

ABE TECHNICAL VISIT TO DRESDEN

The Association of Building Engineers is proud of its relationship with the Verein Deutscher Ingenieure (VDI – Association of German Engineers). The opportunity to exchange information and discussions of both academic and technical development both within the UK and Germany is essential as mobility within the industry continues to increase and professionals must be prepared.

The relationship was further reinforced by a recent visit by the President, Diane Marshall, and the Chief Executive, David Gibson, to the Technische Universität Dresden where they were hosted by Professors' Manfred Curbach and Rainer Schach. They were formally welcomed by Manfred on behalf of the VDI who passed on the compliments from Achim Eggert, Head of VDI International.

Following the welcome was a presentation explaining the developments taking place and the facilities within the University linked to the main areas of learning and research.

Academic studies within Germany, and in particular Dresden, are delivered over tensemesters (five year programme of study), successful completion of the studies in Dresden resulting in the status of 'Diplom Ingenieur'.

The themes available within the University include civil engineering, structural engineering, construction and site management, urban development and transportation, water engineering, building ecology and environmental protection.

The Dean, Rainer Schach, provided an overview of current activities within Germany and discussed implications of skills shortages and the take up by students. In many areas shortages of qualified engineers able to deliver civil and building solutions is at a high level, utilising new technologies and applying current research are apparent.

The initial presentation was enhanced by a range of subject specific discussions relating to civil engineering, concrete structures and new technologies, hydraulic engineering and the application of ongoing research to address real problems in the local, national and international arena.

The University is committed to the ethos of research and is supported by the Government with funding linked to research and the achievement of PhDs for 'researchers and scientists'. These research students are fully supported in conjunction with private funding, by laboratory and technical personnel. In excess of 150 people are active within a research context at the University.

Dresden, as a city, occupies the second largest geographical area within Germany and has been subject to significant growth and development over the last 50 years, with many historic and cultural buildings being reinstated and many modern buildings created utilising new technologies within their structural processes.

From a building engineering perspective, it was impressive to see skills applied to both new and reinstated structures with high levels of craftsmanship, quality and engineering practice being applied.

Dresden not only experienced destruction in the 1940s, but also received significant damage during the floods of 2002. Significant engineering developments have been taking place and these are reinforced by the hydraulic research carried out under the guiding hand of Professor Hans-Burkhard Horlacher.

In considering the hydraulic and river research, linked to flooding, discussions encompassed the issues relating to climate change. The changing environment warmer/wetter is challenging the concepts of 50/100 year flood cycles and the levels of uncertainty are increasing. This is providing a shift from deterministic to probabilistic design and a shift in emphasis to prediction by modelling.

Research projects include the Elster Reservoir at Leipzig which is considering river restoration and an integrated river concept focussing on ecological and water quality requirements. The research is exploring measures to facilitate the flow of flood waters. Areas under consideration include the testing for sediment deposit, material suspension and flow patterns linked to contaminant breakdown, riverbed scour and erosion. Further research is linked to a flood retention reservoir at Neider pobel.

Discussions allowed the review of technical, cultural and social implications linked to the flood experience recently affecting parts of the UK and share the understanding that research provides at local, regional, national and international level.

A further area of detailed discussion related to the developments linked to flexural concrete and use of the integration of fibre and mesh layers; enabling thin, but strong remedial layers to be provided to the existing structures. Aspects relating to the concrete technologies and hydraulic research were experienced during a tour of the Otto-Mohr-Laboratory for construction and the Hubert Engles laboratory the opportunity to view the design process, creation of concrete units, enhancement and reinforcement of concrete units and their testing to destruction was most impressive. As building engineers we all have the urge to feel and handle the materials with which we work and to participate and view the rigour in which research ideas are developed and tested.

The hydraulic Hubert Engles laboratory provided the opportunity to view scale models of projects proposed for the development of flood control and relief flood measures. The research was utilising balancing factors, green reservoirs and diversion systems. Much of this work can be seen in the accompanying photos for this article. Future papers will be submitted in these areas by the University for dissemination through the Building Engineer.

The visit was most positive and the University have taken up membership of the Association as academic affiliates with Professor Manfred Curbach completing the appropriate forms with Diane in her role as President of the Association.

David Gibson