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### TERMINALS HISTORY IN THE MAKING

**TERMINAL 5: HISTORY IN THE MAKING**

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**BA’s T5 Project Director, Andrew Wolstenholme, and Head of Design Management, Dervilla Mitchell, were the guest speakers at The Royal Academy of Engineering’s New Year’s Reception and Lecture on 19 January. Hosted by the Academy President, Lord Broers, the Lecture focused on the management and design principles underpinning the project’s success.**

**IN CONTEXT – THE TERMINAL 5 DEVELOPMENT**

Overall, and organised by BA plc, Heathrow airport is the busiest international airport in the world. Today, Heathrow handles 67 million passengers a year, but its original infrastructure was designed for far less. To increase the airport’s capacity to 95 million passengers a year, BA will open one of the world’s most advanced new airport terminal facilities in March 2008. Construction began on the £4.2 billion Terminal 5 development in July 2002. Currently one of Europe’s biggest and most complex construction programmes, it includes two terminal buildings, a network of over 13km of bored tunnels, a new air traffic control tower, airfield infrastructure, a 4000 space multi-storey car park and a hotel. Just over 1000 workers are employed on the project, but a total of 50,000 people will have been part of this project overall. The integrated client and construction team has reached 50% completion on time and within budget, and has exceeded its own safety record.

**A NEW APPROACH TO PROJECT MANAGEMENT**

BA has spent £1 billion – around £30 million per month – on the development of T5 this year. By the time T5 is finished, it will be the fourth largest airport in Europe in its own right. The scale of the development is such that the 13km twin transport tunnels to the central area of T5 are a major engineering feat in themselves. The logistics of the site are particularly challenging, as 100 deliveries have to be transported to the site each hour and 20,000 cars move on hazardous site conditions, thus improving safety and programme certainty. It also reduced the amount of work that would be done under more hazardous site conditions, thus reducing the amount of work that would be done under more hazardous site conditions, thus reducing the risks of working at height and allowed cranes to operate below the ‘inner horizontal plane’ that is imposed by the airport operations. This early erection of the roof allowed the superstructure frame and fit out services to be built under cover and led to greater programme certainty, says Dervilla.

Similarly, the air traffic control tower also had to be assembled in a way which minimised disruption to airport operations. The top 27m of the tower – including the visual control room – was constructed and partially fitted out on a site near Terminal 4. This 100 tonne section was then moved almost 2km to its final site in the centre of the airfield adjacent to Terminal 5. To complete the structure, jackaging was used again to lift 12m steel mast sections skyward. The construction of the roof and control tower thus effectively combine innovative designs with the new approach to project management which characterises the development of Terminal 5.

**DEMONSTRATING TEAMWORK THROUGH DESIGN: BUILDING FOR 30 MILLION PEOPLE**

Designed and engineered by the Richard Rogers Partnership and steel manufacturer Severfield-Rowen, T5 has been described as engineering of Brunelian proportions. The teamwork so fundamental to the project management of the terminal can also be found in the design management. One of the characteristics of the terminal is that the roof is open to the main terminal building, which creates a flexible internal space for vertical circulation and passenger routes. The innovative design allows BA to alter the building internally in the future without the constraint of roof columns.