LAMBERT REVIEW OF BUSINESS-UNIVERSITY COLLABORATIONS

Corus welcomes this review as it builds on the Roberts' review on the supply of scientists, the RAE review and the recent White Paper on the Future of HE.

The Corus philosophy, activities and initiatives on industry-university collaborations, sponsorships and partnerships are given in the enclosed papers.

Corus has appointed two senior managers, one in the UK and one in Holland to have responsibilities for university liaison.

Corus, therefore, places much value on its relationships with academia ? staff, students and researchers. Graduate recruitment is the lifeblood of the company and we put significant effort into the personal, technical, professional and management training of our graduate recruits to enable them to reach their full potential for mutual benefit. The quality of our graduate training programmes has been widely regarded by academia and the professional institutions.

We currently provide the chairmanship of the CBI Inter-Company Academic Relations Group and are also active in the EPSRC College, Faraday Partnerships, Teaching Company Schemes, Engineering Doctorate Programmes, Industrial CASE, IGDS, LINK, MBA, Marie Curie Industry Host Fellowships, various university department advisory panels, examination boards and

university management committees. We also engage with universities across Europe in EU/ECSC funded research activities. We provide prizes to students to recognise their excellence and enjoy many informal relationships and dialogues with academics. We sponsor undergraduate students, postgraduate and post doctoral researchers, lecturers and chairs.

We organise visits for students to our works and technology centres, industrial training placements and opportunities to meet recent graduates, managers and alumni. We make corporate presentations at universities, not simply aimed at recruitment activities.

For each research project we support at a university, we appoint an in-house project leader whose task is to provide materials, data, access to our plant, processes, products or applications for the academic researchers, to provide industrial input/needs to the project and critically to absorb the knowledge gained on this project into the company. This is often the most difficult part of the collaboration, depending on how the project was set up and how near to market it is.

Two of our Research Directors, a couple of our experts and retired managers are visiting professors or RAE Fellows. However, we have not yet fully exploited other opportunities which are available for seconding staff to universities or vice versa.

Our R&D and technical experts in our manufacturing units rely heavily on

published papers and thesis prepared by universities. These are a vital source of knowledge and data. We also believe that academics benefit from our papers and reports. However, we make relatively little use of patents/licences owned by academics and similarly we get little reward from academics using our patents/licences. We actively participate in conferences and seminars thus interacting with academics worldwide.

The great majority of our research collaborations with universities involve financial and in-kind contributions from us, but we also seek as much gearing (at least 3:1) from EPSRC/HEFCE/DTI/EU/ECSC funding as possible. In a relatively small number of cases we fully fund post-doc research projects ? in situations where we expect exclusive use of the results.

A summary by EPSRC of industrial collaborations in materials shows how active Corus is in this respect, see attached.

We have little experience in generating spin-out or JV companies with universities ? probably reflecting the relative maturity and large scale continuity of our operations ? although we are continuing to seek new ways of adding value to our products and do not rule out such initiatives in the future.

We have been involved in the consultation/lobbying by CBI with the Treasury/Inland Revenue on R&D Tax Credits. We welcome this initiative and urge that it should be increased. It is important that it is easy to

understand and quantify, that it realistically covers all aspects of industrial R&D ? not just research. Sadly, the company has not been in a position this year to claim this relief, as we are in a loss-making situation!

We have experience of working in various ways of industry-university partnerships ? the largest of which is the Netherlands Institute for Metals Research. This involves five universities, at least ten companies, all of whom make a significant financial and in-kind contribution, together with a major financial injection from the Dutch Government. Thereafter, the members of NIMR are left to devise their own research programme and capital investment. This gives a measure of 'security of funding' and continuity. The nature of the research conducted in NIMR is generally more fundamental and theoretical than most of the PhD and post-doc research sponsored by Corus in British universities.

The largest collaborative partnership in the UK is the Engineering Doctorate programme in Wales which is focussed on the processing, products and applications of strip steels. Whilst the Corus Business Units in Wales are the major industrial partner, some of our suppliers and customers are also involved ? thus representing excellent supply chain collaboration. This scheme not only provides high quality industry-based research, but also highly motivated and qualified researchers, many of whom have been recruited into the company and have quickly assumed significant management responsibilities.

Both NIMR and the EngD Schemes hold annual conferences at which the researchers present their work, orally or as posters ? very effective for dissemination to other researchers and industrialists.

Other Corus Business Units producing long products, structural steels and engineering steels, based in the North of England, together with other metals producers, processors and suppliers are very keen to initiate an EngD in Advanced Metals based in Sheffield. This would complement the Corus Corporate Technology Centre and the recently created National Metals Technology Centre based in Rotherham and the plans to create an Advanced Manufacturing Park in South Yorkshire. There is wide support for such a scheme, centred round the multidisciplinary Sheffield Materials Forum of which Corus is a founder member. The Forum involves local metals companies and their suppliers who support collaborative research projects at the Sheffield Universities, which at the PhD level must be supported by at least two of the members. We hope that the Research Council will be able to support the creation of this proposed Sheffield EngD scheme.

We are also members of several industry clubs with North American universities, mainly focussed on steel processing; but these are less effective than local collaborations, on account of the lack of regular face to face contact, but they give us access to expertise which is no longer available in British universities. We have recently advertised a new Corus sponsored lectureship in Steelmaking and Casting at the University of

Sheffield. We still have a need for these subjects to be taught and researched in Britain and it is likely that the recruitment will be from overseas, as there is a dearth of young talent in this area in the UK.

We have helped to create the South Yorkshire Centre for Materials Analysis (SYCMA) with the Sheffield Universities and our Swinden Technology Centre. We have made significant financial contributions to help them buy expensive state of the art electron microscopes, XRD and other advanced analytical instruments and we share these and related facilities between all three parties. The co-funding has come from EU, HEFCE or EPSRC sources. A benefit has been the sharing of expertise available at each site between all three parties.

We have encouraged the development of the 'Third Leg' of university funding to support technology transfer, but disappointed that to date, the major output has been the creation of a bureaucratic infrastructure in the universities to administer and manage this activity, rather than the delivery of technology transfer. This has included a focus on ownership and exploitation of IP and licensing income, and associated metrics and key performance indicators that do not meaningfully take account of the contributions from industry in the technology transfer process. We have been dismayed at the excessive waste of time, imagination and money spent in arguing over the fine details of formal agreements and ownership of IP. We consider that some universities are adopting a too aggressive, unrealistic attitude, especially when dealing with well-established

industries engaged in collaborative research partnerships.

If such attitudes prevail, it is likely that companies will walk away from collaborations and partnerships with these universities and they are likely to drive a wedge between the academic and industrial researchers who will each be trying to cover their backs and protect their own ideas. This is not the way to encourage fruitful, constructive, open and creative partnerships which require mutual trust and respect.

We, therefore, warn the Government NOT to adopt a Bay Dohl type of act in the UK. We consider that this had done more harm than good to industry-academic relations in the United States of America.

The principle that should be adopted is that the main purpose of industry is to create wealth ? for which it needs knowledge. A university's main purpose is to create knowledge ? not wealth! This should be the foundation of effective partnerships. Universities are generally not aware and not equipped or financed to be able to exploit and take their ideas to industrialisation and commercialisation.

Corus is particularly concerned about the decline in undergraduate and postgraduate British students in materials, metallurgy, electrical and civil engineering. We have an active education support programme that provides teaching and learning resources at each key stage, with the aim of informing, educating and exciting pupils and their teachers about these

subjects, metals and science in general. We also work with other organisations active in this important area.

However, the demise of metallurgy in undergraduate courses is now such that we and other steel producers (internationally) and aluminium producers have felt it necessary to create web based learning aids on ferrous and non-ferrous metallurgy. These initiatives are needed to sustain the teaching and learning of these subjects which are vital to UK competitiveness.

See http://www.ilsap.org, http://www.matter.org.uk, http://www.matter.org/steelmatter.org.uk and http://www.aluminium.matter.org.uk.

It is difficult to reverse this trend, although we are engaged with many other organisations with similar concerns, including the professional institutions, in several initiatives to attract pupils into materials science and engineering, but these efforts are hindered by public and media poor impressions of the manufacturing industry and lack of understanding of the importance of these industries to the national economy and of the challenging and rewarding career prospects for graduates in industry. University departments have to tailor their courses to make them attractive to students and employers, but there must be sufficient students to make them viable. Sponsorship of undergraduate students is part of the solution but on its own it is not enough. We are members of several university

department industry advisory panels and take these opportunities to highlight our needs for metallurgists and our research priorities. We are conscious that this is rather ad hoc but have not yet been able to find a more coordinated approach to industry alerting academia to its needs.

Currently, we support about 50 PhD and post-doc projects in a wide variety of disciplines in numerous universities and in the medium term it is likely that these collaborations become more concentrated on fewer institutions. However, we have found that it is not possible to find all the skills and expertise we are seeking, even on a fairly focussed issue, in a single department or institution.

Therefore, we are seeking to form multidisciplinary, multi-institutional partnerships in which we have shared with these partners our medium/long term aspirations, technology roadmaps and property/performance/product targets in the hope that they will be willing and able to apply their imagination, ingenuity, creativity and research skills to help us achieve these aims. We would prefer to work with academics in this way, rather than simply responding to individual academics approaching us for funding of their pet ideas, not that we wish to be overly prescriptive in our approach, but we want to be able to share our technological vision with academics and encourage them to look at our world through their eyes and at their world through our eyes.

We welcome the current review of the RAE, urging that the new criteria will

encourage and support collaborations with industry and multidisciplinary, multi-institutional activities and expertise. We recommend that universities should develop strategic plans and that funding should be dependent on the quality of these plans and the effectiveness of how previous plans have been achieved.

It is important that the metrics adopted by the Government and the funding agencies for university performance and quality actually encourages the attitudes, activities and behaviours that facilitate improved industry-university partnerships.

We have enjoyed a reasonably close relationship with the Welsh Development Agency during the handover of our Welsh Technology Centre at Port Talbot, which we closed in 2002. However, in South Yorkshire, progress in developing the Waverley Advanced Manufacturing Park with Yorkshire Forward has been frustratingly slow, on which we have planned to create a new Technology Centre. We have also been disappointed by the quality of their consultants' reports on the future of the local metals and engineering sector ? which has not adequately recognised the importance, value and prospects for the steel industry in South Yorkshire. Both regions are eligible for EU Objective One funding, but the support available for the steel industry has been limited by the Treaty of Paris legislation.

We work closely with the former Metals NTO (MetSkills) on a wide range of relevant issues especially on schools support, promotion of careers in the

steel industry, modern apprenticeships, foundation degrees and graduate training programmes, but they have little involvement with industry-academic relationships on research and technology transfer.

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