

Simplifying electrical installations in pre-cast concrete construction

With many advances in the design and use of concrete as a building medium, many savings can be made in time and costs in the modern construction project with the use of precast concrete. However, as the modern world advances, so too must new buildings be able to accommodate the latest technology while still being economic to build. Crucial to this requirement is the ease of electrical installation; and the ability to keep this safely hidden from view is key to producing a modern, aesthetically pleasing project.

The development of improved surface finishes and colouring combined with the versatility of concrete has led to a much improved image of precast concrete as a building material. The relative low costs of the material combined with the ability to cast on-site or use prefabricated panels means that construction times can be greatly reduced along with the overall costs of a project.

However, one issue which still impacts on the efficiency of precast concrete is that the installation of the building services cannot begin until the majority of the physical structure is complete. As the design of modern buildings requires a host of criteria to be met - not least relating to the electrical installations - there is a risk of the various trades competing to work in the same areas of the building, as they all try to meet their individual deadlines, which can lead to lost time and increased labour costs.

One solution to reduce this problem is to install the electrical infrastructure in the fabric of the building when the concrete casting moulds are set out, either on-site or in the panel fabricating factory. In order for this to be effective such a system must be extremely strong and stable, and absolutely resistant to leakage during the casting process. In addition, there has to be assured security of positioning, even when compacting the concrete.

Historically this method of electrical installation has been a calculated risk as there aren't any solutions available on the market which are specifically designed to meet these criteria. However, a product has recently been launched by enclosure specialists, Spelsberg ELS, which has been designed solely for the precast construction industry.

Suitable for horizontal and vertical sections, Spelsberg's IBT System allows conduit boxes, junction boxes, lighting outlets and other installation components to be fixed to the formwork before the actual concrete pouring begins. The housings are fixed to the metal formwork by way of strong magnets, or to wooden formwork by way of nail and patented support spar technique; the required conduit is connected and then the concrete is poured in. When the concrete is set and the formwork removed, all the required housings and conduits are in place ready for the cabling and accessories to be installed.

One of Spelsberg's customers comments: "These are the only housings we have seen that are specifically designed for use with pre-cast concrete. A key advantage is the sealing, which prevents any of the concrete fines from getting inside the housing. This has always been a problem with conventional metal solutions, which need to you to take special sealing measures, adding time, cost and effort to the procedure.

"We have been working with the IBT System now for about 16 months, and it has proven itself time and again as an extremely versatile and straightforward system to use. The support from Spelsberg has also been excellent. Initially we were using just the standard product, but when we went back to Spelsberg with some design ideas, the company was quickly able to tailor a range of products specifically for our needs."

The IBT System range of products are made from halogen-free, high temperature resistant material, with a large choice of sizes that can be assembled easily to fit nearly all requirements. The crucial aspect of sealing is assured with the patented diaphragm system which ensures that after the conduit is inserted, the diaphragm returns to its original position and provides strain relief and sealing without the need for special grommets.

The huge range of products available within the IBT System offers a number of solutions depending on the project in question. Conduit boxes can be fixed in position by nails, glue or by magnets as required by the design of the formwork. Outlet cleats provide the transition point from ceiling to light structural walls, while ceiling outlets provide conduit bending angles below 30 degrees and can be fitted with a ceiling hook to complete installation.

With its IBT System, Spelsberg has been able to offer the perfect solution for pre-cast concrete panels in a number of projects, including hospitals, hotels, educational establishments, commercial offices and residential buildings. The product range, specified for concrete installation systems are, designed to be as strong and stable as the concrete itself while assuring ease of assembly, simplicity of use on site, and a high quality finish.

Aside from the standard low voltage installation, more and more projects require extra low voltage (ELV) transformers for lighting, loudspeakers and network communications cables, such as KNX, for building management systems. This requirement has led Spelsberg to develop the IBTronic range, which is fully compatible with the standard IBT range but offers housings that can accommodate ELV transformers, speakers and LED lighting accessories.

Designed to meet UK, European and US regulations, the IBT system has the potential to reduce installation time and save overall build costs. With the advent of sophisticated building management systems, designing the most efficient electrical system is crucial, but keeping the installation costs to a minimum is also important and this can be realised with this innovative and versatile system.

For further details on the IBT and IBTronic range, along with design and installation advice please contact a member of the Spelsberg sales team. Alternatively a product brochure is available to download [here](#).

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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