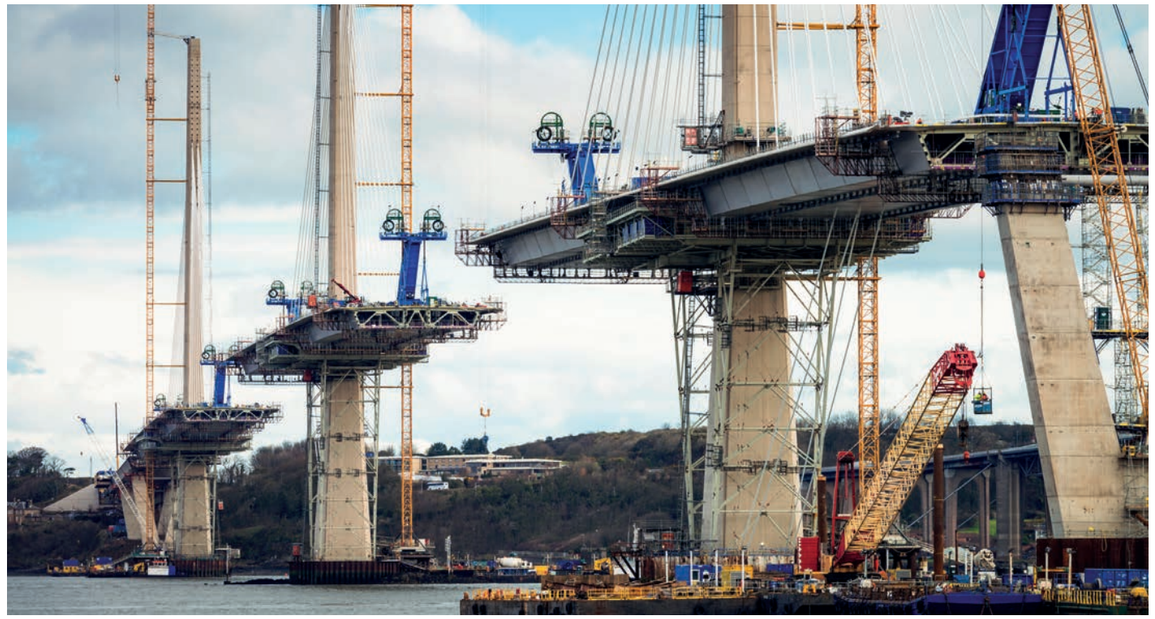
News

Overcoming the hurdles to Offsite Construction in Infrastructure: The view from Lucideon



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Materials Development and Commercialization

Until recently, a lot of media and other interest in offsite construction has been focused on the housing sector. However, this is not all that offsite has to offer. With the Heathrow Airport extension approved, construction soon to start on HS2 and work underway on the Thames Tideway Tunnel, offsite construction in infrastructure is starting to take centre stage.

The lack of skilled labour is always a factor in promoting offsite construction and all the usual arguments can be used in infrastructure, ie an ageing workforce, workforce safety and quality of build. Offsite construction provides a factory made, repeatable product which is of high quality, and delivered quickly and efficiently. When used in infrastructure projects, issues occur with the repeatability of numerous product designs. Bridges, tunnels, railway platforms, etc are custom designed for the environment and specific site conditions. This prevents replication during the manufacturing and production processes. There are moves within the industry and standards bodies to produce standard detailing and design interfaces, which will aid offsite production.

The Heathrow Airport expansion plan includes the development of four offsite hubs, which will produce and assemble components for delivery to site during construction; this will create a strong workforce with new skills. New production sites require full certification to prove factory production control to ISO 9001 and ensure product quality. New products will also require conformance testing and CE marking before they can be supplied to market and installed in-situ. A popular material in offsite construction projects is precast concrete, which has a range of standard requirements both for the material and product performance. Precast concrete products play a huge role in offsite construction projects, so it is essential that all products are tested to the relevant standards and that quality control systems are adhered to. Standard products will need to meet all criteria for CE marking. The systems which exist to do this are prescribed. Difficulties arise when non-standard products are produced that fall outside of recognised standards and routes to market.

If performance requirements do not exist, it is very easy to produce components that are not fit for purpose structurally or do not possess adequate physical properties, eg durability and fire and water resistance. Non-standards can be designed following Eurocodes but these tend to give quite conservative values; in reality there are differences in material attributes, especially when not using a homogenous product like concrete. A reliable test house will be able to produce a test specification, performance parameters and test regimes in order that the performance and quality of the products can be assessed at acceptable time intervals to ensure their continued quality.

There are several routes available for assessing factory produced products; the easiest is the European Standard. When products fall out of scope of these standards, a European Assessment Document (EAD) may exist. This route is not mandatory but does allow products to be CE marked. If these methods are not available, a third-party certification route can be used.

As time moves on, it is expected that the requirements for products and systems to be tested before being accepted onsite will increase, and the routes to prove product performance will need to be clear and followed.

There is frequently a lack of confidence in product quality and certification for offsite production. As more contracts include these aspects, the controls and awareness of the processes will increase, and confidence in product performance and methods will follow, thus benefitting industry.

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