

Engineering research through EPSRC: how practitioners can get involved

Dr Andrew Davies, EPSRC Associate Programme Manager for Engineering Materials & Construction and member of the Institution's Research Panel explains

The Engineering and Physical Sciences Research Council (EPSRC) is the UK's main agency for funding research and related post-graduate training in engineering and the physical sciences, from maths to materials science and from information technology to structural engineering. We are a Non-Departmental Government Body, funded by the government through the Department of Trade and Industry's Office of Science and Technology, with an annual budget of nearly £500m. Our mission is to support high quality research and training in order to advance knowledge and technology while providing a means of supplying the UK with trained engineers and scientists. We also seek to provide advice, disseminate knowledge and promote public understanding in the fields of engineering and the physical sciences.

EPSRC delivers its research initiatives through 11 research programmes (plus public awareness), three of which are engineering based. The Engineering Programme concentrates on maintaining and improving the health of the engineering discipline and operates mainly through our responsive mode. The other two, Infrastructure and Environment (IEP) and Innovative Manufacturing (IMP), operate through specific managed initiatives. The former concentrates on the 'Health of the Nation', principally through initiatives that target 'Quality of Life' issues such as sustainability, transport and energy. The latter focuses on improving the 'Wealth of the Nation' through funding research and training aimed at improving the performance of the UK manufacturing sector.

That is all well and good you may say,

but what do you have to offer me or my organisation as an end-user of engineering research?

In order to answer such a question, this article aims to describe some of the many ways in which the user community can interact with EPSRC in order to benefit directly from the high quality research we fund and to influence our funding strategy through input into our business planning process.

'We are now beginning to realise our aim of building stronger, longer term strategic relationships with industry'

Funded research projects

One of the most obvious ways of getting involved with us is through an EPSRC funded research project or initiative. The traditional way of doing this is to link up with an academic group with appropriate expertise and a shared interest in the research problem that you wish to investigate. This is not always a straightforward process, especially if you have no existing academic links. In such circumstances, EPSRC is always happy to provide help and advice on the most appropriate contacts through our in-depth knowledge of the academic community.

Involvement in projects can take many forms, from a modest in-kind contribution, such as taking time to appear on a project steering committee, through to a full-blooded partnership involving close joint working. There is possibly even secondment of researchers into your organisation for a period at the end of the project through our Research Assistant Industrial

Secondment scheme, as a means of translating research findings for practical industrial use.

In recent years, we have developed several new mechanisms for commissioning and funding research, designed to make it easier for the user community to get involved in our initiatives. Two such examples of particular relevance to the engineering community are the formation of research consortia within IEP and the creation of a number of Innovative Manufacturing Research Centres (IMRCs).

Research consortia. This model involves inviting researchers and stakeholders to submit expressions of interest in response to a specific call, recent examples of which include 'towards a Sustainable Urban Environment' (SUE), 'Building Knowledge for a Changing Climate' (with UKCIP) and 'Rail Research UK'. A cross-section of interested parties are then invited to participate in facilitated workshops which aim to highlight the key research challenges in these areas while simultaneously bringing together appropriate expertise from the academic and stakeholder communities as one or more research consortia to tackle these challenges. This has the advantage of bringing very diverse groups together and allows the end-users and beneficiaries of such research much greater involvement in the whole process, with a correspondingly greater ability to influence the research agenda.

Innovative Manufacturing Research Centres There are currently 13 of these, funded through IMP, with interests spanning the whole breadth of engineering while also including disciplines such as management and design. Several IMRCs have relevance to the structural engineering and construction communities, with those at Imperial College, Loughborough, Reading and Salford having large, dedicated construction programmes.

The IMRCs were created to enable those groups with a strong tradition of innovative manufacturing research to obtain greater stability and flexibility to carry out their research, as well as freedom to develop new projects with industry, without the need to continually apply for fresh funding from EPSRC. This allows them to be far more responsive to industry needs.

Peer review

Other ways in which practitioners may work with EPSRC include peer review. This lies at the core of EPSRC and to operate effectively it relies on the generosity of the whole community. Individuals with appropriate expertise agree to comment on new research proposals and assess final reports. The 'Peer-review College', consists of eminent individuals nominated by the community who have subsequently agreed to act as regular referees and

occasional panel members, although where particularly specialist expertise is required we can also seek assistance from outside the College. As either a member of our College or someone willing to help us on a more occasional basis, this is an excellent opportunity for practitioners to gain fresh insights into the cutting-edge of UK engineering research and can be a great way of learning about the academic community and even spotting potential research partners.

As can be seen in Fig 1, EPSRC constantly seeks the views and advice of a wide range of parties as we develop our strategic priorities, including both the academic and user communities. Much of our interaction is on an informal basis through, for example, individuals discussing issues with EPSRC representatives they meet at events and functions.

As part of EPSRC's ongoing 'Sector' based approach to our research portfolio, our officials also meet regularly with industry representatives in order to discuss the opportunities available through joint working and at the same time to learn more about the key research related issues as identified by end-users themselves.

More formal industry involvement comes through membership of our User Panel (UP), which has a major role, together with the academically focused



Fig 1. A summary of the major groups that regularly engage with the EPSRC Programme Team and thus contribute to our strategic forward planning.

Technical Opportunities Panel (TOP) in approving our business plans.

Another mechanism for strategic involvement is through membership of one of our Strategic Advisory Teams (SATs), one of which exists for each EPSRC Programme. These are an important source of advice, the membership working closely with the programme managers during the development of their business plans.

To conclude, EPSRC is taking an increasingly active role in liaising with

the user community and we are now beginning to realise our aim of building stronger, longer term strategic relationships with industry. se

- EPSRC is happy to hear from practitioners and if you are interested in getting involved in our activities or want to know more about what we do, contact: Andrew Davies, EPSRC, Polaris House, Swindon SN2 1ET (tel: 01793 444 115; email: andrew.davies@epsrc.ac.uk) website: (www.epsrc.ac.uk).

Upcoming IStructE courses

Fibre composites - structural materials for the 21st century

14 October 2003

The course will offer a comprehensive introduction into the use of fibre reinforced polymer composites in the construction industry. The course will provide an understanding of material properties, benefits, limitations and design considerations. It will also have a significant practical/demonstration content with several case studies.

Liquid retaining reinforced concrete structures

22 October 2003

This course will benefit engineers and technicians engaged in the design of tanks, reservoirs, swimming pools and other liquid retaining structures, as well as those designers experienced in normal reinforced concrete design who wish to extend their knowledge.

Project management of the design process

27 October 2003

This seminar will cover the main aspects of project management for a typical structural engineering practice, with the aim of getting it right first time, on time and to budget. The aspects covered are also relevant to larger organisations on major engineering works. Areas covered will include project management from the designer's perspective, setting up and managing a project, the roles, responsibilities and project stages.

All courses take place at IStructE headquarters in London. For full course aims, details and an application form, click on to www.istructe.org.uk/courses/ or contact the Events Office on 020 7235 4535 or courses@istructe.org.uk