to be creative, which means there are huge opportunities as an engineer."

Monica is passionate about supporting programmes that encourage more women to realise their ambitions. "Important initiatives such as WISE, WES, and STEM are already helping to bring more women into engineering. More work is needed to increase gender diversity in the engineering field. I hope that by giving career talks to students of school age, change can happen by sharing success stories of women in engineering.

"WES was really supportive in my placement year, and I engaged with many of its events and activities along with my work. One benefit of being a Member of WES, were the monthly interactive and useful webinars on various topics. This helped me to improve my knowledge and get to know successful women and their stories. Recently, on *International Women in Engineering Day*, I participated to write a blog on social media describing who my engineering hero is. This was something new which I have never done in my career."

*As a 38-year-old civil engineer, University Lecturer, Modupe Olufunmilayo Jimoh is a prime example of diversity in engineering, and she is very keen to mentor other women to realise their potential.*

What she describes as a "love of maths, physics and buildings" resulted in Monica achieving a B.Eng in Civil Engineering in 2005 from the University of Ilorin, Ilorin, Nigeria; an M.Eng in Civil Engineering (Water and Environmental Engineering) in 2010 from the Federal University of Technology, Akure, Nigeria; and a PhD in Engineering in 2015 from the University of Warwick, UK.

She has some significant 'firsts'. "I was the first female lecturer in the Department of Civil Engineering at the University of Ilorin in Nigeria, after 30 years of its establishment," she says.



This was followed with becoming the first black woman on the academic staff at the School of Engineering, University of Warwick after 55 years of its establishment.

Monica is proud of how this can signify a change in attitude. "It is significant as it shows anyone that they can change the stereotype. In addition, it creates a more diverse and inclusive working environment. It also means that when decisions are in the making, I can provide a view that considers women or black staff and students. Colleagues can also use the experiences I share to improve the delivery of their modules."

When asked what needs to happen to encourage more girls into a career in engineering, Modupe is very clear. "There is a need to make role models more visible. STEM awareness at a younger age can also be productive. It is also necessary to make engineering workplaces woman friendly. It will keep more women in the profession. The more that young women see their mums, aunts, neighbours thrive in the engineering profession, the more they would be drawn to it."

As for her advice: "You can achieve anything you want to achieve. There is room for you at the table. If there is no one like you there, be the first."

Modupe is new to WES but is a member and executive of a similar professional body in Nigeria, the Association of Professional Women Engineers of Nigeria (APWEN). She says it has been a great help to her: "My membership of a professional women engineer's body has given me access to mentorship and a community of women role models in different facets of the profession and places of influence.

"We are stronger together. Together we cover more ground."

*Great strides have been made to encourage more girls to pursue engineering roles, says Electrical and Electronic Engineer, 75-year-old Janice Hall, who helped set the path for many who have followed.*

As a Weapons Engineer in the Royal Navy from 1978-1996, Janice certainly was a trailblazer, although as she explains, her name may have changed but the determination hasn't. "When I was the first woman to do something, I was known as Second Officer Janice Rouse, Women's Royal Naval Service. My service name is Lieutenant Commander Janice Rouse Royal Navy."

Janice was the first woman to undertake the Guided Weapons Course at RMCS Shrivenham, in 1978 and was the first woman to be appointed to Weapons Engineer posts in the Royal Navy 1979-1996. "I was in the WRNS/RN for 25 years, retiring in 1996, the last 18 of those years I was doing jobs that only men had previously done," she says. "At that time women were not allowed to go to sea, so all my engineering appointments were shore-based. It was not until about 1990 that women were allowed to be appointed to jobs at sea.

"The Royal Navy did not allow women in any of the engineering specialisations when I joined in 1971, but through perseverance I managed to get selected for the Guided Weapons Course in 1978 and from then on each of my appointments in the WRNS (and subsequently the Royal Navy after the amalgamation of WRNS and RN) was in a post previously only held by a man. All my predecessors were men, and all my successors were men.

"I think we've gone a long way since then to get more girls into engineering. They should be encouraged at the first stages of education to consider engineering isn't only for the boys."

Having worked in the Civil Service, the opportunity arose for Janice to work in the laboratories, which led to her fascinating career path. It was not entirely surprising as she says she had always been interested in what her engineering father did for a living.

She is qualified in electrical and electronic engineering. She obtained an Ordinary National Certificate at Highbury College, Portsmouth, then a HNC at Portsmouth Polytechnic, followed by various engineering endorsements at Portsmouth and Southampton Colleges. In 1978 she completed the MSC level Guided Weapons course at Royal Military College of Science (RMCS) at Shrivenham Wiltshire and undertook an Open University degree in engineering subjects which she completed in 1986.

Janice has this advice for girls considering a career in engineering: "Go for it if that's what you want and don't be put off by people saying women cannot be engineers. I had a lot of opposition back in the 1960s, 70s and 80s, but luckily it is easier for women to be accepted now."



*Three young women engineers – recognised at the Institution of Engineering and Technology’s (IET) Young Woman Engineer of the Year Awards for their work in engineering – have been described as a real credit to the engineering profession who will make excellent role models to young girls thinking about a career in engineering and technology.*



# Three outstanding women celebrated nationally as **YOUNG WOMAN ENGINEERS OF THE YEAR**

## IET YOUNG WOMAN ENGINEER OF THE YEAR

Aerospace Systems Lecturer at the University of Manchester, Dr Ciara McGrath (30) was named as the *IET Young Woman Engineer of the Year*. Ciara carries out engineering research projects in the areas of astrodynamics and space mission design, working with industry and policy makers to design space systems that can help support life on Earth. She also teaches university courses and supervises student projects in space system design, to support the education and development of the next generation of engineers. Ciara’s public engagement aims to make complex ideas accessible to everyone, through hands-on examples, podcasts, radio interviews, written articles, and public talks.

On winning, she said: “These awards that the IET run are so incredibly important, and I am completely shocked to have won – it is more than I could ever have imagined. Engineers are the people that change the world and make a difference – they problem solve, they find a solution and they make amazing things happen. Being a finalist has been a whirlwind and I am so excited to see what happens next. I’d like to say a special thanks to my parents for their support – I always say it was my dad who took me out to show me the stars, but it was my mum that taught me to reach them.”



## IET MARY GEORGE MEMORIAL PRIZE FOR APPRENTICES

The *IET Mary George Memorial Prize for Apprentices* was won by 22-year-old Dilani Selvanathan, a Junior Software Engineer at Herotech8. Dilani works alongside the technical delivery team to support growing technical requirements and helps build the products and services. She recently completed a Software

Engineering Degree Apprenticeship with the BBC, where she worked on a variety of projects and learnt about the different aspects of software engineering. Dilani is a STEM Ambassador and took part in the STEMazing programme, giving online interactive sessions at primary schools. She is also a WISE role model, promoting young women in STEM.



## WOMEN'S ENGINEERING SOCIETY PRIZE

The *WES Prize* went to Eftychia Koursari, a 35-year-old Senior Civil Engineer at Amey Consulting. Effie specialises in scour, the main impact of climate change on infrastructure, whilst also undertaking part-time PhD research on scour at the University of Glasgow. Effie is developing innovative scour monitoring and prediction tools and methods, protecting infrastructure, whilst also aiding in the response to the climate emergency.

Scour involves the removal of material from the bed and banks of water bodies and helps to support infrastructure to prevent things like bridge failure.

She is an active STEM Ambassador, was named one of the *Top 50 Women in Engineering* for 2020 and was also awarded the *Women Leaders Association Rising Star in STEM*.

The *WES Prize* is awarded to a young woman engineer who can engage and inspire young people's involvement in science, technology, engineering and mathematics.

The recipient wants to attract young people into engineering and is also interested in the challenges women face in maintaining their career in engineering.

Effie will be working closely with WES to help us to inspire future generations of women engineers.

Speaking about her career she said: "One of the biggest threats faced by humanity is climate change. I work with others to design and invent advanced solutions that help to protect infrastructure, people and the environment."

On winning the *WES Prize* she said: "I cannot believe this. I am so happy and congratulations to everyone else. I want to, thank Amey, Transport Scotland and the University of Glasgow for all their support and encouragement, my family who inspired me to become and engineer, and my partner who is very supportive."



Finalists Lauryn Jayes, Nipuni Karunaratne and Anna Will were all highly commended. All winners and finalists will play an ambassadorial role for the engineering and technology professions in the forthcoming months, promoting engineering careers to girls and young people.



The YWE of the Year finalists with Sam Quek MBE, former English field hockey player and TV personality who was the presenter for the awards ceremony in 2021



## GENDER DIVERSITY AMBASSADOR AWARD

Now in its third year, the *Gender Diversity Ambassador Award*, which recognises an individual's hard work in achieving gender equality within the engineering industry, was awarded to Professor Elena Rodriguez-Falcon. The award aims to showcase innovation and good practice to compliment the *YWE Awards*, by recognising the support and encouragement of women in STEM careers.

Elena, who studied mechanical engineering in her hometown of Monterrey in Mexico, has always had a focus to help people. Having spent over 25 years in male dominated learning and working environments, Elena has led national and international activities to seek to bring balance to engineering where the lack of women representation is painfully evident. She has received numerous awards throughout her career but in 2020, she was named *Executive Leader of the Year* by Equal Engineers, *Distinguished Mexican in the UK* by the Mexican government, and *Woman of the Year* by FDM everywoman in the *Technology Awards*.

The *IET Young Woman Engineer of the Year Awards* celebrate women working in modern engineering – and aim to help change the perception that engineering is predominantly a career for men by banishing outdated engineering stereotypes of hard hats and dirty overalls.

As well as highlighting female engineering talent, the *IET Young Woman Engineer of the Year Awards* seeks to find role models who can help address the UK science and engineering skills crisis by promoting engineering careers to more girls and women.

Dr Laura Norton, Head of Equality, Diversity and Inclusion at the IET, said: "Engineers develop products and services for everyone, yet just 14.5 per cent of the sector's workforce are women. Awards like this are crucial for raising the profile of women within engineering and providing real-life role models to younger generations to encourage greater diversity within the industry.

"I'd like to congratulate our fantastic winners and finalists of this year's awards. They are a real credit to the engineering profession and will make excellent role models to young girls who might be thinking about a career in engineering and technology.

"It's vital we champion engineering careers to the next generation – it's a diverse, creative and exciting career, which offers the opportunity to change lives, or even the world."

*This year's YWE Awards were presented at a national ceremony on 2nd December 2021 and were sponsored by BAE Systems, Boeing, BP, Collins Aerospace, Capgemini, Frazer-Nash Consultancy, GCHQ, Leonardo, MBDA, Northrop Grumman, Nucleargraduates, Ofcom, RAF, Rolls-Royce, Royal Mail, RS Components Grass Roots, Teledyne and Thales.*  
[www.theiet.org/ywe](http://www.theiet.org/ywe)

# The results are in for the 2021 Lottie Tour

**The yearly Lottie Tour is organised by the WES Early Careers Board to capture the interest of a younger engineering audience by showing current engineers 'touring' with Lottie Dolls. 2021 marked Lottie's sixth year on tour.**

With Covid-19 continuing to impact the normal ways of working in the UK and globally, we faced a second year of challenges with regards to recruiting volunteers. However, this time around, we were more aware of the challenges to expect and were able to set realistic expectations. Whilst many potential volunteers had not fully returned to their workplaces, the Covid lockdowns easing in summer 2021 meant that some volunteers were able to take Lottie to work, labs and site visits.

We began recruiting for volunteers in May 2021 through posting on social media (Instagram, Twitter, and Facebook) and in the WES newsletters and *The Woman Engineer*. Similarly to the previous year, we anticipated that some volunteers would be more reluctant to share Lottie dolls and would not be as happy receiving Lottie from a previous volunteer due to the Covid-19 pandemic. Therefore, we once again worked with Arklu, the makers of the Lottie dolls, to offer a 20 per cent discount code for volunteers who wanted to purchase their own Lottie. We also encouraged volunteers to sign up and use images they may have taken in previous years. Lastly, we were still offering our volunteers the opportunity to borrow the WES Lottie dolls. Once lockdowns were fully lifted and engineers went back to workplaces, sites, and labs we had an influx of volunteers so there was a rush at the end of the year to get dolls to as many volunteers as possible. In the end we had over 50 registered volunteers, plenty of companies buying their own Lottie Doll, not only for the tour but for general STEM outreach, and many more who weren't registered but still took part by posting throughout *Tomorrow's Engineers* week. We had volunteers from around the world from companies including: Dyson, McLaren Racing, MET Police, Heathrow Airport, the Engineering Council etc., and from universities including University of West England, University of Dundee, Loughborough University, Swansea

University, and many others. This year, Lottie also made a presence at the biggest climate summit to date – COP26 – with Star Refrigeration.

## CONTINUED CORPORATE SUPPORT

Ian Harkin, CEO of Arklu, has continued to support the *Lottie Tour*, offering various support and ideas throughout the planning and execution of the tour. In terms of sponsors, we were honoured to have GKN Automotive continue to sponsor the *Lottie Tour* for the second year running. In addition to this, we were excited to welcome a new sponsor – McLaren Racing. Lottie spent some time at the McLaren technology centre helping to optimise cars ahead of the Formula 1 races and she got to meet the engineers and racers.

This year for the first time ever, WES enlisted the help of a marketing organisation – Genius Marketing – to help us promote the tour and expand our reach. Genius Marketing helped us to update our website and to reach schools and other organisations, and we look forward to continuing to work with them this coming year.

The *WES Lottie Tour* website continues to host resources including volunteer profiles, our WES poster, Lottie Lockdown adventure books and a gallery showing *WES Lottie Tour* photos from previous years.

We would like to say a huge thank you to our sponsors this year, GKN Automotive and McLaren, and of course to all our amazing volunteers who managed to get some incredible Lottie photos in another very challenging year.

For more information on the Lottie tour, visit: [www.weslottietour.org.uk](http://www.weslottietour.org.uk) or email: [ymb@wes.org.uk](mailto:ymb@wes.org.uk)

## LOTTIE TOUR 2021 STATISTICS (Provided by Genius Marketing)

### Advertising (Facebook)

- 1.8k ad link clicks on the web traffic advert.
- 10.4k brand recall on the brand awareness advert (the estimated number of additional people who can recall seeing the advert if asked after two days).
- Both adverts were targeted at parents and teachers.

Audience	Total	Open rate
WES Newsletter November	10,202	14.6%
Lottie Tour to schools' email	25,000	10%
Lottie Tour to STEM organisations	35	61.3%
Lottie Tour Press Release to Media contacts	589	25%
Lottie Tour Previous Volunteers	182	33%
Lottie Tour to Parenting Groups	35	40%
Lottie Tour to WES Partners	212	29%
WES Newsletter October	7612	35%
Sprint Education (Schools)	38,008	30.5%

Email Reach

