Foster & Partners returns to Clydeside, 16 years after completing the ‘Armadillo’, to build an adjacent ‘Spaceship.’

Critique: Johnny Rodger.
Photos: Nigel Young.

Traditionally when the players came to town to entertain they found a spare bit of land on the urban limits where they could be daring, edgy and give the townsfolk a splash of colour. It’s not too much of an exaggeration to say that this is essentially what’s happening with the Hydro, a new 13,000-seat music venue completed by Foster & Partners on Glasgow’s Clydeside.

Nicknamed ‘The Spaceship’ by locals, the 45-metre-high auditorium beams colour out across the grey skies of Glasgow. In the post-industrial city, of course, it’s not always necessary to go right to the edge of town to find accommodation for such a massive venue: any old brownfield site might be redeveloped as a cultural district, and the advantage of the filled-in docks on the banks of the Clyde is that in a dense urban environment like Glasgow, you’re only
drive through these portals to deliver sets right onto the stage. That’s not the sort of thing that can be done in a bijou Edwardian Frank Matcham theatre in a city centre.

The skeletal concrete structure is clad in a wall of EFTE cushions, which are kept inflated at a low pressure by fans. On concert evenings these walls are fully illuminated by an array of LED lights said to have a range of 12.8 million colours. The lighting system is programmable and dimmable so that any incoming act can apply its own ‘branding’ colours. For the viewer on the outside, the concert is visually ‘trumpetted’ across the city. For the concert-goer, however, mounting the stairs and standing in the foyers between the back of the seating decks and this translucent wall, it means bathing in the luminous display and participating in the visual build up to the performance itself. It could perhaps be described as the modern technological equivalent of the experience the fin-de-siècle listener would have had in

with the Hydro, which sits up like a tipping cup on a green-planted encircling bank – the saucer – which keeps the raised form distinct and in the round above the surrounding edifices.

The structure itself is efficient, with tilted in-situ concrete fins supporting a crescent-shaped deck of seating within the circular perimeter. This arrangement means that a greater proportion of seats in the middle face square onto the stage, and fewer, at the points of the crescent, wrap around the stage area. This stage area is separated from front-of-house by two large stage doors on the west and east sides. We see again here the advantage of such a site for this type of venue, for full-size articulated trucks can

The arena has capacity for 12,000 seated or 13,000 with standing in the performance bowl, and includes 11 hospitality boxes, two large VIP suites and a club seating level. As well as accommodating a wide variety of concerts and stage acts, the SSE Hydro will host retail and gymnastics during Glasgow’s 2014 Commonwealth Games. The seating bowl is enclosed by a lattice steel roof and wrapped in translucent ETFE cushions. The 1,400 tonne steel diagrid roof, one of Europe’s largest free-spanning roof structures, is raised on a circular array of angled concrete fins which also support a tilted seating bowl, designed to provide the best possible viewing angle from every seat.
Lluís Domènech i Montaner’s Palau de la Musica auditorium in Barcelona, where the music is enhanced synaesthetically by garish moving reflections from the coloured glass and majolica tiling.

The Hydro is built on a 26-hectare site which formerly contained parking areas for the SECC Conference Centre. The parking facility is now housed in a new multi-storey car park. This structure was part of an overall masterplan, but nonetheless the stacking of these vehicles brings us to the question of access, and of how well the leisure and media facilities are knitted into the existing city. Clearly such large venues need to be able to accommodate people drawn from beyond the city and the region, so is it just a question of urban planning?

The usual criticism of the area is that as an isolated and windswept park dotted with such perfectly formed protruberances, the zone doesn’t participate in or communicate fully with the grammar of Glasgow’s built form or the vibrancy of its street life. It is true that there is a good underground rail link to the quarter, but despite its proximity to the city centre few people would be encouraged to walk or cycle up the desolate streets leading past motorways and industrial scale showrooms. On the other hand space needs to be made not just for huge venues and the kit involved, but for the safe management of vast numbers who come some distance to attend. To find room for this so near to a city centre is an achievement in itself.

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Arup writes. In terms of the roof design, the aesthetics required a ‘spiral’ structure that could achieve a clear span of 125 metres. The solution was to provide a structure that acted as a dome in the final condition, but as a series of beams during construction phase. Using a ‘performance-based dynamic assessment’, which considers ‘accelerations’ of the structure, savings were made by avoiding unnecessary structural reinforcements. Sensors allow the arena to be rapidly reconfigured while minimising energy consumption and responding to the demands of the various spaces. Central boilers, water storage tanks, chillers, electrical switchgear and the standby generator are housed in an adjacent energy centre.

The use of a full 3D model enabled preconstruction and off-site manufacture to be optimised, improved installation quality and reduced materials use. The model was used to coordinate service routes within and around the various spaces. Central boilers, water storage tanks, chillers, electrical switchgear and the standby generator are housed in an adjacent energy centre. Savings were made by avoiding unnecessary structural reinforcements. Sensors allow the arena to be rapidly reconfigured while minimising energy consumption and responding to the demands of the various spaces. Central boilers, water storage tanks, chillers, electrical switchgear and the standby generator are housed in an adjacent energy centre.

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The use of translucent ETFE allows the facade to ‘disappear’ to show the activity within, or host video or Gobo (Goes-to-be) projection as required. The facade LED scheme features 16 million colour combinations, and uses colour change, movement and projection to achieve different effects. The system uses additive colour mixing rather than subtractive (as at the Allianz Arena in Munich by Herzog & de Meuron), so only the colour is produced rather than using filters to subtract unwanted colours. The auditorium has one of the largest LED schemes in Scotland. Though at the early design stage the technology was not sufficiently developed to light the arena successfully. The lighting consumes a fraction of the energy of a traditional solution and greatly reduces heat generation, allowing ventilation and cooling loads to be minimised both in capital and running costs.

The project, handled out of Arup’s Edinburgh and Glasgow offices, was led by project director Martin Sundberg and project manager Iain Lumsden, with David Brodie (mechanical), Douglas Whyte (electrical designer), Patrick Elsdale (lighting). Project manager Ian Lumsden, with David Gillespie and Glasgow offices, was led by project director Martin Sundberg and project manager Iain Lumsden, with David Brodie (mechanical), Douglas Whyte (electrical designer), Patrick Elsdale (lighting).