

Data centre's electrical network optimised by installation within concrete

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Developing a high-tech data centre to house blue-chip companies demands a quality finish. Setting the electrics within the structure's concrete walls achieves a premium design, but with businesses waiting to relocate, the project has to be completed on schedule. CMB Electrical is completing a £2.5m electrical installation in partnership with Spelsberg UK, which is providing its IBT enclosures for use within the in-situ concrete cast.

Swansea's Kingsway project is a flagship datahub intended to advance the city's commercial and technical evolution. Bringing high-speed fibre connections to optimise data transfer and storage, the nine-story building will also feature offices, conference facilities and a restaurant. The Kingsway project is using a modular building approach, saving time and money on site.

Setting enclosures in concrete

Kingsway is CMB Electrical's largest ongoing project. The Cardiff-based electrical services company works across South Wales and the West Country with up to 80 employees at any one time, depending on the scale of current projects. At the Kingsway site, CMB Electrical is responsible

for the electrical installation, which is headed by Managing Director Keith Martin and Mike Prole, the company's contracts manager at site level.

“The architect planned for clean wall surfaces, with all electrical cables set within the concrete,” says Mike. “Spelsberg enclosures were specified by the architect to house various electrical devices and junctions, but up to that point, we’d never used in situ conduit – at least not on a project of this scale.”

Usually, CMB Electrical's technicians install the required devices and cables long after the concrete walls themselves have been assembled into place. Typically, the concrete frame is cast, then positioned, with conduits and trunking suspended from the walls, ready for electrical installers to lay cables and make the connections. Instead, setting over 3,000 enclosures in-situ within the concrete, Mike and his team were initially apprehensive at the prospect.

“It's been an eye opener!” says Mike. “We were sceptical, both that the enclosures would hold, and how the installation could be completed within the schedule, but it's worked brilliantly.”

High accuracy positioning

The Kingsway project has involved coordination between the concrete installation engineers and the electricians. With steel formwork in place for each concrete wall section, the CMB Electrical team installed the Spelsberg enclosures to these frames before connecting them with

flexible conduit. The construction engineers then made the concrete pour. When the mix cures, the enclosures and conduit are securely set, ready for electrical installation when the wall sections are hoisted into place.

“We installed the Spelsberg enclosures using GPS coordinates to define exactly where each enclosure was to be placed in the slab,” says Mike. “We’re literally working to around nine decimal places accuracy on the GPS. This ensures that each enclosure is in exactly the right place to enable straightforward cable installation later on. Using GPS makes the process much quicker than standard location techniques. This was the first time we tried it, and it worked perfectly.”

Installing more than 3,000 enclosures, the only partial fault CMB Electrical identified was to a small section of conduit. Working through winter conditions, burners were used to melt ice on the formwork, and this damaged a partial area, but this was identified and replaced during the quality check ahead of the concrete pour. Spelsberg’s IBT enclosures, specially designed for use within concrete, retain their form throughout the pour and curing process and prevent ingress. Following installation, the enclosures provide high protection for electrical devices and junctions.

Fast project completion

At Kingsway, CMB Electrical has installed Spelsberg enclosures in the ceiling to house lighting, Wi-Fi boosters, mechanical connections, and smoke detectors, as well as all sockets and switches mounted in the

building's walls. The project is two-thirds the way through the in-situ conduit installation as of March 2023, and CMB Electrical is progressing past the third floor in its installation.

"It's been a fast process from the enclosure and conduit installation perspective – faster than we expected," says Mike. "At this moment, all the conduits are up, ready for final installation in a couple of weeks' time."

While Spelsberg's IBT concrete enclosure system has enabled a timely installation, the cost-effectiveness of the approach was also a surprise to Mike. Considering the saving in external conduit, the cost of installation within the wall is the same as CMB Electrical's typical approach.

With the Kingsway building estimated to go live early next year, and a host of blue-chip companies ready to relocate, the project is set to expand Swansea's potential as a business hub.

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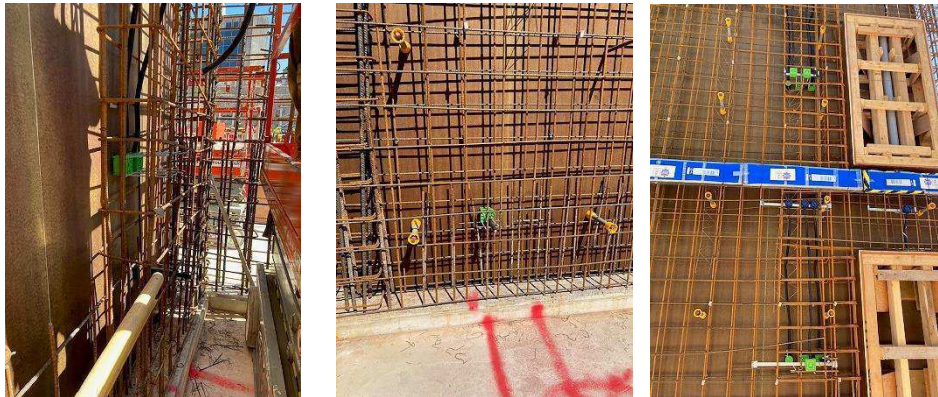


Image 1 - 3: Spelsberg IBT concrete enclosure system at Kingsway Project



Image 4: Spelsberg IBT concrete enclosures

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About Spelsberg

Spelsberg is one of the largest manufacturers of electrical enclosures in the world. With over 4,000 enclosures available as standard and further customisation possible, it offers solutions for almost any application.

With the largest supply of non-metallic enclosures, ex-stock in the UK, its products are often available for delivery within 24 hours; customisation is possible on any product, including bespoke entries, engraved corporate logos or fitted terminals, within 48 hours. Products can be ordered direct from Spelsberg or from most leading supply specialists including RS, Rapid, Farnell and CPC.

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