Accurate enclosure positioning in pre-cast concrete projects

21st September 2022

Building with pre-cast concrete walls and floors, it's vital that enclosures used to house electrical sockets and devices remain in place during the concrete pour. Movement of the enclosure during this phase can result in installation challenges or wastage of an entire pre-cast wall. Precast Concrete Structures, which specialises in large building projects, has worked with enclosure manufacturer, Spelsberg UK, for over 10 years to achieve reliability for enclosure placement.

Concrete is widely used as a preferred material for large buildings for its durability and speed of construction. Build speed and ease is often enhanced if sections can be pre-cast and delivered for on-site assembly. Precast Concrete Structures designs, supplies, and installs frames comprising pre-cast concrete walls, floors, and staircases, for projects across the UK. This includes buildings such as hotels, student accommodation, and prisons. When walls and floors are installed, they're ready for electrical contractors to fit cabling and devices. This means that enclosures required to house electrical connections, communications cables, and devices, need to be installed at the same time as the concrete walls are cast.

During the cast, pouring tonnes of concrete from heights of 2m presents a challenge for securing the position of the enclosures that can easily move under the flow of the wet concrete. When the concrete sets and the walls are delivered to site, if the

location of the enclosures has been forced to move from the pre-designed position, this can make electrical installation a challenge. The out of position enclosure can introduce obstructions, and in some cases, if the delivered frames don't meet the specified design, they're rejected. This means cost in scrappage, plus extra time required to recast the structures.

"We began working with Spelsberg UK over 10 years ago in order to rid our projects of the problem of shifting enclosures," explains Paul Smith, Technical Manager at Precast Concrete Structures. "The design of Spelsberg's enclosures for pre-cast concrete installation means that during the pour, they cannot move and are held in the specified position. It's such a reliable system that we basically never have to reject a frame through movement of an enclosure. They also keep their shape perfectly after the concrete pour: they're so strong."

Precast Concrete Structures has installed thousands of Spelsberg IBT polycarbonate enclosures across projects including 1,400-room HMP Berwyn, 350-bed student accommodation at the University of Cardiff, and the 100-bed Sleepers hotel, Newcastle.

Secure positioning is achieved by a strong magnet embedded within the enclosure that attaches to the formwork or base ahead of the cast. If formwork or a metal base is unavailable, the enclosures include a screw that ensures secure attachment. Extra security is also provided by ties that can attach to formwork or frames.

"This means we can commit to a box position within plus or minus 3mm of the original design, which is a very close tolerance when you're working with concrete," says Paul.

Following cast, the enclosure's original protective face that prevents ingress of wet concrete is cut away. When the electrical connections have been installed onsite, the installer can fit a new cover, specially designed by Spelsberg that provides additional flexibility in adjustment.

"In reality, although we work to a 3mm tolerance, we could allow up to 10mm of movement of the enclosure during cast, because the Spelsberg enclosure face can be moved as required during electrical installation to suit the desired position," Paul adds.

Installation speed pre-cast has also increased thanks to Spelsberg's conduit design. Previously, Precast Concrete Structures used enclosures with conduit already attached, and installing a 3m length within the cramped space of formwork was a challenging and time consuming task. With Spelsberg's IBT design, conduit is fed in after the enclosure has been secured, pushed through the entry point that locks the position and forms a seal.

Precast Concrete Structures' customers have varied requirements, hence customisation is often needed to fulfil the design specification. At a recent project at HMP Stocken, the design required a combination of enclosures, including British Standard (BS) 1 single socket and the larger BS2 double socket, joined together to form a single unit. The enclosure also required custom cut cable entry points and would house power as well as data cable connections.

"As Spelsberg has an in-house design and CNC team at its UK site, they can create and build virtually any specification of enclosure we need," says Paul. "Importantly for our projects, their in-house customisation capability also makes completion much faster, so our orders can be delivered from design confirmation within one to two weeks."

Image captions:

Image 1: Spelsberg IBT polycarbonate enclosures
Image 2: Large building projects worked with Spelsberg UK enclosure manufacturer to achieve reliability for enclosure placement.
Image 3: Build speed and ease is often enhanced if sections can be pre-cast and delivered for on-site assembly.

About Portescap

Portescap offers the broadest miniature and specialty motor products in the industry, encompassing coreless brush DC, brushless DC, stepper can stack, gearheads, digital linear actuators, and disc magnet technologies. Portescap products have been serving diverse motion control needs in wide spectrum of medical and industrial applications, lifescience, instrumentation, automation, aerospace and commercial applications, for more than 70 years.

For more information, visit www.portescap.com

Press contact:
Portescap
Nicole Monaco
Global Marketing Manager
Tel.: +1 404.877.2534
sales.europe@portescap.com

PR agency:
DMA Europa
Brittany Kennan
Progress House, Great Western Avenue, Worcester,
WR5 1AQ, UK
Tel.: +44 (0) 1905 917477
brittany@dmaeuropa.com
www.dmaeuropa.com