Sponsor brochure







Advanced Manufacturing Research Centre



Sponsored Engineering Doctorate programme



Fully-funded doctoral research opportunities

The Industrial Doctorate Centre (IDC) in Machining Science is a unique collaboration between industry, the University of Sheffield Advanced Manufacturing Research Centre (AMRC) and the Faculty of Engineering offering sponsored four-year Engineering Doctorate (EngD) research projects.

Sponsoring an EngD research engineer lets your company drive research in areas relevant to your needs, with access to world class research facilities and experts in machining science.

The unique nature of the IDC means that our research engineers are both academically strong and highly committed to solving real world research problems - and so are valuable asset to your company.

Our research focus is on improving the machining of high performance metals, alloys and composite materials in a wide range of operations where material is removed as part of the production process (e.g. hole generation, turning and finishing).

The Engineering and Physical Sciences Research Council (EPSRC) awarded the IDC £3.8M to support the training of 60 PhDs and EngD Research Engineers to meet the current and future demand for research expertise in this area. This is a direct response to some of the huge challenges faced in the high value manufacturing sector, such as the difficulty of machining complex components from high performance materials, the cost of energy and raw materials, environmental sustainability, and the threat of international competition.

EngD Industrial Sponsorship Scheme

The majority of our EPSRC studentship funding is used to match your contribution in our flagship EngD Industrial Sponsorship Scheme. Our current sponsors range from SMEs to global giants, and from watch making to aerospace. Our sponsors include: Boeing, Safran Landing Systems, Rolls-Royce, Sandvik Coromant, Seco, Element Six, Hexagon Metrology, Bremont Watch Company and Carpenter Technology.

Potential sponsors work with the centre to identify medium term research projects that will benefit the sponsors, but which also have academic depth suitable for doctorate study. Once the project scope is agreed, the project is advertised widely, with the sponsor being fully involved in the recruitment process.

Our current EngD research engineers are at various stages of the programme. Many companies now sponsor several EngD research engineers in the IDC as they see the real difference that the EngDs make to their business.

Due to our recently increased funding we are now seeking approximately nine new industry sponsors per year to develop suitable projects with us.

The University of Sheffield Faculty of Engineering and the AMRC

The AMRC has a global reputation for helping companies overcome manufacturing problems and is a model for collaborative research involving universities, academics and industry worldwide.

Combining state of the art technologies with the AMRC's expertise in design and prototyping, machining, casting, welding, additive manufacturing, composites and structural testing, has created a manufacturing resource far beyond anything previously available in the UK. The Faculty of Engineering are one of the biggest and best providers of engineering research and education in the UK, with over 5,000 students and, combined with the AMRC an annual research income of over £65 million.

We provide research-led learning and teaching across the breadth of engineering subjects and 93 per cent of our research is listed as 'world leading' or 'internationally excellent' (REF 2014).

The AMRC is the University of Sheffield's world-class centre for research into advanced manufacturing technologies used in the aerospace, automotive, medical and other high-value manufacturing sectors.



What is an Engineering Doctorate?

An EngD is of equal academic status to a PhD. The EngD was created over 20 years ago to meet the specific demands from the engineering industry for more applied postgraduate research, and provide a pipeline of highly qualified application-focused "research engineers" for their businesses.

EngD research projects have a more immediate link to their industry sponsors' business needs. Our research engineers work closely with their sponsor company typically spending 75 per cent of their time split between the AMRC and their industry sponsor, and 25 per cent of their time at the University.

Benefits for sponsors

Sponsoring an EngD candidate is an ideal opportunity to propose and drive a research project tailored to your own company's development needs, with access to world class research facilities and experts in machining science.

Projects receive substantial co-funding from the EPSRC and sponsors may also be eligible for research and development tax credits. Joint industrial sponsorship is welcome where this is relevant.

The course value totals $\pounds136,000$ as the EPSRC match the sponsor companies contribution. Over the course of the four year programme the sponsor company will contribute $\pounds68,000$ with flexibility to contribute more if required.

The EngD research is built on the foundations of the industry sponsor's technical and commercial needs.

Benefit from effective knowledge transfer through the essential skills learnt by the candidate whilst on the programme. Many Research Engineers go on to join their sponsors in key technical roles.

The EngD is a highly cost effective way to drive relevant leading-edge research which you may not have the funding, expertise or equipment to undertake in house.

Through the EngD Research Engineer, sponsors have access to world-leading expertise in machining science and stateof-the-art equipment in the AMRC; Your organisation will be part of an extended network of like-minded organisations.



Programme structure

Most structured teaching and training happens in the first academic year with a tailored programme of personal and professional skills development and taught courses in appropriate advanced engineering disciplines.

This training underpins three mini research projects, directed by the sponsor, where students explore the scope of their main research problem set by their sponsor company. They use this time to formulate their individual research questions, which will then be addressed in year's two to four of their EngD and culminating with the presentation of their thesis.

What about intellectual property rights?

The EngD project is a close partnership between the sponsor and the University, and there will be some joint outputs and publications.

We can negotiate IP arrangements, and will follow a reasonable approach to publication (i.e. sponsor prior approval, removal of sensitive information, timing of publication etc).

For candidates we offer:

- Four year fully-funded postgraduate Engineering Doctorate research degree.
- Competitive tax-free stipend of £18,000 per year, with all academic fees paid, including expenses for the research engineer such as travel and food.
- Individually tailored training covering personal and professional development, science and technical training, plus skill building mini research projects.
- All research engineers enrolled in the programme are supported towards chartership.
- The opportunity to network with industry peers and attend international conferences, with expenses covered.
- A qualification with excellent work experience that is the launch pad for a rewarding career in high value manufacturing or academic research.



What will it cost?

The sponsor company pays 50 per cent of the cost of the four-year EngD studentship, with the other half being match by the Engineering and Physical Sciences Research Council (EPSRC).

Standard EngD in Machining Science Sponsorship Package Breakdown

- £10k for project experimental costs.
- £10k for expenses relating to the studentship e.g. conferences, travel, laptop, safety equipment etc.
- £88k for student stipend and academic fees.
- £26k contribution to group training, activities and administration.

With £68,000 being paid by both the sponsor company and the EPSRC.

In some cases, the standard package breakdown may be open to negotiation. Examples include if additional resources are needed for the experimental projects, a sponsor wishes to top up the student stipend to attract the most talented candidates or wishes to sponsor a candidate on a part-time basis.

Sponsors may also be able to claim Research and Development tax credits.

How are potential candidates recruited?

The IDC advertises all EngD projects widely through the relevant channels, and sponsors are also encouraged to advertise the studentships. Candidates apply directly for the project that interests them and the main recruitment window is late autumn and early winter.

Engineering Doctorates are demanding degrees so candidates must have or expect to obtain a first, good 2:1 degree or strong Masters in mechanical engineering, materials science, applied mathematics, physics or other relevant discipline (depending on the specific project requirements).

The IDC manages the overall recruitment process, but sponsors are encouraged to participate at all stages, including the interview stage.

Requirements for sponsors

What is expected of the sponsor company?

- To provide a link for the student into the sponsoring company.
- Ensure that the proposed project is aligned to the business requirements.
- Provides opportunities for training and development and integration into the sponsor organisation.

- Is responsible for health and safety of the student at the company.
- Ensures that the EngD is aware of commercial confidentiality issues, IPR etc. and procedures.
- Assists students in working towards Chartership in relevant Professional Bodies.

Every company has a different culture, internal processes and varying levels of experience of working with EngD students. The industry supervisor will need to be proactive particularly in the early stages of the degree to ensure that the EngD student gets access to the resources and support they need from the company to deliver on their project plans.

How to apply

For enquiries please contact the Centre Manager by email at: idc-machining-science@sheffield.ac.uk who can explain the scheme in more detail and direct you to the relevant technical and academic specialists. We can put you in touch with one our current sponsors if you wish. We can visit you, or you are welcome to visit us at our base at the world-class AMRC facilities near Sheffield.

If you are ready to sponsor and EngD, please download and complete the EngD Industry Sponsorship Proposal Form on the IDC website at: www.ms-idc.co.uk/sponsors

Potential sponsors are asked to submit an Project Outline Proposal by Sponsor included within the form for review by the IDC Board. The board will (after further consultation with you if necessary) evaluate your proposals against the criteria listed on the form, selecting approximately five projects each year for EPSRC co-funding.

The IDC Board reviews EngD project proposals at regular intervals throughout the year. EngD projects attract interest from final year students, recent graduates and those already in employment with many looking for opportunities between October and January. So to attract the highest number of strong applicants, project proposals should be submitted August to September of the preceding year, to be ready to advertise from October, with candidates starting at the beginning of September the following academic year.





Profile: Dr Jamie McGourlay

AMRC Partnership Manager Rolls-Royce Plc

How many EngD Research Engineers does Rolls-Royce currently sponsor?

Rolls-Royce typically sponsors more than 50 EngD Research Engineers at any one time, including seven at the IDC in Machining Science.

What are the benefits to Rolls-Royce of sponsoring EngD Research Engineers?

The benefits are the ability to drive sustained high quality applied research into real industrial requirements and opportunities. Successful EngD students also present a rich talent pool for future careers in industry and ongoing collaborative industrial research.

Why have Rolls-Royce particularly chosen to sponsor EngDs in the IDC in Machining Science?

The IDC in machining science offers a unique opportunity to place EngDs directly in to the AMRC's modern collaborative research environment. Here they can gain access to the latest technology, thinking and skills and build a broad network of contacts through the combined academic and industrial partners.

Do you think smaller companies can also benefit from sponsoring an EngD?

EngDs can offer smaller companies an accessible and affordable means of directing research that can be sustained over a number of years and yield valuable outputs to their company's specific needs. A trained and qualified EngD student working within their business can significantly enhance their specialist knowledge base and become a valuable resource to the company for the future.

Want more information?



For more information and a list of our latest PhD and EngD opportunities, please see the IDC website at **www.ms-idc.co.uk**



Join our email list - email your details to idc-machining-science@sheffield.ac.uk









