

# Restoring the Gender Balance

## Dr Carol Marsh

### President

Women's Engineering Society

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



## Agenda

- Introduction to WES
- Why we need more women in Engineering?
- What is WES doing to help?



# Introduction to WES



Aircraft Wing Building during WW1



WES Conference 1923 Birmingham

- During WWI women working in engineering made a huge contribution
- When WWI ended, faced with opposition from government, industry and unions, the women were expected to give up engineering and go back to domestic work
- Pioneering women like Lady Katherine Parsons and her daughter Rachel campaigned to retain their engineering careers
- They were not allowed to join professional bodies or to publish technical papers so they created their own professional body in 1919 ....

## Women's Engineering Society (WES)



The aims in 1919 were:

- To promote the study and practice of engineering among women
- To provide a forum for women to publish their research
- To enable technical women to meet and to facilitate the exchange of ideas respecting the interests, training and employment of technical women
- Past presidents include:
  - Amy Johnson CBE
  - Dame Caroline Haslett
  - Marjorie Bell
  - Daphne Jackson OBE



Today WES' mission is:

Inspiring women to achieve their potential as engineers, scientists and technical leaders and assisting educators, managers and employers in making this happen



WES objectives are:

- **W**ork with companies, government and professional bodies to promote gender diversity and equality in the workplace
- **E**ncourage and promote the study, training and application of engineering among women
- **S**upport women to achieve their potential as engineers, scientists and technical leaders



There is currently a shortage of engineers

- Perkins report states we need 830K engineers by 2020
- Engineering UK states there will be 1.86 million engineering jobs between now and 2020
- The UK currently produces 46K engineering graduate a year. This needs to almost double to 87K a year
- Only 54% of those studying engineering actually go into engineering
- The UK currently produces 27K advanced apprenticeship each year. This needs to increase to 69K a year





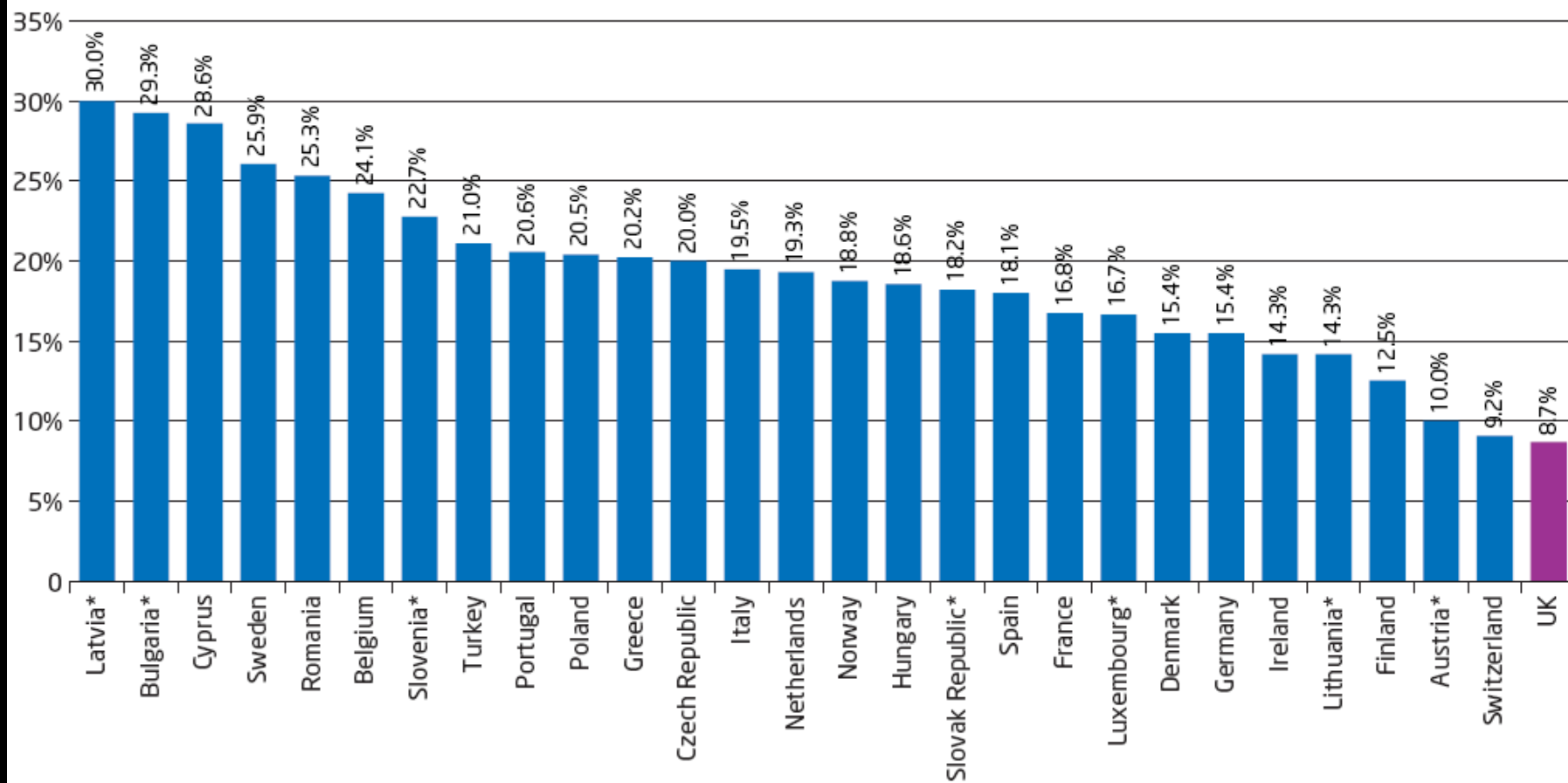
## Women Engineers Stats

- 16% of engineering graduates are women
- Only 27% of females studying engineering go into engineering (in Scotland its only 21%)
- 9% of engineers are female (this reduces to 7% in Electronics)
- 4% of engineering apprentices are female
- 1% in construction, planning and environment are female

**But 51% of the population is female**



**Fig. 26.4:** Proportion of female engineering professionals in EU countries



Source: UKRC's analysis of the European Labour Force Survey (2007)

## But why women?

Truth is need more girls as well as boys to enter engineering but:

- Encouraging girls to enter engineering at the same rate as boys will can fill the shortage gap
- Girls out perform boys at maths and science at primary school, so they are capable but don't pursue these subject
- A more diverse company improves the social mix in the office, encourages creativity and improves their business<sup>1</sup>

1 The Bottom Line: Corporate Performance and Women's Representation on Boards, Catalyst Inc, October 2007 <http://www.catalyst.org/file/139/bottom%20line%202.pdf>



## What do we need to do?

- Improve the image of engineering
  - Emphasize the creative side of engineering
  - De-emphasize the repairing machines image
- Promote engineering as an exciting and rewarding career
- Inspire girls interest in engineering
- Help retain women in engineering



## Your Life campaign

- WES has joined over 170 leading businesses and institutions in pledging support to a new UK Government campaign Your Life
- Your Life is all about inspiring more young people, and especially girls, to study science, technology, engineering and maths (STEM) subjects.



## Our pledges

- Support female engineering students
  - Connect them to industry
  - Hold at least one Student Conference annually
  - Help set up University Engineering Network Groups
- Provide a network of support for women working in engineering
  - Hold national and local events
  - Provide journals and e-newsletters
  - Maintain our advice line for queries about engineering and diversity from women, girls, parents and companies



## Our pledges

- Promote engineering to schools
  - Magnificent Women and their Flying Machines national outreach activity
  - Outreach support to schools through career events and school activities



## Past Projects

### Voices Project

- Cupcake poster to attract girls to engineering
- Informing course and career choices from GCSE to degree
- Captured stories from women students

### Purple Boots

- PPE survey and Safety Boots campaign for women
- National campaign with regional outreach

### 90 for 90

- Recognition of 90 women high achievers
- Celebrating our 90<sup>th</sup> anniversary

### Laws of Attraction

- Guide to engaging girls in STEM
- **Written for Big Bang Fair**





# Engineering

It's in everything



## Engineering. A career that's made for you

Engineering is all around us. It's in the phone in your hand and the shoes on your feet. It's in sub-sea pipelines and supersonic planes, towering skyscrapers and nano-technologies. It's even in the perfectly-baked cupcake (ovens don't heat themselves). And it's engineers who make it all possible – just by imagining a world without them. Find out more about engineering and engineering careers at <http://engineergirl.wes.org.uk>



**Hannah** Chemical Engineer

"I usually work in a lab, so the practical nature of industrial chemistry is a big part of my job. I've got the chance to work on a wide range of projects, and I'm always learning new things. I've also got the chance to work on a wide range of projects, and I'm always learning new things. I've also got the chance to work on a wide range of projects, and I'm always learning new things."



**Rosie** Mechanical Engineer

"I usually work in a lab, so the practical nature of industrial chemistry is a big part of my job. I've got the chance to work on a wide range of projects, and I'm always learning new things. I've also got the chance to work on a wide range of projects, and I'm always learning new things."



**Izzi** Mechanical Engineer

"I usually work in a lab, so the practical nature of industrial chemistry is a big part of my job. I've got the chance to work on a wide range of projects, and I'm always learning new things. I've also got the chance to work on a wide range of projects, and I'm always learning new things."



**Kashaf** Chemical Engineer

"I usually work in a lab, so the practical nature of industrial chemistry is a big part of my job. I've got the chance to work on a wide range of projects, and I'm always learning new things. I've also got the chance to work on a wide range of projects, and I'm always learning new things."



# Time for Engineering Girls

<http://engineergirl.wes.org.uk>

Engineers do things that are useful and help to improve the world. They use their brains to think about how things work and how to make them better. They also use their hands to build things that are useful and help to improve the world.



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**Charlotte Tingley** Production Engineer, B&E Systems



**Neruja Srikantharajah** Lead Process Engineer, Selatris, Petrol Refinery



**Yvonne Akinola** Senior Engineer, Environmental Services Engineering



**Gemma Whitting** Medical Engineer, Central University

## Meet the Engineers



WES is a charity that supports young people to get into engineering. We provide advice, training and support to help you succeed in your career. Find out more about us at [www.wes.org.uk](http://www.wes.org.uk)

## Current Projects

### National Women in Engineering Day

- Co-ordinated by WES to celebrate 95<sup>th</sup> anniversary
- Resource Pack and ideas for others to get involved

### Magnificent Women (and their flying machines)

- Hands on schools outreach activity to look at the work women did in WW1
- Accompanying set of Resource Sheets on Magnificent Women

### University Alumni Survey

- Survey of women STEM graduated from 1980s-90s
- Measure of untapped talent and how to get women back into engineering

### MentorSET

- Cross sector career mentoring programme
- Relaunch to include training and mentoring for Board level representation



## Current Projects

### WES Prizes and Awards

- Karen Burt Award for Best Newly Qualified Chartered Engineer
- WES Prize for best young female engineer

### WES Bursaries and Grants

- Doris Gray Awards to support engineering in Scotland
- Lady Finnieston awards to support women studying electrical engineering

### WES Policy Forum

- To advise government on policy
- To reply to relevant consultations
- To represent WES at highest levels

### Young WES Membership

- **Encouraging school students towards careers in STEM**
- Providing the individual reinforcement or 'nudge' needed





Emily Spearman



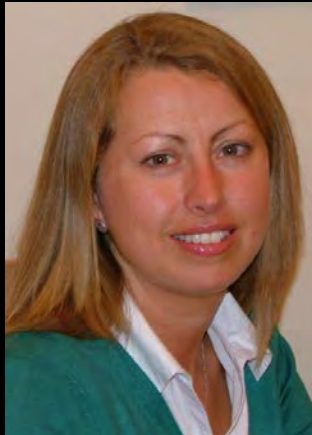
Katy Roelich



Dr Gemma Whatling



Katie Deacon



Jane Hunter



Kate Cooksey



Louise Dougan

## **WES Karen Burt Award Winners – Role Models**

**Best newly chartered woman engineer is selected after a rigorous process every year**

- Become a member of WES
- Volunteer
- Become a sponsor
- Become a supporter



## **Prestige Lecture & Karen Burt Award Presentation**

Professor Ann Dowling  
29 October 2014

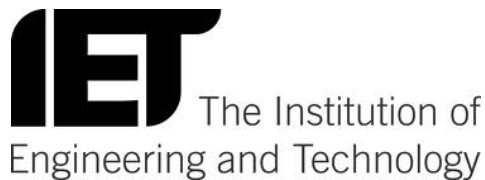
## **WES Student Conference Engineering Inspiration**

14th - 15th November 2014  
Aston University

## **National Women in Engineering Day**

23 June 2015





UK Government:

Growing the number of women in engineering is essential to addressing the UK science and engineering skills crisis

**WES is here to help to restore the gender balance**

