

Unemployment of Engineering Graduates: The Key Issues

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Engineering employers say publicly that they need more engineering graduates so why is there a national unemployment rate of 13% (July 2010 HESA published figures)? Why do certain students not get graduate level work within a short time of graduation?



OIL & GAS

BP struggles to fill vacancies

AS UNEMPLOYMENT hovers around the 2.5 million mark, BP is the latest employer to complain about a shortage of skilled recruits.

A dearth of skilled engineers is threatening to hamper efforts by BP to boost production in the North Sea, including a £3bn redevelopment of two oilfields off the Shetlands.

The company wants to fill between 150 and 300 jobs a year but admits that one of its biggest problems is finding the right people with the right skills. Trevor Garlick, the head of the company's North Sea operations, said: "Getting hold of the right people is a real issue for us. We are hiring a lot of people, but we are also an exporter of a couple of hundred people to other regions. We are a centre for recruiting elsewhere."

Jaguar Land Rover has also said recently it faces problems hiring skilled engineers.

Independent 15/8/11

Dyson warns of shortage of engineers in Britain

By Nick Clark

SIR JAMES Dyson yesterday warned the country will face a desperate shortage of engineers "unless something drastic is done".

The inventor behind the vacuum cleaner group Dyson, which will today post record results as it continues to shrug off tough consumer market conditions, warned that companies will begin to move their engineering facilities abroad if the current graduation trends continue.

About 22,000 engineering students graduate every year, he said before continuing: "But there are 37,000 vacancies this year, and that will soon go up to 200,000."

He has long supported the introduction of design and technology into the school curriculum at an earlier age to reduce the skills gap. He has urged the Government to provide

grants to engineering students. Yet, despite "excellent universities and excellent programmes" the UK is suffering a dual problem, he said.

Not enough British students are in programmes and 80 per cent of post graduates are from outside the EU, who take skills away with them.

Dyson itself has committed to hiring more graduates, and doubling its engineers at the R&D centre in Malmesbury to 700. It now employs 2,700 across the group.

Profits rose from £190m in 2009 to £206m a year later, its most successful one yet, as its bladeless fans, vacuum cleaners and hand dryers continued to sell strongly.

"It surprised us at the beginning of 2008 that despite the recession... we continued to increase our sales," Sir James said "Yet, people need vacuum cleaners and if you have good technology they will buy it," he said.

Independent 16/8/11

Potential Reasons for Unemployment

- Students put off looking for a graduate level job until after graduation hence 'missing the boat' for that particular year
- Academic and personal skills attributes
- Mismatch between jobs sought and attributes
- Wanting a job in a particular region of the country where there are few engineering jobs
- Graduating in a branch of engineering where there is currently a downturn

Looking for hard evidence as opposed to opinion.....

Methodology

- Interview engineering graduates who were unemployed at the time of the annual HESA survey from all five universities
- Identify common themes
- Interview employers to find out why people fail the recruitment process
- Identify actions for universities and implement

Demographics: Interviews with 64 Unemployed Graduates

- Slightly over-representative of Chemical Eng and under-representative of Electrical/Electronic
- Degree class: proportions almost match national stats (slightly fewer firsts but more 2:1s)
- Slight over-representation of females but sample too small to draw conclusions
- Some over-representation of non-whites but this would need further study
- 15 of the 64 now in graduate engineering posts. 22 still unemployed

Findings so far: Unemployed Graduates

- About half wanted to stay in a particular region (family/friends)
- Starting salary expectations realistic
- Half had waited until after graduation before applying (hence had 'missed the boat' for that year)
- Of those who did apply in their final year, most had only done a few applications.
- Very few of those who had applied had got through to the assessment centre stage (see later for Employer Comments on Web-based applications and 'phone interviews')

Findings so far: Unemployed Graduates

- Careers input into course/curriculum: most useful when linked to securing a placement; practical advice on CV/applications/interview
- Prefer compulsory....'have to do it'
- $\frac{3}{4}$ had used the Careers Service and found it helpful
- Their view of their difficulties: general economic situation v. factors under own control....degree class or type (e.g. not having MEng); lateness in applying; writing applications (especially competency-based questions) and coping with interviews/aptitude tests; limitations on job choice or location
- Biggest single reason....lack of work experience

What Unemployed Graduates Felt Universities Could Provide More Help With

- Between a third and a half felt universities provided enough help already; it was up to students to take advantage of it BUT
- Encourage/push students to take up placements
- More CV/application/psychometric test/interview/assessment centre advice tailored specifically to needs to engineering students
- Careers/employability specifically timetabled (e.g. final year module on effective job seeking)
- Greater employer involvement in curriculum with employer contacts
- More awareness of careers service and ensuring adequately resourced so do not have to wait for appointments

Their Advice to Current Engineering Students:

- Obtain work experience
- Start early
- Use the careers service
- Get experience for the CV
- Get a good degree
- 'Don't give up'

Findings so far: Employers' Views

- Academic Qualifications: At least a 2:1 plus at least 300 points at 'A' level
- Work experience (particularly in engineering rather than catering or retail)
- Extra-curricular activities as evidence of wider perspective and 'get up and go'
- Skills of leadership, team building, communication and interpersonal skills; analysis/problem-solving; creativity/innovation; planning and organising; business understanding/commercial awareness; performance (i.e. execution, delivery, impact, direction)
- Ability to apply technical skills/knowledge in business context

First Stage Rejections (Applications and CVs)

- Poor spelling, grammar, punctuation, lack of attention to detail
- Inadequate response on the competence questions
- Cutting and pasting materials from company's own website
- Lack of enthusiasm/interest shown on application form
- Not making effort to tailor application to company

Second Stage Rejections (Screening/Telephone Interviews)

- Failed to live up to impression created by application form or unable to add substantially to this in the interview
- Made it very hard for interviewer – brevity/lack of detail in responses
- Lack of enthusiasm

Rejection at the Assessment Centre Stage

- Not contributing to group discussions
- Dominating group discussions too much
- Looking for people who listen and challenge others to defend their opinions sensitively and appropriately and who seek consensus so the group as a whole comes to sensible decisions
- Presentations inadequately prepared with incoherent cases
- Over-running allotted time
- Lack of ability to review evidence and present recommendations based on that

Rejection at Assessment Centre Interview

- Poor interview technique: lack of preparation for questions about motivation or how they have gained skills sought by employer
- Lack of research into company
- Low confidence and unwillingness to sell themselves or to reveal personality at interview....not a slick sales job but a willingness to express themselves and to enter into dialogue with the interviewer
- Lack of commercial knowledge and experience

Rejection at Assessment Centre Interview (Contd)

- Many applicants did not appreciate the potential contributions made by other engineering disciplines to their own area (e.g. electrical systems in mechanical environments)
- Limited grasp of the need to attend to the 'bottom line'
- **Most seriously**, inability to apply basic engineering principles and concepts to everyday work situations e.g. turbine blade...What is it made of? What are its properties? How might it be used? **Over reliance on computers for calculations** – unable to do paper calculations to confirm computer work

Concluding Remarks

- Unemployment does not correlate with degree class
- Unemployment rate affects league table position and hence recruitment of high quality undergraduates
- Government may require us to publish earnings of graduates (Key Information Sets)...it will be important to help our graduating students not only to get a graduate level job but a good quality, high paying engineering job (Rolls Royce, Jaguar Land Rover et al.)
- How to embed further in the curriculum the development of the skills above?
- Tracking who is likely to be unemployed after graduation? Can we do something predictive? Target action on the few?
- Tracking who is unemployed after graduation?