

Case study



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Schöck and Hollowcore innovation benefits Stoke Extra Care scheme

A PFI Extra Care complex at Abbey Hulton, a village just outside Stoke-on-Trent, is another UK project benefitting from a faster build time by using innovative off-site manufacturing that combines Isokorb structural thermal break units from Schöck with the Hollowcore system. The Holdcroft Fields development at Abbey Hulton, is part of an on-going scheme to build three Extra Care villages in the Stoke area for those over 55 years of age. These are being developed over the next two years by Sapphire, a consortium of construction, housing, facilities management, property development and architect professionals.

Holdcroft Fields will provide 175 self-contained one and two bedrooled apartments with extensive communal facilities including a restaurant, library and fitness suite, enabling the residents to continue living independently with the same privacy they would have in any other kind of housing, but with access to other services and facilities that help them.

There are two distinct but linked three-storey blocks around two central courtyards consisting of mainly traditional brickwork with double pitched tiled roofs on a mixture of piled and traditional foundations. The buildings are designed to meet BREEAM Excellent standards making them both energy efficient and environmentally friendly.

Many of the apartments throughout the complex feature spacious balconies, so the prevention of thermal bridging is a critical consideration. Quite apart from heat loss, condensation can lead to structural integrity problems and worse, it encourages mould growth, which could have serious medical implications for elderly residents in the form of possible respiratory problems and dermatitis.

One of the most effective countermeasures on the market is the Schöck Isokorb structural thermal break; units that offer outstanding thermal insulation properties and unobtrusive connection detail. They dramatically reduce thermal energy loss in connective areas and enable inner surface area temperatures to remain well in excess of those likely to cause mould formation and condensation.

It is the Isokorb type KS14, for concrete-to-steel connectivity that is being installed at Holdcropft Fields to meet the steel cantilever requirements. This is in conjunction with the Hollowcore floor system and to facilitate the method, the precasters broke out selected cores and cast reinforcement bars in their works. The KS14 thermal breaks were then fixed to a template, so they would match the broken out Hollowcore, the complete modules supplied to site, dropped into position and the broken out Hollowcore filled with insitu concrete.

Because the Hollowcore has voids extending its full length, there is a huge weight saving over floor slabs of equal thickness or strength, resulting in both transportation and material cost efficiencies. With the slab sizes on the project being typically 1.2m wide x 7.5m long, they are also faster to install and provide an immediate working platform for following trades.

Whilst the Hollowcore element of the construction brings its own benefits to any project, the Isokorb type KS14 has its own proven performance values as well. It provides BBA Certification and LABC Registration, as well as comfortably exceeding the requirements of BRE IP1/06 and Part L of the Building Regulations. Here the temperature factor used to indicate condensation risk (f_{RSI}), must be greater than, or equal to, 0.75 for residential buildings. A stipulation comfortably exceeded by incorporating the Schöck product into the design.

It should be highlighted here too that there are misconceptions in some areas of the UK marketplace that certain 'common solution' alternatives for concrete-to-steel connections perform thermally just as well as the Schöck Isokorb type

KS14 structural thermal break element. Additionally, claims have been made on occasions that these alternative solutions are more cost-effective than the Isokorb. This is not true in either case and to bring clarity to the situation, an independent investigation into the various criteria concerning the effectiveness of steel balcony connections to concrete slabs, has been carried out by the Oxford Institute for Sustainable Development, at Oxford Brookes University.

The aims of the investigation were firstly to determine the heat loss, minimum surface temperature and hence temperature factor (f_{RSi}) resulting from use of Schöck Isokorb type KS14 units connecting a steel balcony support to a concrete floor slab. Secondly, to compare the calculated performance with that of structurally equivalent solutions. In the test all three alternatives to the Schöck solution failed against the criteria required for residential buildings⁽¹⁾.

Specifiers, contractors, developers and those in procurement therefore need to be wary and question any product performance claims involving bespoke solutions. Often they will be found wanting and the lack of transparency in determining true performance values may well mean a product being installed that is simply not fit for purpose. Due to building site 'tolerances' it is vital that thermal product solutions should, at the very least, exceed minimum standards and in many cases even that may not be good enough.

For your free copy of the Schöck Specifiers Guide and / or the new Thermal Bridging Guide contact the company on 01865 290 890 or visit www.schoeck.co.uk

¹⁾ A free copy of the full Oxford Brookes report is also available (Reference: 120927SCH – 27/09/12).

Contact Schöck on 01865 290 890 or email: design@schoeck.co.uk

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Notes to the editor

A leading European supplier

Schöck has grown to become Europe's leading supplier of innovative structural load bearing insulation products. The main product is the Schöck Isokorb – a thermal break for various types of cantilever constructions in new buildings and for renovation. Its headquarters are at Baden-Baden in southern Germany and there are subsidiary companies in Great Britain, France, Austria, Switzerland, Italy the Netherlands, Belgium, Poland, Hungary, Russia, Japan, Canada and the USA. Sales teams and partners operate in many other European countries and also Australia and South Korea. Schöck is committed to providing the highest level of technical back up and comprehensive customer service to the construction industry.

Pics and captions



Exterior shot of part of the Holdcroft Fields development

Image: courtesy of The Eric Wright Group of Companies



Hollowcore and Isokorbs in position

Image: Schöck Bauteile GmbH