

Call for Expressions of Interest to support the Sellafield Ltd - Flammable Gases Centre of Expertise

Introduction

Sellafield Ltd is working to strengthen the technical understanding of the management and control of hydrogen and other flammable gases that are generated and stored on the site. Increased engagement with the wider academic community has been identified as a key part of this process and is the reason for this call for Expressions of Interest.

What is expected of the university, what Sellafield Ltd can offer the partnership and some background notes are provided below. The expectations are indicative and the nature of the partnership(s) would evolve depending on the partners involved and it is not necessarily essential that one institution can meet all of the expectations listed. Should universities wish to combine in order to submit a bid which meets the criteria more comprehensively, this is considered acceptable.

To respond please submit your Expression of Interest to:
Closing Date:
For technical discussion of your interest please contact:
For commercial discussion of your interest please contact:

Ian Kempzell
24:00 hrs 30th November 2011
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diane.c.pomford@sellafieldsites.com

Background

Sellafield has been in operation since 1947 and is the principal site within the UK for reprocessing of spent nuclear fuel from power station operations and storage and treatment of resulting wastes.

Management of the flammable gas hazard, principally hydrogen, which is present across many of Sellafield site's decommissioning and operational projects, remains a dominant issue, which requires a consistent approach, Learning From Experience, and innovation to provide fit for purpose solutions. Substantial expenditure is in progress as part of current clean-up and hazard reduction across Sellafield site. Many of the larger projects associated with this programme (such as Intermediate Level Waste stores, ponds and silos) have flammable gas management challenges which require on-going resolution calling upon a diverse range of skills and expertise.

The Flammable Gases Centre of Expertise has developed several working relationships to address these challenges both within Sellafield itself and with external bodies. These include University Research, independent benchmarking and liaison with other groups having similar interests both within the UK and overseas.

To date both research and associated expertise has culminated in Company Technical Guidance, focussing on hydrogen hazards which require on-going maintenance and support.

Request for Expressions of Interest

Sellafield Ltd requires expert support to manage immediate plant challenges, short and medium term research programmes and the provision of independent benchmarking for flammable gases hazard management that will support its continuing long term objectives of:

- Extension of the fundamental science required to underpin the understanding of the formation of flammable atmospheres (principally hydrogen) e.g. dispersion in the liquid and gas phases, Note that gas generation is excluded from this scope.
- Develop current understanding of ignition mechanisms of flammable gas mixtures (principally hydrogen) to facilitate ignition source control on nuclear plant.
- Extension of the fundamental science required to underpin the understanding of the effectiveness of possible suppression and mitigation techniques for hydrogen gas hazard management.
- Development of relevant technical guidance and standards.

Expectations of the University or Universities

Academic Reputation

The university link programme will involve physical work and provision of scientific advice by the university. This needs to have credibility with Sellafield stakeholders, including the regulators, hence it is expected that the university (or universities) will have a good established and recognised academic reputation in the field.

A good track record in successful industrial collaboration, including a flexible approach to intellectual property is also expected as the Nuclear Decommissioning Authority (NDA) expects work it funds to be available across all site licence companies.

Provision of Scientific Advice

This is the primary mechanism by which Sellafield Ltd gets timely access to the understanding being built up in the university by the partnership prior to the research work being published. It will also be the means of sharing wider understanding from generic programmes such as best industrial practice including the non-nuclear hydrogen economy and will be reimbursed as part of the Sellafield Ltd financial support to the partnership.

The provision of scientific advice is expected to come principally from named, experienced personnel. To be effective these individuals would need to have both academic and regulator credibility.

The scope is seen as being through review of papers, participation in some of the Flammable Gases CoE meetings (up to ~ 6 per year) and telephone/email communication.

Established connections with the nuclear industry in general and particularly with the Sellafield site in order to maximise the value of work already done and minimise the cost of developing background understanding, would be a valuable advantage.

Experimental and Analytical Work

The ability to conduct both computer modelling and physical experimental work, and specifically the capability to perform work using hydrogen and other flammable gases, is expected.

Such work would be a mix of, joint funded (preferable), sponsorship of existing or agreed fundamental studies, and which could include MSc, PhD and EngDoc projects. We would expect this work to be published and the underpinning data would be made available to Sellafield Ltd.

The implication of this expectation is that university (or universities) have access to appropriate techniques, facilities and equipment and be open to visits by Sellafield Ltd staff to observe work in progress, and in some cases to Sellafield Ltd participation in physical work in order to build up skills within the company.

A good track record in successful academic collaboration, particularly across disciplines, is expected.

Access to wider knowledge

It is recognised that there are independent research programmes – for example Hysafe – undertaking generic work. It is expected that this developing link will enable experience and knowledge from such programmes to demonstrably add value to the link.

The university (or universities) are expected to have an industrial collaboration portfolio outside the nuclear industry so that there is the potential for cross fertilisation and further added value.

Recruitment and staff development potential

Even in times of static or falling numbers of employees there is a need to replace or grow key technical skills and it is anticipated that developing the link(s) with a university (or universities) will help. In order to do that it is expected that courses will include material that informs nuclear industry design and operations. A history of graduates being offered and taking up posts within the industry would be an advantage.

It is also anticipated that the teaching programmes, or physical work envisaged, will provide training and development opportunities for Sellafield Ltd staff.

The Sellafield Ltd contribution to the partnership

It is recognised that a partnership must be mutually beneficial and so Sellafield Ltd expects to make a significant contribution to the partnership. The detail would be dependent on the university (or universities) expectations and requirements but is envisaged to include the following generic areas which would be developed with the arrangements:

The support envisaged by Sellafield Ltd will take the form of in kind and financial support. The support in kind will be to provide an industrial supervisor for sponsored PhD students, where the University chooses to use this approach, and to participate in the university's industrial liaison arrangements.

We will also provide information as necessary to enhance the research project and encourage the University staff to spend time at Sellafield Ltd working on real and relevant projects within the industry. This is likely to mean industrial input into the research and teaching programmes through consultations, case study material etc.

Our financial support will be to provide up to £100,000 per year. It is expected that the scope of the work described will last for 5 years.

Background

For general information about Sellafield Ltd and site history please see the company web page www.sellafieldsites.com

Guidance on the submission

To respond please submit your Expression of Interest to: Ian Kempzell

Closing Date: 24:00 hrs 30th November 2011

For technical discussion of your interest please contact: ian.d.kempzell@sellafieldsites.com

For commercial discussion of your interest please contact: diane.c.pomford@sellafieldsites.com

Submission by email is preferred. File size is limited to 15Mb.

To facilitate comparison of submissions please use the following structure:

Introduction

- *A brief overview of your institution and its involvement with the nuclear industry*
- *A short general comment on the ability to address the range of technical and engineering areas of interest*
- *A clear comment about areas that you do not consider your institution or partners can support*
- *Contact details*

Academic Reputation

- *A statement of the extent to which your institution meets the expectations set out in the call*
- *Refer to CVs in an appendix*
- *Refer to evidence in an appendix in support of your statement*
- *RAE assessment ratings and Teaching Quality Index (TQI)*

Provision of Scientific Advice

- *A statement of the extent to which your institution meets the expectations set out in the call*
- *Rates for the reimbursement of the provision of scientific advice*
- *Refer to evidence in an appendix in support of your statement*

Experimental and Analytical Work

- *A statement of the extent to which your institution meets the expectations set out in the call*
- *Refer in an appendix to details of the techniques, facilities etc available to support the partnership*

Access to wider knowledge

- *A statement of the extent to which your institution meets the expectations set out in the call*
- *Refer to evidence in an appendix in support of your statement*

Recruitment and staff development potential

- *A statement of the extent to which your institution meets the expectations set out in the call*
- *Refer to evidence in an appendix in support of your statement*

The Sellafield Ltd contribution to the partnership

- *A statement of what your institution would regard as priorities, especially with regard to support in kind*

Appendices

- *CVs*
- *Evidence of academic reputation*
- *Evidence of successful industrial collaboration*
- *Evidence of successful academic collaboration*
- *Evidence of past involvement with the nuclear industry in general and the Sellafield site in particular*
- *Details of experimental facilities etc available, specifically including any ability to do radioactive work*
- *Details of computer modelling capability available*
- *Evidence of experimental work in support of the nuclear industry*
- *Evidence of your ability to add value by links to other programmes of work and joint funding of work*

PLEASE NOTE:

It is not expected that every institution will be able to meet all of the expectations indicated above and partial submissions will be considered on their individual merits.

The submission structure set out above is to assist in our evaluation of the proposals, if it inhibits your institution from properly presenting their capabilities, please change the format of your submission.

Criteria for selection - primary

Recognised academic excellence in both research and teaching: the RAE assessment ratings and the TQI will be taken as a guide and the university should include its score for those subjects that it sees as relevant. Other evidence would also be acceptable.

Have established connections with the nuclear industry in general and particularly with the Sellafield site in order to maximise the value of work already done and minimise the cost of developing background understanding.

A good track record in successful academic collaboration, particularly across disciplines including a flexible approach to intellectual property as the Nuclear Decommissioning Authority expects work it funds to be available across all site licence companies.

Scope of techniques, facilities and equipment available.

Criteria for selection - secondary

A history of students from the university (or universities) going on to work in the industry

A location that facilitates good personal contact between the partners

Publishing the results of evaluation

The evaluation of the expressions received is likely to take some time as each submission will need to be considered against the criteria listed above and the evidence evaluated. This will require some consultation with stakeholders. Approval to proceed will then need to be obtained, and will be at the discretion of the Sellafield Ltd management, before the result can be published on the Sellafield Ltd Innovation Website.