

DTI supports research and innovation

Paul Waskett of the DTI, and a member of the IStructE's Research Panel describes some of the DTI's research work

The Department of Trade and Industry (DTI) supports research and innovation within the construction sector, primarily through collaborative schemes which bring together the research community and industry. The programme is driven by key policy aims established in Prospectus 2000 – the principles of *Rethinking construction* married to *Building a better quality of life*, the Government's strategy for sustainable construction. The examples below show the wide range of recently completed DTI-funded work.

Technological solutions

One of the aims of the programme is to provide better technological solutions to the problems faced by construction businesses. A wide range of tests undertaken on multi-storey concrete and timber frame demonstration projects at the BRE Cardington facility have attracted considerable industry interest. A fire test of the timber frame went a long way to dispel doubts over the safety of high-rise timber based structures.

Exciting on-going projects on timber include:

- ground-breaking work by BRE on adding value to UK grown timber by advanced sawing, drying and gluing;
- TRADA work on the development of new methods of on-site flitch fabrication.

Buildability

'Buildability' is a key factor to competitiveness and the quality of construction. Key outputs included:

- a CIRIA-led project producing useful guidance on the engineering properties and durability of treated ground,
- University of Dundee work on the use of conditioned pulverised fuel ash in concrete.

Lessons from the natural world

The development of new knowledge through more fundamental research has been highlighted by an innovative and radical look at Animal Architecture. Gaia sought inspiration from animals which build structures to feed into development of the built environment. The project

showed the vast potential for improved membrane science (ie, relating biological membranes to damp-proof courses and roofing fabrics), fastenings, tools design, structures and climate control by extracting lessons from the natural world.

Integrating design and construction

Integrating design and construction is a major goal of *Rethinking construction* and has the potential to provide considerable customer benefits.

CONSTRUCT's development of the *National Structural Concrete Specification* is a straightforward, yet definitive specification, which encourages efficiency and quality of construction while reducing commercial risk and tender cost.

Other work in this area includes comprehensive testing, such as BREs work to justify Eurocodes on plastically analysed portal steel frames.

The programme also funded the Timber and Brick Consortium to further improve performance in the timber sector by developing a third party accredited quality assurance scheme for the on-site erection of timber-frame buildings.

The QA scheme goes beyond quality management by incorporating product and design conformity criteria. Work to improve the construction process within the programme includes the influential Tavistock Institute/ Ministry of Defence Building Down Barriers (BDB) project. The BDB prime contracting model for supply chain management has enormous potential for construction supply integration.

Code changes

Many DTI 'Partners in Innovation' research projects that have been under-

taken in the past few years have either helped to influence the development of European codes or have been used to inform UK designers and contractors on Eurocode requirements and the difference between these and British Standards and Codes.

UK research bodies, such as BRE and SCI, also have representatives on the CEN technical committees responsible for developing Euronorms and Eurocodes. These UK members use the advanced data and improved technical knowledge derived from UK research projects to ensure that UK interests are not forgotten when European codes are being harmonised.

Projects are also being undertaken to support the development of National Application Documents (NADs) for the UK. These are used in conjunction with ENV (European Pre-standards) to help designers familiarise themselves with the use of Eurocodes and with any modifications necessary to ensure they are compatible with UK practice.

Best practice programmes

DTI programmes have been providing funding for both the Construction Best Practice Programme and the IT Construction Best Practice Programme.

The best practice programme has a key role in ensuring the industry is made aware not only of the range of Management Best Practice but is given help in putting it into practice (web: www.cbpp.org.uk).

The ITCBP focus in 2000-2001 was on the needs of the consultancy sector, following work undertaken the previous year by the Building Centre Trust on determining project-based IT practice within SMEs (web: www.itcbp.org.uk). In addition to the ITCBP, a number of IT-related research projects were supported, a good example of which is the project led by Stent, examining object modelling in the handling of project data during the piling process.

Business improvement research projects

Business Improvement research projects have included:

- TRADA work to provide improved new statistical information for the UK timber industry, aiming to facilitate management development of markets for both British produced and imported wood products.
- CIRIA work that concluded a radical update of the Environmental Handbooks helping companies tackle environmental issues in a practical manner. se

A list of recently completed projects can be download from the DTI website (www.dti.gov.uk/construction); and further details from the Programme database at www.databases.dti.gov.uk/construction/projects.asp

