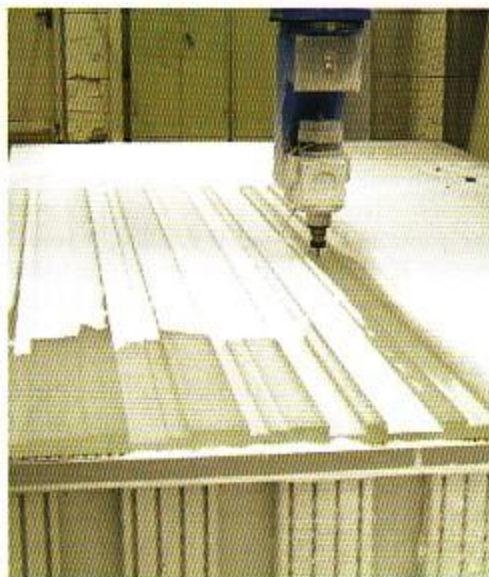


Oxford Street, eat your heart out. Squire and Partners' acrylic waterfall of light for fashion retailer Reiss is glamming up a London side street. By Jan-Carlos Kucharek

# I'm looking through you

Turn into a quiet road just behind London's Oxford Street and you're brought up short by what looks like a waterfall caught in sunlight. In fact it's the innovative illuminated facade of fashion chain Reiss's £16m new headquarters. But why in this relative retail backwater? According to Squire and Partners' project architect Alessandro Mangiavacchi, it is part of the Reiss's strategy to pick low-key, lower rental locations and, by introducing its corporate brand, to alter the nature and marketability of the street itself.

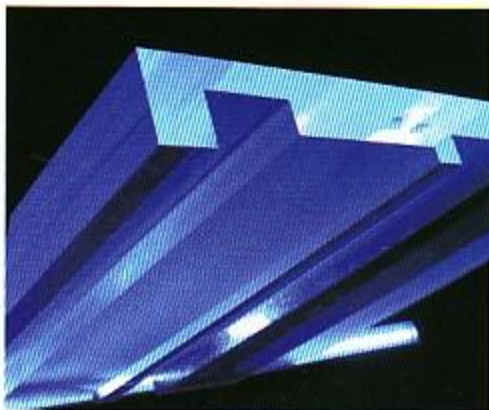
The Barrett Street HQ, with its shimmering LED acrylic facade, is a bold, bright and sophisticated statement in a darker corner of this busy shopping enclave. Beating off competition from David Adjaye, Allies and Morrison and Make Architects, Squire and Partners convinced company director David Reiss and adviser d-rav that its concept best represented the brand's pared down aesthetic. Reiss himself is no stranger to the less salubrious shopping streets of London, having begun his career as a market stallholder. It's fitting that he's chosen to set his penthouse above this curtain of light.



Acrylic sheets are routed out in the factory.

Mangiavacchi explains how the facade took almost a year of design development after they had won the competition, going through various manifestations in the process. 'While it looks like a simple facade, it was technically complex to achieve,' he explains. 'From the outset, we looked at various materials, from cast glass to dichroic films, but the more that we spoke to manufacturers, the more reticent we got about using glass at all. We found ourselves either talking to big cladding manufacturers not interested in working at that level of complexity, or smaller firms who were prepared to do the work, but whose costs for doing so were coming in exceptionally high.'

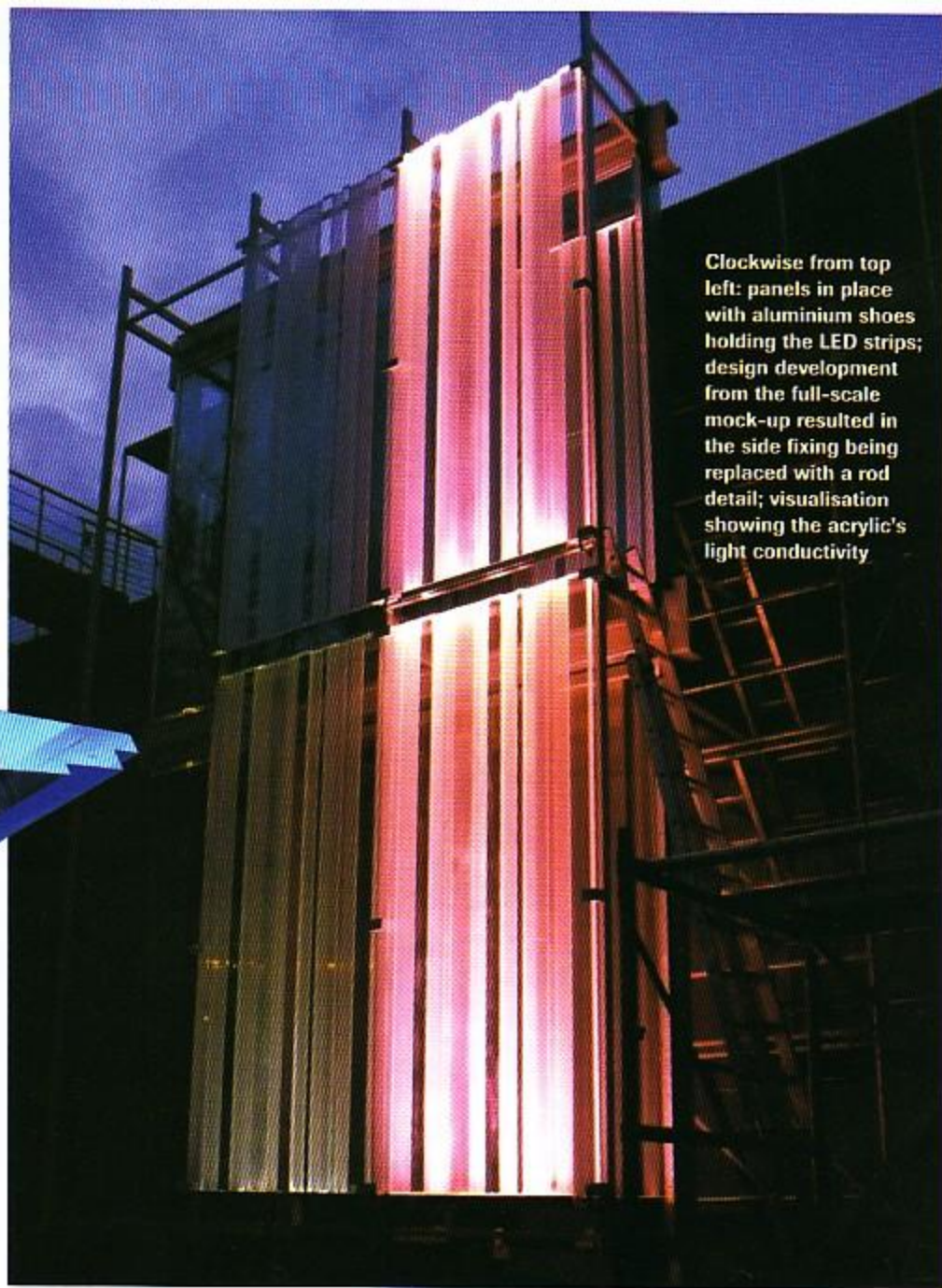
Squires started looking at plastics, a process that involved talking to almost every manufacturer in the UK, as well as suppliers in Italy, Switzerland, Germany, Dubai and China. In the end, the firm opted to develop the design with German firm Tuchschmid, consultant engineer Fluid Structures, and Hilson Moran as services engineer. This culminated in a full-scale mock-up of the facade being built in Switzerland to analyse its viability and light conductivity. ▶



► The decision was made to develop what was effectively a triple-skin facade, comprising a double-glazed skin to seal the building, and an acrylic exterior skin to create the illuminated curtain effect. Light conductivity and dispersal across its face was achieved by milling various serrations vertically up the 50mm thick sheets to create the illusion of 'depth' – requiring some sharp thinking from the design team to realise. This was due to the fact that the milling process created intrinsic weaknesses in the material, and as each panel was 3.5m high by 1.5m wide, even a small crack in the acrylic could cause catastrophic failure of the panel.

The biggest challenges then became dealing with the shear failure, thermal expansion and the fixing of the panels to the secondary frame – solving these concerns was the key to the success of the whole facade, and involved some vital stress calculations courtesy of Lucerne University.

To try and deal with stresses at source, at the edges of the cut, radii were formed out of each of the laser-cut grooves, but the architects still needed to deal with the panels themselves. 'From the mock-up we ascertained that each of the south-facing panels could expand laterally by +/-8mm and vertically by +/-4mm,' explains Mangiavacchi, 'but we also had to allow the panels to flex under wind load, as the greatest stresses are created at the centre of the panel where it flexes most.'



Clockwise from top left: panels in place with aluminium shoes holding the LED strips; design development from the full-scale mock-up resulted in the side fixing being replaced with a rod detail; visualisation showing the acrylic's light conductivity

'To deal with failure we ended up developing a "teardrop" detail at the panel edge through which we ran a rod that fixed back to the secondary structure. The design allowed the panel to move, but if it failed, it would remain held by a combination of this fixing and the shoe detail at the bottom of each panel holding the low-energy LED luminaires that light the facade.'

The facade, too, had to meet stringent Part L requirements, requiring some major input from Hilson Moran to prove the building's performance. While there was thermal mass intrinsic to the concrete slabs, the client was also keen on a fully glazed building, putting onerous demands on the design team. Fortunately, the acrylic facade helped here, too. Not only does it reduce solar gain on the coated double-glazed facade, but the cavity between the two acts as a passive chimney, purging heated air from above and drawing in cooler from below. In addition, the access deck that allows

for facade maintenance of the double-glazed skin performs a secondary role as solar shading, further mitigating solar gain.

With an electronic control system that changes the light levels and allows each panel to be individually controlled, the potential for creating a multitude of lighting effects has been built into the design – and so it should be; at £4000 per m<sup>2</sup>, this is no off-the-shelf facade. So is it likely that the research and development aspects of the Reiss project will be carried forward onto other developments?

'When it was in design development, a lot of clients came into the office and commented favourably on the design, and we're even getting positive comments from people who are just walking past,' says Mangiavacchi. But on the whole commercial clients are a conservative bunch who prefer using tried and tested techniques, so he suspects the innovation of this particular light may, unfortunately, remain under a bushel. ■