# Polycarbonate enclosures protect crane control architecture in corrosive atmospheres

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**Galvanizing plants need heavy lifting capabilities, but these systems must be able to endure an aggressive chemical atmosphere. Levate Solutions manufactures crane systems that provide high reliability in a market where any downtime is extremely costly. The company uses Spelsberg polycarbonate enclosures to protect crane control architecture from corrosion, while enabling easy use for their own build process, as well as operator access.**

Whether a metal structure is required for outdoor installation, or if the form will face exposure to aggressive chemicals, corrosion protection is a common requirement across global industry. In a galvanizing process, steel or iron pieces are given a protective zinc coating to prevent rust. A variety of techniques can be used, including hot dip galvanizing where steel sections are submerged in a molten zinc bath. To transport metal sections, some of which could weight up to 40 tonnes, into and out of the galvanizing process, a heavy-duty crane is required.

The cranes themselves also need to be resistant to the galvanizing process. The atmosphere at a galvanizing plant is corrosive, including chemicals such as sulphuric acid, used in the pickling process to clean the iron or steel structure ahead of the galvanizing process. Zinc chloride and ammonium chloride, used in the flux process to help adhesion of zinc galvanizing to the metal structure, can also be aggressive to untreated metals, as well as any plastic components.

**Durability for galvanizing plants**

Levate Solutions, based in Shrewsbury, designs and manufactures cranes, with a strong focus on the UK's galvanizing industry. The company has a dominant market share in the sector, thanks in significant part to the durability of its lifting solutions even within the aggressive atmosphere of a galvanizing plant. Levate fabricates cranes with capacities from 500 kg through to 20 tonnes with 30-metre spans. The cranes can also be used in tandem to move structures double their weight limit.

Fundamental to crane operation is the electrical system. This includes the PLC that enables control of the movement of the crane and winch, as well as sensors for functions such as collision prevention and remote monitoring of mechanical components such as bearings. While the PLC can be installed away from the crane in a protective cabinet, terminals for the various sensors, including their electrical supply and communications, are installed on the crane itself. These terminals require the same high level of environmental protection.

"During galvanizing, anything metallic - even stainless steel - is susceptible to corrosion, so that's why we use Spelsberg's polycarbonate enclosures to protect electrical terminals on our cranes," says Levate Solutions' Control Systems Engineer, Joe Davies.

Spelsberg's GEOS enclosure is corrosion resistant, and an IP65 rating prevents ingress of moisture or chemical vapour thanks to a heavy-duty elastomer seal. Although installed in an industrial environment, the polycarbonate boxes are also high strength with IK09 protection, giving the required impact resistance.

## Bespoke control

“We manufacture around 15 crane systems a year, and each one is bespoke,” explains Joe. “This means we have varying requirements from the enclosures, using different sizes that we can configure to suit, depending on the scale of devices and the number of terminal connections. We can bay several boxes together too with the combining kits, so it’s a neat unit.”

As well ensuring durability for harsh environments, Levate is also recognised for the level of control its cranes provide. For example, the company provides anti-sway control, which can be vital for the heaviest loads, and it’s also currently developing its own hoist system. Bespoke control also means Levate’s cranes are used in diverse sectors such as automotive and aerospace, as well as manufacturing and production applications.

## Easy to use enclosures

To enable bespoke requirements for electrical architecture, Spelsberg provides a CNC service, but at present, Levate fulfils its own customisation when required, such as a cut-out to install an HMI control panel. Easy access to the enclosures for Levate’s customers is also required, at the same time as ensuring system safety. The GEOS enclosure features a transparent door that gives clear viewing inside. At the same time, a protective frame insert behind the door provides user access to devices such as an HMI and emergency stop buttons, while protecting the electrical terminals positioned behind.

“The enclosures are easy to work with and they’re good for our customers,” says Joe. “The main benefit we offer is providing crane solutions for tough environments

that other cranes can’t deal with. Any downtime can cost our customers thousands of pounds, so using Spelsberg enclosures helps us ensure high durability.

**Image captions:**

**Image 1:** Levate Solutions uses Spelsberg GEOS enclosure to protect crane control architecture from corrosion while enabling easy use for their own build process, as well as operator access.

**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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