

A Feasibility Study for the Development of Research-Focused Work-Based Masters Degrees in Engineering Leading to Professional Qualification

Undertaken on behalf of the Engineering Council UK

and

the Royal Commission for the Exhibition of 1851

By

The Research and Enterprise Support Unit at the
University of Surrey

October 2009

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1. Introduction

As part of the DfES Gateways to the Professions project, Engineering Council UK (EC^{UK}) has developed a model for a work-based Masters level programme that integrates learning with professional development. Successful completion of the programme results in the award of an MSc in Professional Engineering and eligibility to apply for chartered professional review, and hence Chartered Engineer (CEng) status. The route is likely to reduce the time taken to achieve the professional qualification.

There has been considerable interest in this MSc programme from both engineering professional bodies and companies, with approximately 50 individuals so far enrolled on the MSc over the past 12 to 18 months. It provides a pathway for the growing number of very capable BEng graduates to achieve CEng status without leaving work, and enables companies to target graduates as part of their recruitment with an attractive offer. A complete guide to the programme is available at:

[http://www.engc.org.uk/ecukdocuments/internet/document_library/Guide to the MSc Professional Engineering.pdf](http://www.engc.org.uk/ecukdocuments/internet/document_library/Guide%20to%20the%20MSc%20Professional%20Engineering.pdf)

The experience gained with the MSc in Professional Engineering has suggested that there is an opportunity to develop a version of the MSc with research-led universities; in this version the MSc would incorporate a significant research project of importance to the company. Increasing the volume of industry-based and industry initiated research is also of interest to the Royal Commission for the Exhibition of 1851.

1.1 Key features of the proposed research-focused MSc in Professional Engineering

Employees would work towards the MSc at the same time as developing the required competence for CEng registration and completing a piece of Masters level research that is of value to the company. Successful completion of the programme would result in the award of the MSc and, assuming that the competence requirements were met, eligibility to apply for chartered professional review. Knowledge exchange between the participating company and university would be a key feature and there is potential for a sustained relationship with the university beyond the duration of the Degree.

Additional potential advantages can be summarised as follows:

- Assists in developing knowledge and workforce skills, for advancing an innovative and competitive economy
- Offers a means to enhance business R&D capability
- Provides a platform to develop business skills
- Could provide some of the benefits of EngD programmes, over a similar period, but would be less costly to the funders
- Offers the potential for flexible and innovative delivery models that may enable rapid application of new technology, or technology transfer.

1.2 Outline of the feasibility study

The study was undertaken with a group of 26 engineering companies that employ, or would be interested in employing, BEng graduates.

The aim of the study was to ascertain the level of support for a version of the MSc Professional Engineering, to be offered by research-led universities that incorporates a significant research project of importance to the company. The terms of reference are included as **Appendix 1**.

The study was undertaken in the summer of 2009 with the final report being published in September 2009. Academics from five universities contributed to the planning (**Appendix 2**).

1.3 Management

The research was sponsored by EC^{UK} and the Royal Commission for the Exhibition 1851 (**Appendix 3**), and carried out on behalf of the sponsors by the Research and Enterprise Support Unit at the University of Surrey. The lead contact at EC^{UK} was Deborah Seddon, Deputy Director of Formation. The Steering Group comprised representatives from the sponsors. The research team at Surrey comprised Derek Saunders, Stephen Ogin, Paul Smith and Keith Robson.

This report is jointly owned by the sponsors and copies are available on request to EC^{UK}.

2. Executive Summary

2.1 The Research Process

Named individuals in companies suggested by the participating universities and the sponsors were invited to take part.

A survey was sent out by email and 26 replies were received. Follow up telephone interviews were conducted where appropriate.

2.2 Key Findings

80% of companies believe that the work-based Masters with a research component would encourage BEng qualified engineers to become CEng registered. [Question 11]

39% of companies agreed, or strongly agreed, that they would support their employees on the work-based Masters with a research element, with a further 46% being neutral. Only 15% of companies said that they would not support their employees on the work-based Masters with a research element. [Question 9]

The 26 companies employed an average of 333 MEng or BEng graduates per year in the period 2007-2009. More MEng than BEng graduates were recruited by a ratio of 5:3. See response to survey question 2.

88% of the companies encourage BEng and MEng qualified engineers to become CEng registered. [Question 3]

96% engage with Universities in some way by either short courses (teaching) or research. [Question 5 and Question 6]

72% of companies engage with Universities in research in some way. [Question 6]

The 26 companies expect that between 69 and 111 employees per year might follow this pathway. [Question 12] This is more than 50% of their typical BEng intake per year.

80% of companies would be interested in training sessions on the practicalities of using the MSc in Professional Engineering scheme. [Question 14]

2.3 Recommendations

There are encouraging indications of potential interest from UK companies in an MSc in Professional Engineering with a research component. It is recommended that:

- the sponsors encourage the five Universities that have already expressed an interest in this model, and any other interested research-led Universities, to work with interested industry partners to develop proposals for this type of MSc.
- EC^{UK} organises a briefing for companies about the MSc Professional Engineering and its potential for leading to CEng registration.

3. The Research Process

3.1 Inviting company involvement

Rather than cold calling, it was decided that companies who already had links either with one of the participating Universities or the sponsors would be contacted. The companies should employ, or be interested in employing, BEng graduates.

The companies contacted comprised nominations from three of the five universities, EC^{UK}'s Employers' Forum contacts, companies where Royal Commission Fellows were based, and twenty-two companies sponsoring EngD Research Engineers.

In total, 101 companies were sent a briefing paper and an invitation to participate in the survey. Of these 101 companies, 32 responded that they were willing to take part. Five companies declined and 64 did not reply.

In total, 26 completed surveys were returned (i.e. about 25% of the total number of companies that were sent briefing papers). The respondents represent a range of company size and type, and engineering speciality (**Appendix 4**).

A copy of the questionnaire that was sent out to the companies is reproduced in **Appendix 5**.

3.2 Responding Individuals

Initial contact was made with the named contacts provided by the recommending organisation. In some instances these individuals indicated that they were not best placed to complete the survey on behalf of the company and passed the survey on to others. Job titles were provided by 22 of the 26 respondents and these represented a wide range of responsibilities as follows:

Director
Director, Engineering Services
Graduate Programme Manager
Group Leader Mechanical Systems
Group Manager Responsible for Graduate Training
Group Technology Officer
Head of Engineering College
Head of Engineering (Europe)
Head of Highway Operations
Head of Professional Development
Head Technical Assistance Group

Human Resources Manager
Human Resources Officer
Organisation Development and Learning Consultant
Portfolio Manager – Graduate and Professional Development
Principal Manufacturing Engineer
Principal Engineer
Principal Mechanical Engineer/Chief Mentor IMechE
Project Manager Research and Technologies
Project Manager
Projects Manager
Resource Manager
Senior Engineering Manager

3.3 Methodology

3.3.1 Optional pre-briefing at the company's premises

All companies were offered a briefing about the survey and the MSc Professional Engineering pathway to assist them in completing the survey. In the event, none of the companies felt it necessary to take up this offer.

3.3.2 Completion of the survey

The questionnaires were sent out electronically in the first week of July with a four week response deadline. Reminders were sent to non-respondents. The companies were also alerted to the plan to hold a workshop after the survey findings had been analysed (Section 3.3.4).

26 completed questionnaires were received by the deadline.

3.3.3 Follow-up telephone interview

10 follow-up interviews were conducted in early August to elicit missing information and to clarify some of the survey responses.

During the telephone interviews, it became clear that in some companies, the responses were rather more complex than could be portrayed by ticking boxes. This was not always explained in the comment spaces on the survey, and such comments appear later in this report.

It also became clear that responses from a small number of companies were estimates based on the restricted knowledge of the respondents. This was the case for 4 large companies with a number of semi-autonomous divisions, where it was not possible to obtain accurate information without substantial effort. It is difficult to assess the accuracy of these estimates.

3.3.4 Workshop/discussion for all participants

All participants were invited to a workshop about the findings of the research and ways of improving the supply of professional engineers.

4. Analysis of Responses to the Survey

Of the 26 responses received:

13 represented the whole company;
5 represented one site;
8 represented one division.

The responses indicated that these companies or divisions employed approximately 170,000 employees.

The responses have been analysed on the basis of a straight forward calculation of the percentage of replies. This percentage has not been weighted by the number of people represented by each individual response. The largest number of employees represented by one response was 50,000; the smallest number was 20. Therefore if the responses had been weighted by the number of employees, the smallest numbers would have been rendered insignificant. In effect, the responses from the small companies are taken as being representative of the large number of small companies who were not reached by the survey. One respondent indicated that their reply represented the number of engineers rather than total number of employees in the company.

Academic and Professional Qualifications

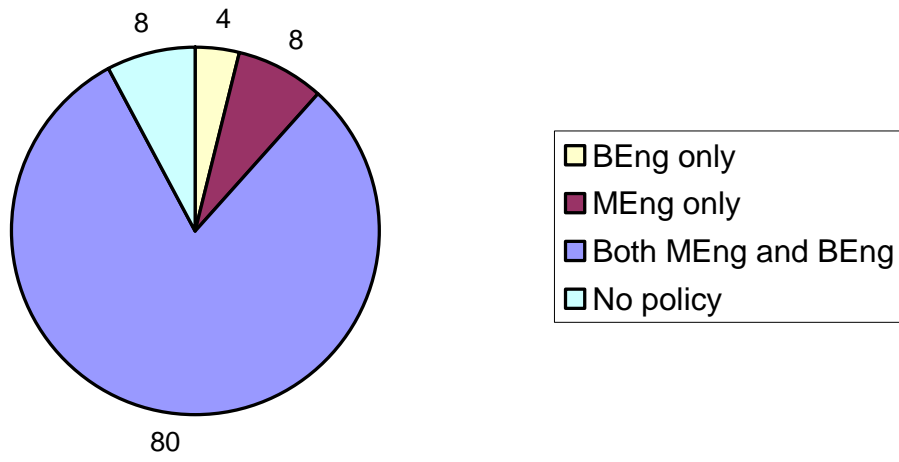
Question 1

1. Which of the following applies to your company's graduate recruitment policy: (tick all that apply)	
We recruit BEng graduates only <input type="checkbox"/>	We recruit both BEng and MEng graduates <input type="checkbox"/>
We recruit MEng graduates only <input type="checkbox"/>	Not applicable <input type="checkbox"/>

Responses to Question 1

80% stated that they recruit both MEng and BEng graduates
8% stated that they recruit MEng graduates only
4% stated that they recruit BEng graduates only
8% stated that they have no specific policy on MEng or BEng recruitment.

Percentage of companies who recruit BEng, MEng or both



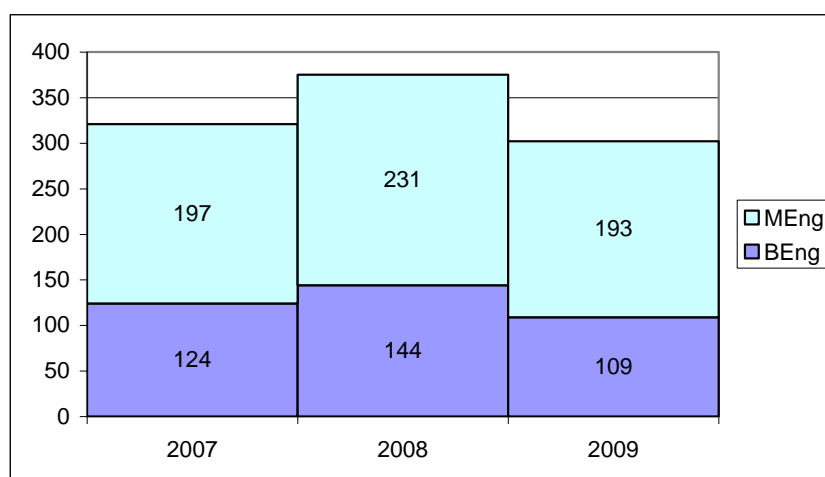
Question 2

2. Approximately how many BEng and MEng graduates did your company/site/division take on in 2007 and 2008 respectively, and what is the projected number for 2009?

2007	BEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
	MEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
2008	BEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
	MEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
2009	BEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
	MEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>

Responses to Question 2

The total number of BEng and MEng graduates recruited by the 26 companies in the years 2007, 2008 and 2009:



Year	BEng	MEng	Total
2007	124	197	321
2008	144	231	375
2009	109	193	302

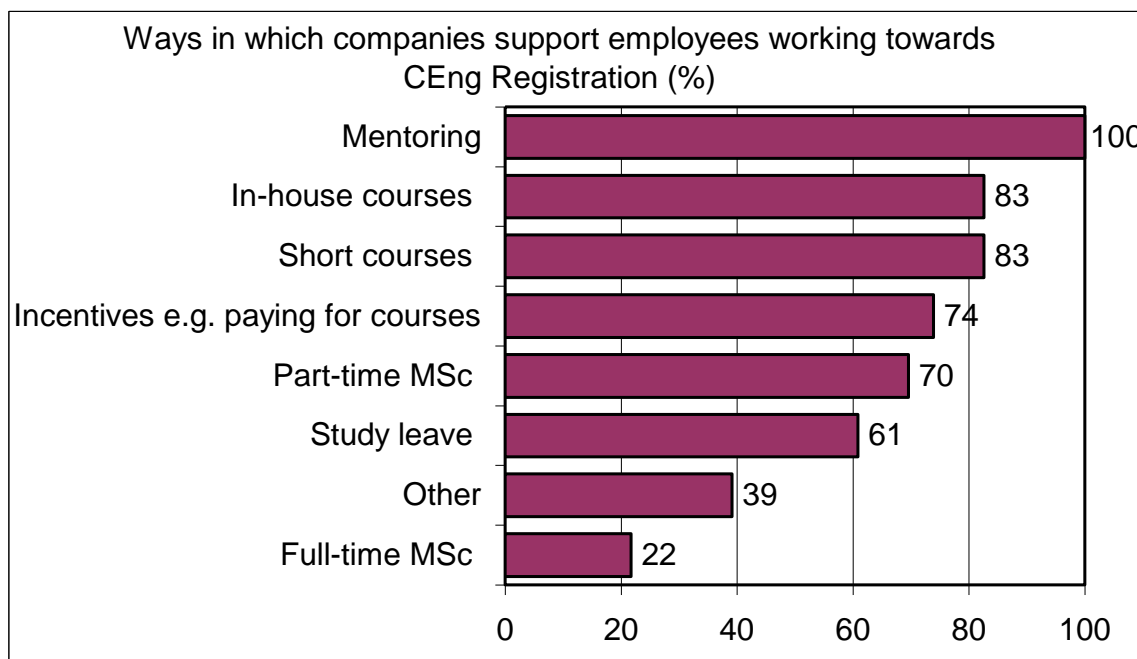
The above figures are calculated using the mid-value of each range. Apart from the unsurprising reduction in the number, or projected number, of graduates recruited in 2009 due to the economic downturn, the survey shows that the sampled companies recruit more MEng than BEng graduates by a ratio of approximately 5:3.

Question 3

3. Does your company encourage BEng and MEng qualified engineers to become CEng registered?		Yes <input type="checkbox"/>
		No <input type="checkbox"/> (go to question 5)
If yes, what sort of support is provided? (please check all the relevant boxes)		
In-house courses <input type="checkbox"/>	Mentoring <input type="checkbox"/>	
External short courses <input type="checkbox"/>	Study leave <input type="checkbox"/>	
Part-time MSc courses <input type="checkbox"/>	Full-time MSc courses <input type="checkbox"/>	
Incentives e.g. paying for courses <input type="checkbox"/>	Other (please describe) <input type="checkbox"/>	

Responses to Question 3

88% of companies encourage employees to work towards Chartered Engineer registration. In these companies a variety of support is provided:



One company stated: 'We have a Professional Engineering Development Scheme (PEDS) which supports all levels of professional engineering status. We have a calendar of events, arrange advice sessions with the institutions and pair people with suitable mentors.'

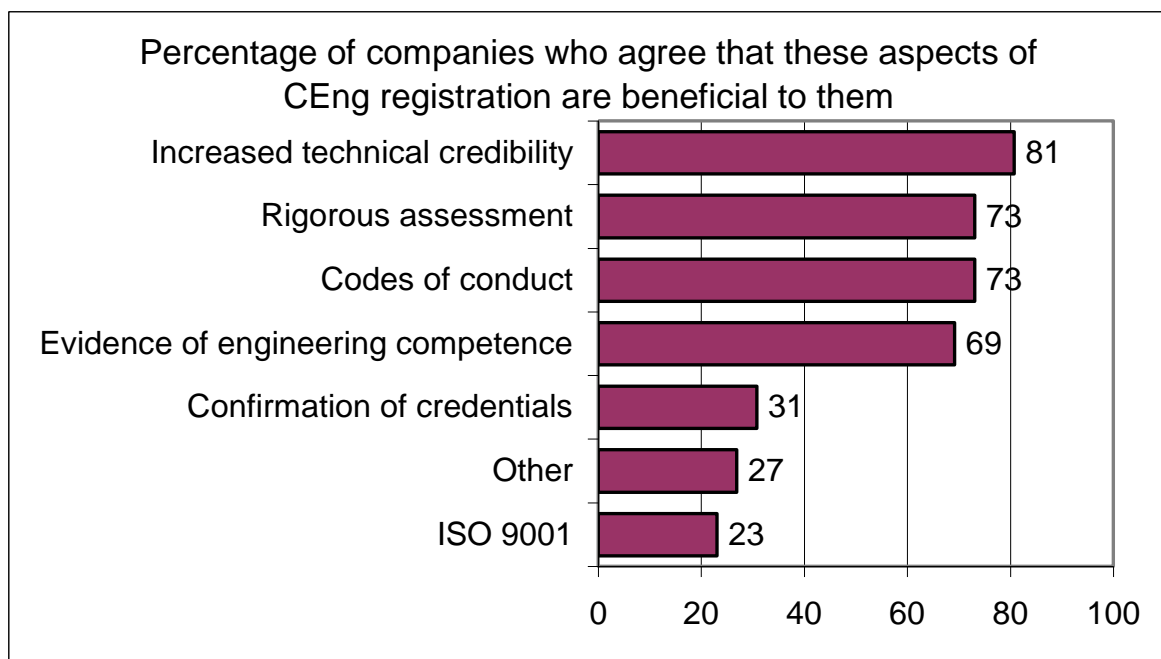
Another company has rotational placements and 'Buddy' schemes. A third company has graduate regional support groups and dedicated intranet pages for shared information about professional development.

Question 4

4. What are the perceived benefits to your company from your engineers being CEng registered? Please use the 'check box' function to indicate all that apply)	
Increased technical credibility with customers	<input type="checkbox"/>
Evidence that the employee has satisfied a rigorous assessment of their engineering competence	<input type="checkbox"/>
Confirmation that the engineering credentials being claimed are actually held	<input type="checkbox"/>
Assurance that the employee is keeping up to date with professional codes of conduct and has the means to do this	<input type="checkbox"/>
A means to satisfy requirements of the Quality Management Systems standard ISO 9001:2000	<input type="checkbox"/>
Evidence of engineering competence, as required by many customers	<input type="checkbox"/>
Other – please specify	

Responses to Question 4

Benefits to company from engineers being CEng registered:



Examples of other benefits of being CEng registered include: recruitment incentive, employee satisfaction, technical excellence, foundation for senior positions, recognised in other countries, personal growth and development.

Engagement with Universities

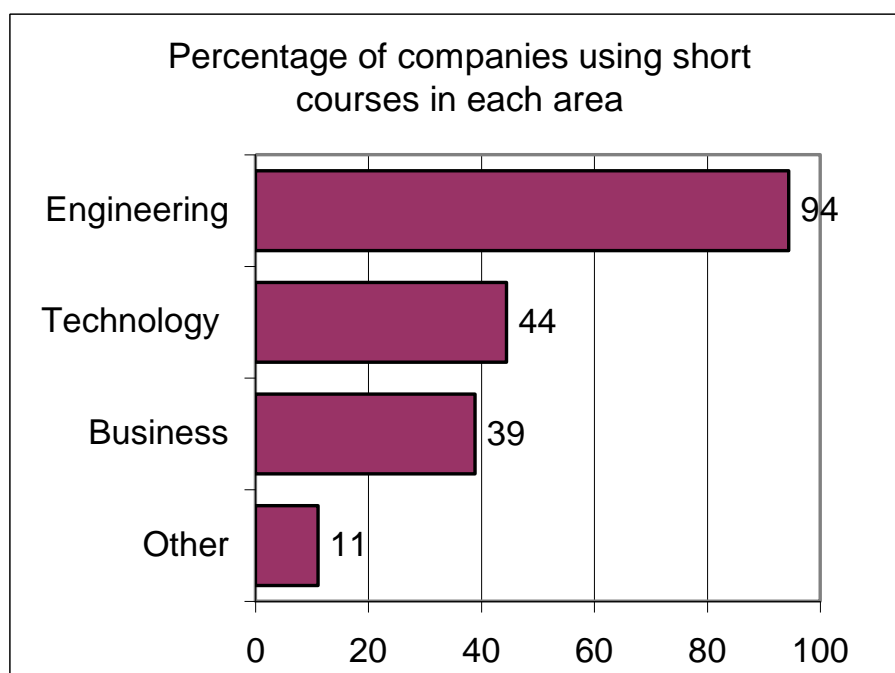
Question 5

5. Does the company make use of university short courses?		Yes <input type="checkbox"/>	
		No <input type="checkbox"/> Go to Q 6	
If yes, which of the following are included? (Please use the 'check box' function to indicate all that apply)			
Engineering <input type="checkbox"/>		Technology (including IT) <input type="checkbox"/>	
Business <input type="checkbox"/>		Other (please specify) <input type="checkbox"/>	

Responses to Question 5

72% of companies make use of university short courses.

The subject areas of university short courses used by these companies are shown below:



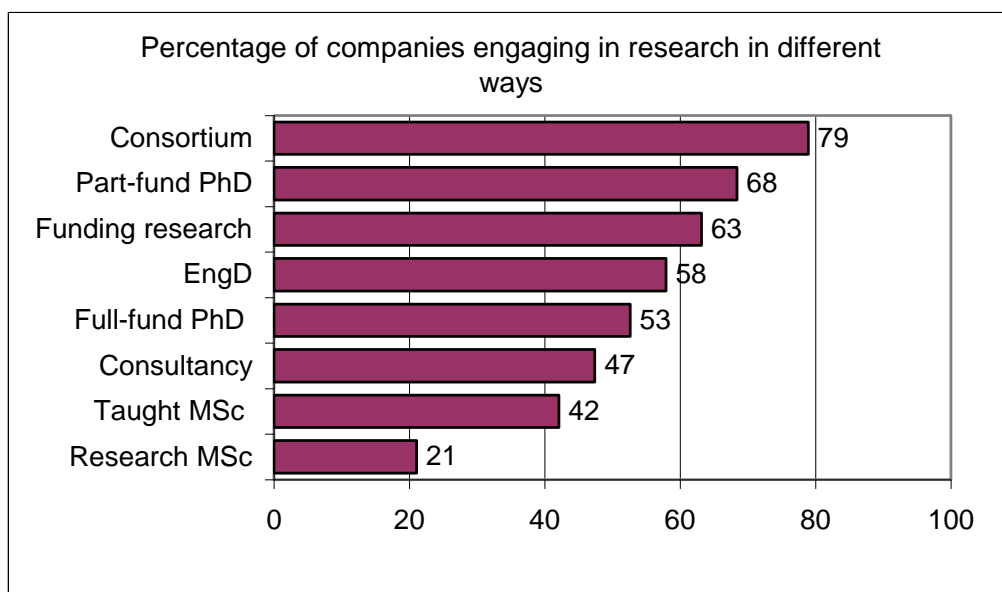
Question 6

6. Does the company's strategy include actively engaging with universities in research?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If yes, which of the following are included? (Please use the 'check box' function to indicate all That apply and give approximate numbers where indicated)		
Funding research at universities	<input type="checkbox"/>	
Partner in consortium with third party funding	<input type="checkbox"/>	
Sponsoring MSc students: taught Masters course	<input type="checkbox"/>	Number:
Sponsoring MSc students: research based Masters	<input type="checkbox"/>	Number:
Sponsoring PhD students: Part-funding e.g. CASE Studentships	<input type="checkbox"/>	Number:
Sponsoring PhD students: fully funded PhDs	<input type="checkbox"/>	Number:
Sponsoring/employing EngD students	<input type="checkbox"/>	Number:
Consultancy	<input type="checkbox"/>	

Responses to Question 6

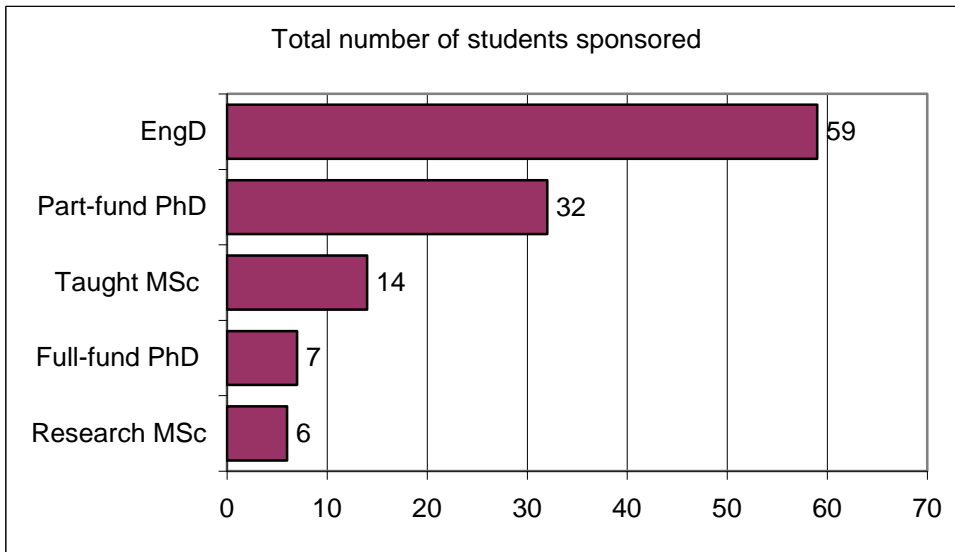
73% of companies have a strategy which includes actively engaging with universities in research.

Of these, the percentage of companies involved in research with universities in different ways is as follows:



The data also shows that 64% of companies either sponsor PhD students or EngD Research Engineers, or both.

The overall number of students sponsored is as follows:



Question 7

7. The proposed work-based MSc degrees have a strong research component, intended to be of benefit to the company. Which of the following might be the benefit(s) to your company of being involved in such MSc research projects?

Assisting company research effort

Business needs

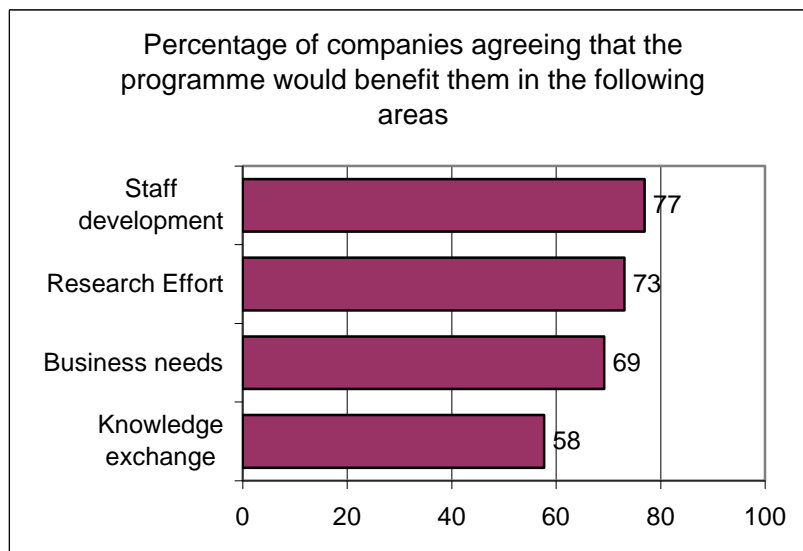
Staff development

Knowledge exchange

Other (please describe)

Responses to Question 7

Perceived benefits of MSc research projects



It was specifically stated by one company that the work-based MSc with a research component would be about supporting an individual's development not about getting research done.

Work based learning

Question 8

8. Does your company/site/division currently have any employees who undertake work-based learning to achieve CEng registration?	Yes <input type="checkbox"/> No <input type="checkbox"/> Go to Q 9
If yes, is any of this work-based learning assessed formally by a university?	Yes <input type="checkbox"/> No <input type="checkbox"/>

Responses to Question 8

48% (12 companies) stated that they currently have employees who are undertaking work-based learning to achieve CEng registration.

Of these 12 companies, 2 stated that some of this work-based learning was assessed formally by a university.

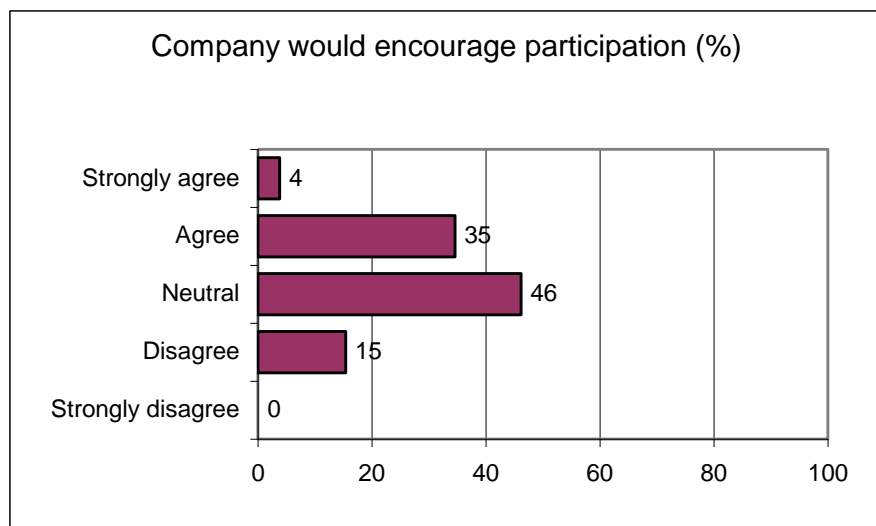
Question 9

9. As a route to registration, your company would encourage employees to enrol for a work-based Masters degree involving a substantial research component.

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Responses to Question 9

39% of companies agreed, or strongly agreed, that they would support their employees on the work-based Masters with a research element, with a further 46% being neutral.



15% of companies (4) disagreed with the statement that they would encourage their employees to enrol on the proposed MSc.

For two of these companies, this was because they had links already with particular Professional Engineering Institutions and were only interested in schemes accredited by them.

A third company wished only to sponsor graduates on PhDs rather than Masters programmes.

The fourth company indicated that they thought graduates undertaking Masters programmes should enjoy the benefits of being on campus.

Question 10

10. Would you expect a work-based Masters degree scheme to be popular with the BEng qualified engineers?	Yes <input type="checkbox"/> No <input type="checkbox"/>																																																
If yes, which of the following reasons would apply?																																																	
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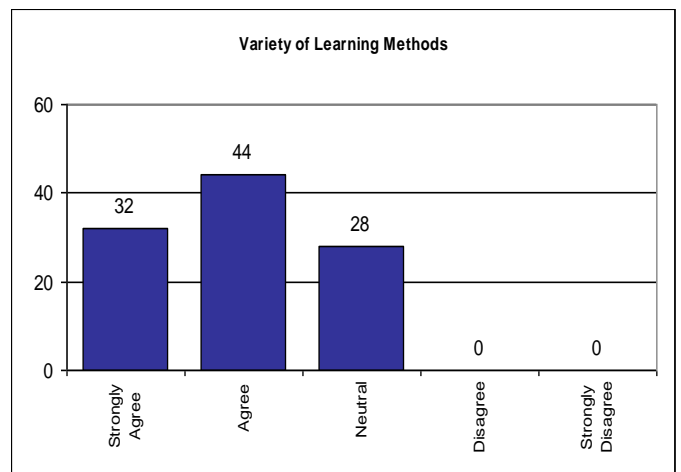
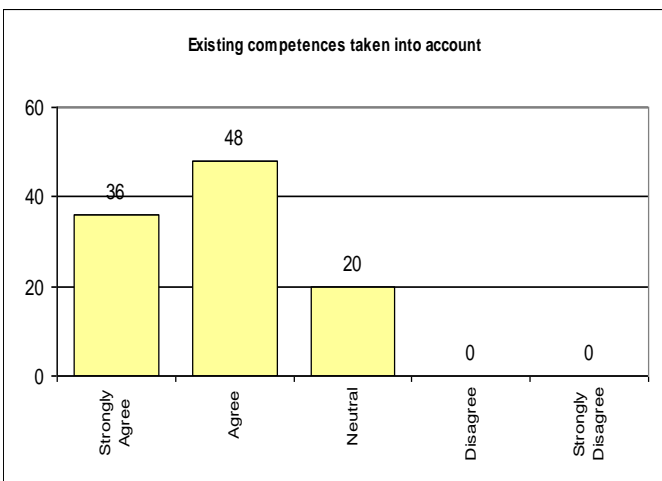
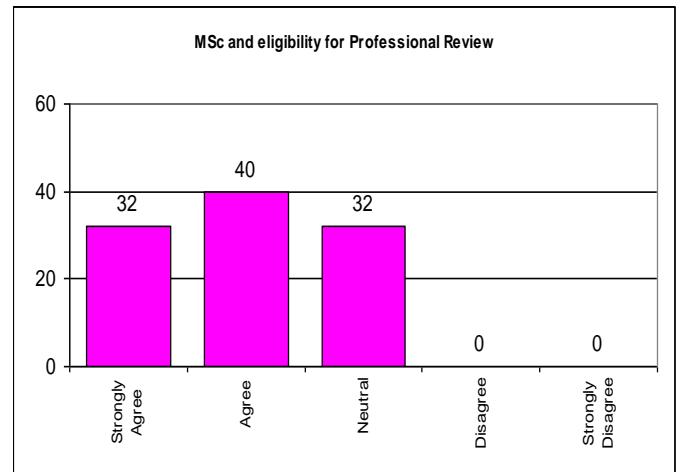
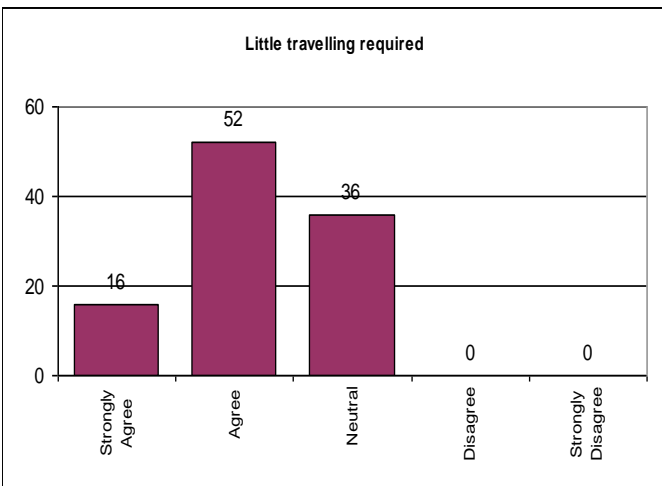
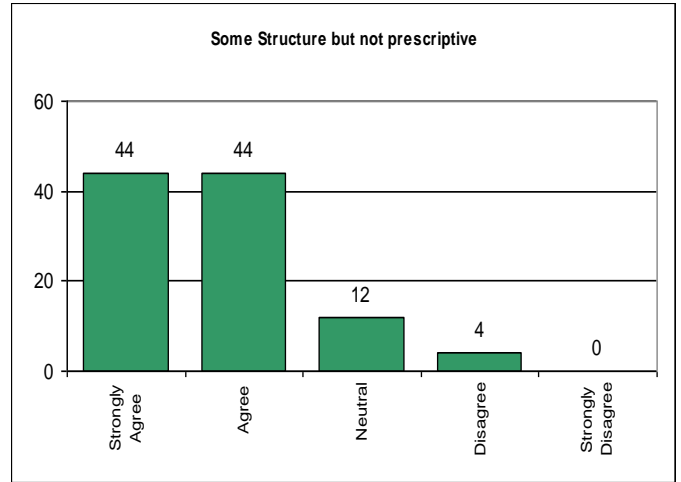
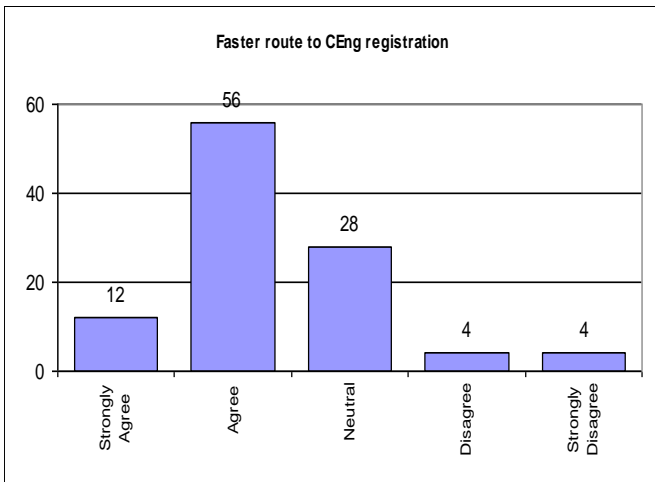
Responses to Question 10

80% believed that a work-based Masters degree would be popular with the BEng qualified engineers within their company.

On the following page, the histograms show the percentage of companies who agree or disagree as to whether each of six different factors are expected to make a work-based Masters degree scheme popular with BEng qualified engineers.

The responses show that 68% believe this proposal may be a faster route to CEng registration.

Reasons why a work-based Masters degree scheme is expected to be popular with BEng qualified engineers



Question 11

11. Does the company have BEng qualified engineers who are not currently working towards CEng registration?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Would this pathway encourage BEng qualified engineers to become CEng registered?	Yes <input type="checkbox"/> No <input type="checkbox"/>

Responses to Question 11

96% of companies stated that they have BEng qualified engineers who are not currently working towards CEng registration.

80% thought that this pathway (a work-based Masters degree with a research component) would encourage BEng qualified engineers to become CEng registered.

Question 12

12. If a research-oriented work-based MSc Professional Engineering degree became available, approximately how many employees a year might follow this pathway?					
0 <input type="checkbox"/>	1 – 2 <input type="checkbox"/>	3 – 5 <input type="checkbox"/>	6 – 10 <input type="checkbox"/>	11 – 15 <input type="checkbox"/>	16+ <input type="checkbox"/>

Responses to Question 12

The responses indicated that if a research-oriented work-based MSc Professional Engineering degree became available, between 69 and 111 employees a year from the 26 companies might follow this pathway. Expressed differently, this is over 50% of their typical annual BEng graduate intake.

Several companies indicated a larger potential uptake for the programme than their reported annual BEng graduate intake.

A few companies made it explicit that their estimates of likely take-up were not at this stage a firm commitment to enrol those numbers on the proposed work-based MSc. Further discussion would be needed.

Question 13

13. Does the company currently have BEng qualified engineers who are enrolled on the MSc in Professional Engineering?

Yes No

Responses to Question 13

8% (2 companies) have BEng qualified engineers who are enrolled on an MSc in Professional Engineering, developed according to the EC^{UK} model.

Question 14

14. Would the company be interested in training sessions for mentors/training managers on the practicalities of using the MSc in Professional Engineering scheme?

Yes No

Responses to Question 14

80% of companies would be interested in training sessions for mentors/training managers on the practicalities of using the MSc in Professional Engineering pathway.

Question 15 Additional Comments

15. If you think that any of your check box answers would benefit from further explanation, or if you wish to make any additional comments, please add them here.

Responses to Question 15

The responses to this question were very varied, ranging from those who were strongly in favour of the MSc in Professional Engineering programme and would like to see several engineers from their company joining such a programme every year, to the 4 companies who thought it would be unlikely they would enrol employees in the scheme for a variety of reasons (e.g. existing involvement with PEIs).

Below are some of the most important points made, with the companies randomly identified as Company A, Company B, etc.

On Stakeholders

Company A:

- The costs of involvement need to be understood by all parties
- The potential conflicts with business needs must be understood by all parties
- The amount of personal time which is needed must be highlighted
- The amount of mentor input must be clearly stated
- Clarity is needed on the duration of the programme, measurable milestones and required outputs
- The level of Institution recognition should be clearly stated

On CEng and IEng

Company B:

Unless it is a mandatory requirement, development from BEng to CEng is on request from the individual currently following their preferred method of learning.

Company C:

Some BEng qualified engineers may be content to remain IEng; others may have careers that develop away from areas where CEng would be relevant.

Company D:

This initiative will be of use to existing BEng employees who have discovered that currently many companies' expectations are that engineers will be chartered; these employees now feel trapped, with IEng as their professional horizon. They feel that this is career-limiting.

Company E:

We encourage BEng qualified engineers to become Chartered or Incorporated, depending on the individual and the work area as appropriate. We do not adopt a default policy of encouraging all BEng graduates to become Chartered.

On Engineering Institutions

Company F:

We have recently formed a stronger link with the IMechE to formalise/streamline our internal processes for staff to become Chartered, and are reliant on advice from the IMechE with regard to those with non-accredited degrees.

On the research element

Company G:

Masters degrees are a useful top up and it is useful for the research to be work based. However, there is a significant benefit to be gained from broadening horizons through university-based courses and research.

Company D:

The research element is attractive, especially if it can be matched to our business goals

Company E:

This proposed pathway is likely to have some attraction for certain individuals in certain work areas and would be a useful additional option. The recently established work-based MSc in Professional Engineering would be equally of interest and it is possible that there may be a greater demand for this overall; however there is potential for a research-orientated work-based MSc.

Company H:

Work-based development underpinned by a professional qualification linked to a university fits better with modern business, especially in light of the current market situation. For a business, it is easier to justify in-house training of individuals, more flexible, no expensive travel and employee readily available on-site. For the individual, they are still getting a professional qualification, great links to university, ideal for research purposes and still the motivation of learning/development.

On work-based learning

Follow up questioning revealed that in Question 8 on work-based learning, two companies reported work-based learning generally, including apprenticeships, rather than just work-based learning leading to CEng. In this regard, i.e. a broader consideration of work-based learning, a third company, Company E, noted:

Company E:

While not the subject of this survey, there would also be wide potential for work-based BEng degrees for those with HND level qualifications to achieve Incorporated Engineer status.

Appendix 1: Terms of Reference

To explore with an agreed sample of UK-based engineering companies employing BEng graduates the level of support for a professionally focussed work-based Masters programme that enables their employees to gain an academic award, at the same time as developing the required competence for Chartered Engineer registration and completing Masters level research that is of value to the company.

The suggested sample size was a minimum of 15 companies, spanning a range of engineering sectors to be advised by the Engineering Council UK. The methodology was to include an electronic questionnaire, follow-up telephone interviews and a workshop/discussion for all employers to discuss the findings.
The Study to be completed and presented by September 2009

Appendix 2: Academics from the following universities contributed to the study

University of Birmingham
University of Leeds
University College London
University of Surrey
University of Warwick

Appendix 3: Sponsoring organisations

Engineering Council UK

EC^{UK} holds the national register of Chartered Engineers (CEng), Incorporated Engineers (IEng), Engineering Technicians (EngTech) and Information and Communication Technology Technicians (ICTTech). It also sets and maintains the internationally recognised standards of competence and ethics that govern the award and retention of these titles. By this means it is able to ensure that employers, government and wider society – both at home and overseas – can have confidence in the skills and commitment of registrants. To apply for the CEng, IEng, EngTech or ICTTech titles an individual must be a member of one of the 36 engineering institutions and societies currently licensed by EC^{UK} to assess candidates. Applicants must demonstrate that they possess a range of technical and personal competences and are also committed to keeping these up-to-date, and to behaving in a professionally and socially responsible manner. For more information visit: www.engc.org.uk

The Royal Commission for the Exhibition of 1851

The Royal Commission for the Exhibition of 1851 gives fellowships and grants for top level science and industrial research, as well as industrial design. Some 25 awards are made each year which, together with a number of special grants, approach £2m in value.

Originally set up to stage the Great Exhibition, the Royal Commission was kept in being to invest the Exhibition's substantial profit. It first acquired the site in South Kensington on which the three great museums, the Royal Albert Hall, Imperial College and other Colleges now stand, and it continues to own and manage the freehold of most of this estate. When the development of the estate was largely complete, in 1891, the Commission then set up the education and research awards programme which runs to this day.

Details of the 1851 Royal Commission's awards are on its website: www.royalcommission1851.org.uk

Appendix 4: Companies who contributed to the study

BVT	Marine
Carillion	Civil
dstl	Defence/security
EADS Astrium	Aerospace
East Sussex County Council	Transport
Eon	Power
Garrad Hassan	Renewable energy
GKN	Automotive/aerospace
Halcrow Group Ltd	Infrastructure
Hexcel	Materials
Instron	Mechanical
Kellogg Brown and Root	Civil
Laing O'Rourke	Civil
Lloyds Register	Marine
Lotus	Automotive
Morgan Est	Infrastructure
Mott MacDonald	Civil
Noble Denton Consultants	Marine
Ringway	Civil
Rolls-Royce plc	Aerospace
RWE npower	Power
SSTL	Aerospace
Transport for London	Transport
TRL	Transport
Tyco	Electronics
W S P Development Ltd	Civil

¹Branches of engineering covered:

Aerospace	4	Marine	3
Automotive	2	Materials	1
Civil	6	Mechanical	1
Defence/Security	1	Power	2
Electronic	1	Renewable Energy	1
Infrastructure	2	Transport	3

¹ Sourced from company websites

Appendix 5: The Questionnaire

A Work-based postgraduate route to Chartered Engineer Registration

A survey on behalf of the Engineering Council ^{UK}

Introduction

This survey aims to explore your company's interest in an extension of the employer-oriented work-based MSc Professional Engineering programme for employees developed over the past few years by the Engineering Council UK. This MSc enables employees holding BEng qualifications to work towards CEng status. The MSc Professional Engineering is already offered by a number of universities and integrates learning to Masters level with supervised professional development, based around workplace activity.

This survey seeks your views about developing a variant on the work-based MSc that incorporates a substantial research element of importance to the company. We believe that there will be interest amongst companies and universities in this.

In general terms, the benefits of these work-based Masters programmes include a particularly efficient use of time and resource for the company and the graduate, with the great advantage that employees spend little time away from the company. The proposed variant on the current MSc would include research that meets your needs. Further details are in the briefing sheet previously forwarded to you and re-sent with this survey.

Your participation in this survey is much appreciated by EC^{UK} and will help to inform the development of further work-based Masters programmes in engineering in the UK.

Your answers will be confidential and any attributed comments in the final report will only be used with your explicit permission.

If you do not wish/are not able to answer any of the questions please leave them blank.

Please indicate whether you are responding for:

the whole company *Double click on boxes to select 'checked' or 'not checked'*

one site

one division

Approximately how many employees does this represent?

Academic and professional qualifications of your graduate engineers

1. Which of the following applies to your company's graduate recruitment policy: (tick all that apply)	
We recruit BEng graduates only <input type="checkbox"/>	We recruit both BEng and MEng graduates <input type="checkbox"/>
We recruit MEng graduates only <input type="checkbox"/>	Not applicable <input type="checkbox"/>

2. Approximately how many BEng and MEng graduates did your company/site/division take on in 2007 and 2008 respectively, and what is the projected number for 2009?							
2007	BEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
	MEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
2008	BEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
	MEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
2009	BEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>
	MEng	0 <input type="checkbox"/>	1 - 5 <input type="checkbox"/>	6 - 10 <input type="checkbox"/>	11 - 15 <input type="checkbox"/>	16 - 20 <input type="checkbox"/>	21+ <input type="checkbox"/>

3. Does your company encourage BEng and MEng qualified engineers to become CEng registered?	Yes <input type="checkbox"/> No <input type="checkbox"/> (go to question 5)
If yes, what sort of support is provided? (please check all the relevant boxes)	
In-house courses <input type="checkbox"/>	Mentoring <input type="checkbox"/>
External short courses <input type="checkbox"/>	Study leave <input type="checkbox"/>
Part-time MSc courses <input type="checkbox"/>	Full-time MSc courses <input type="checkbox"/>
Incentives e.g. paying for courses <input type="checkbox"/>	Other (please describe) <input type="checkbox"/>

4. What are the perceived benefits to your company from your engineers being CEng registered? Please use the 'check box' function to indicate all that apply)	
Increased technical credibility with customers	<input type="checkbox"/>
Evidence that the employee has satisfied a rigorous assessment of their	

engineering competence	<input type="checkbox"/>
Confirmation that the engineering credentials being claimed are actually held	<input type="checkbox"/>
Assurance that the employee is keeping up to date with professional codes of conduct and has the means to do this	<input type="checkbox"/>
A means to satisfy requirements of the Quality Management Systems standard ISO 9001:2000	<input type="checkbox"/>
Evidence of engineering competence, as required by many customers	<input type="checkbox"/>
Other – please specify	

Engagement with Universities

This section is about the extent to which your company currently engages with the Higher Education (HE) sector in employee development and research that is of strategic importance to the company; also whether or not the company would like to have greater engagement with the HE sector.

5. Does the company make use of university short courses?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Go to Q 6
If yes, which of the following are included? (Please use the 'check box' function to indicate all that apply)			
Engineering <input type="checkbox"/>	Technology (including IT) <input type="checkbox"/>		
Business <input type="checkbox"/>	Other (please specify) <input type="checkbox"/>		

6. Does the company's strategy include actively engaging with universities in research?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If yes, which of the following are included? (Please use the 'check box' function to indicate all that apply and give approximate numbers where indicated)		
Funding research at universities <input type="checkbox"/>		
Partner in consortium with third party funding <input type="checkbox"/>		
Sponsoring MSc students: taught Masters course <input type="checkbox"/>	Number:	
Sponsoring MSc students: research based Masters <input type="checkbox"/>	Number:	
Sponsoring PhD students: Part-funding e.g. CASE Studentships <input type="checkbox"/>	Number:	

Sponsoring PhD students: fully funded PhDs	<input type="checkbox"/> Number:		
Sponsoring/employing EngD students	<input type="checkbox"/> Number:		
Consultancy	<input type="checkbox"/>		
7. The proposed work-based MSc degrees have a strong research component, intended to be of benefit to the company. Which of the following might be the benefit(s) to your company of being involved in such MSc research projects?			
Assisting company research effort <input type="checkbox"/>	Business needs <input type="checkbox"/>	Staff development <input type="checkbox"/>	Knowledge exchange <input type="checkbox"/>
Other (please describe)			

Work-based Learning

This section is about work-based learning to achieve CEng status

8. Does your company/site/division currently have any employees who undertake work-based learning to achieve CEng registration?	Yes <input type="checkbox"/> No <input type="checkbox"/> Go to Q 9
If yes, is any of this work-based learning assessed formally by a university?	Yes <input type="checkbox"/> No <input type="checkbox"/>
9. As a route to registration, your company would encourage employees to enrol for a work-based Masters degree involving a substantial research component.	Strongly agree <input type="checkbox"/> Agree <input type="checkbox"/> Neutral <input type="checkbox"/> Disagree <input type="checkbox"/> Strongly disagree <input type="checkbox"/>
10. Would you expect a work-based Masters degree scheme to be popular with the BEng qualified engineers?	Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes, which of the following reasons would apply?	

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
May be a faster route to CEng	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has some structure but is not prescriptive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does not involve a substantial amount of travelling to day-release courses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leads to MSc as well as eligibility for chartered professional review	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Takes existing competencies into account	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A variety of learning methods can be used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other reasons (Please specify)					
If no, why not?					

11. Does the company have BEng qualified engineers who are not currently working towards CEng registration?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Would this pathway encourage BEng qualified engineers to become CEng registered?	Yes <input type="checkbox"/> No <input type="checkbox"/>

12. If a research-oriented work-based MSc Professional Engineering Degree became available, approximately how many employees a year might follow this pathway?					
0 <input type="checkbox"/>	1 – 2 <input type="checkbox"/>	3 – 5 <input type="checkbox"/>	6 – 10 <input type="checkbox"/>	11 – 15 <input type="checkbox"/>	16+ <input type="checkbox"/>

13. Does the company currently have BEng qualified engineers who are enrolled on the MSc in Professional Engineering?	Yes <input type="checkbox"/> No <input type="checkbox"/>
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14. Would the company be interested in training sessions for mentors/ training managers on the practicalities of using the MSc in Professional Engineering scheme?	Yes <input type="checkbox"/> No <input type="checkbox"/>
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15. If you think that any of your check box answers would benefit from further explanation, or if you wish to make any additional comments, please add them here.

Your details:

Your name

Position/job title

Company