GRCA Congress report

The 16th International Glassfibre Reinforced Concrete Association Congress was held this year in the historic city of Istanbul. The venue was chosen because of the extensive use of glass-fibre-reinforced concrete (GRC) façade cladding in and around the area with virtually all new developments featuring this exciting material. *Concrete* report.

Over 150 delegates attended from over 30 countries to hear presentations and papers given on various subjects as well as visiting GRC projects and two of the world's largest GRC production plants. Delegates also included some of world's leading architects and engineers, who have discovered the benefits GRC can bring to their projects.

The congress was opened by Hüseyin Bilmaç, chairman of the Association of Turkish Building Material Producers (IMSAD). The two-day programme of papers was divided into several important topics. Delegates were amazed at the high level of activity in the Turkish construction materials sector, with exports particularly strong – due, in part, to the region's GRC manufacturers.

GRC in the environment

A series of papers was presented by delegates from the USA, Iran, UK and Germany regarding GRC's contribution to sustainable and 'green' construction methods.

Many delegates were surprised to hear how GRC is environmentally friendly. Significant facts were presented regarding the production of cement, which contributes to approximately 5% of the world's carbon emissions. The lower cement content of GRC products results in significant CO_2 emission savings over other forms of precast concrete cladding. Delegates presented papers that compared the BREEAM ratings of GRC to other products, most being pleased to note that in a typical construction of GRC cladding, cavity, EPDM, insulation, light steel stud framing and internal drywall lining, GRC achieves an A+ rating. This is far higher than most other cladding materials.

However, everyone was reminded that the industry needs to continue its research and development to improve GRC as a sustainable building material. New raw materials continue to be developed including exciting advances in the use of titanium dioxide modification to produce even 'greener' GRC.

Research and development

GRC manufacturers and universities in both Turkey and Japan have been carrying out extensive research and development in relation to the behaviour of GRC in earthquake conditions. These include full-scale shake table tests using GRC cladding panels fixed to large-scale steel structures. The videos presented showed the scale of seismic impact to which the panels and their associated fixings were subject – all performing well beyond expectations and underlining how GRC can perform in the most extreme environmental conditions.

Delegates were also presented papers on how the use of modified matrices can enhance GRC performance and the increased strengths obtained by the use of textile and mesh alkali-resistant fibre reinforcement.

The session on products and projects proved to be the most popular with attendees.

It commenced with a presentation by Ross Palmer, a partner at Foster + Partners, on the Masdar project in Abu Dhabi. The design of the development was inspired by the architectural and urban planning of traditional Arab cities and had to consider various issues. These included thermal performance, sustainability, design life, maintenance, aesthetics and cost. After a lengthy consultation GRC cladding façades were decided upon. These were manufactured by Hong Kong-based Canbuild. The successful completion of the project

(Photo: Fibrobeton Yapi Elemanlari Istanbul.)

Top: Capital Hill by Zaha Hadid and Fibrobeton won the Project Award.

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Above: Winners/Highly Commended – Project Awards.

GRC replaced the original cladding during restoration work on Sheppard Hall at New York's Central College.

(Photos: Elemental Architecture/NYC.)

has led Fosters to use GRC on other major projects throughout the world. The recognition of GRC by such a world-renowned architect encouraged all those attending.

Another world-famous architect represented was Zaha Hadid, whose practice has designed the iconic and futuristic Capital Hill project in Moscow. Again GRC was chosen to provide the rectilinear and curvilinear cladding required. These have been supplied by GRCA AMS-certified producer Fibrobeton from Turkey.

The Chinese manufacturers were also well represented with several presentations of large-scale GRC façade cladding projects in their country. This included one project with over 600,000m^2 of GRC panels. Likewise several presentations covered large-scale cladding panels in Australia and New Zealand, as well as India.

Most delegates were fascinated by a presentation by award-winning New York architect Carl Stein. His practice has spent the last 20 years working on the restoration of Sheppard Hall at the city's Central College. This impressive Gothic building was built in 1906 and featured extensive use of terracotta detailing.

Over the period since its construction all the terracotta had deteriorated to the point where all needed replacement. After extensive research, including accelerated weathering tests, GRC was chosen as the material most suited to replace the original claddings.

Various improvements to production methodology were shown to the attendees. These included new ideas for panel strengthening, and attachment of supporting steel stud frames to GRC skins.

Design

Various papers were presented on the design of GRC and associated support systems.

Jonathan Wilson of Arup Facades presented an extensive paper on the selection of GRC for a major project in Saudi Arabia. Another paper from Zaha Hadid, on how GRC was chosen for a complex façade system.

The presentation also described how 3D modelling software had been used to simulate the various environmental stresses to which the cladding would be subjected.

Authors from the USA, Turkey, Australia, New Zealand and China shared their experiences in the design of GRC façades that could withstand the forces that seismic and hurricane conditions can impose on a structure.

Production

Various improvements to production methodology were shown to the attendees. These included new ideas for panel strengthening, and attachment of supporting steel stud frames to GRC skins. All were well received; however, what was striking about these presentations was how the basic manufacturing techniques were the same at every plant irrespective of location.

Awards

The highlight of the congress was the individual, company and project awards voted on by the membership and attending delegates. These were presented by GRCA chairman Bob Faulding at a special gala night. In superb surroundings the following presentations were made.

Individual Awards

These are awarded to people, who in the opinion of the membership, have contributed significantly to the GRC industry over a long period. They were awarded to Ian Morrison, former GRCA technical advisor, who retired this year and Ayhan Babacan, who founded manufacturer Fibrobeton in the mid-1980s and has worked tirelessly and successfully to promote GRC in Turkey along with developing innovative GRC products.

Company Award

This was presented to Fibrobeton of Turkey in recognition of its contribution to the development of the GRC industry in Turkey, having been the first to introduce the material 24 years ago. The award was received by senior board members Dundar and Arzu Yetisener. Fibrobeton has recently made a significant investment in a new manufacturing plant using the latest GRC manufacturing technology at Duzc, which produces GRC not only for the Turkish market but also for projects in Russia and other CIS states plus the Middle East and Europe.

Project Award

For the first time the shortlisted finalists for the project award were presented at the congress and the delegates were asked to vote for the winner. Finalists included Masdar by Canbuild/Foster + Partners, Capital Hill by Zaha Hadid and Fibrobeton, three stunning examples from China and Dap Yapi Towers by Betofiber of Turkey. This resulted in very close voting with only seven votes separating the winner and second place.

All finalists were presented with certificates. The winner was Capital Hill by Zaha Hadid and Fibrobeton. This futuristic residential development impressed all by its innovative use of GRC. The award was collected by Muhammed Marasli, general manager of Fibrobeton.

In close second place was the Foster + Partners Masdar project, the award being collected by Trevor Gregory, Canbuild managing director.

The congress was a huge success, enjoyed by all participants and delegates. Everyone came away enthused by the possibility of a growing and vibrant industry, which finally seems to be coming of age after 40 years. ●

The Masdar project in Abu Dhabi by Canbuild/ Foster + Partners.

(Photo: Foster + Partners.)