

Flexible approaches to industrial enclosure customisation

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If a standard enclosure doesn't meet application needs, customisation can accommodate requirements without compromising on protection. From CNC machining of small batches to modular tooling for high-volume production, enclosure manufacturers can deliver bespoke solutions that combine design flexibility with cost-effective production, and a fast time-to-market.

Chris Lloyd, Managing Director at Spelsberg UK, explains.

When equipment manufacturers need to protect sensitive components such as electrical or electronic systems within an enclosure, they have a vast range of features, materials, and sizes to choose from. Despite this, off-the-shelf, production-ready housings might not always fit the precise requirements, even when they incorporate features such as knock-out sections, removable sidewalls, or a selection of accessories that support integration.

For example, when enclosures are required to host devices that must be visible or protrude through the housing, such as keypads, display screens, LED arrays, buttons or switches, specific design work can be required. Even though cable sizes are standard, even they might need tailored entry and exit points. Inside the enclosure, housed equipment can also benefit from exact configurations and positions, with special fixings. Meanwhile, on the outside of the housing, non-standard installation to integrate with the host equipment might also be needed.

Customisation options

In situations where a standard enclosure doesn't precisely meet all requirements, customisation is a useful alternative. However, handling customisation in-house needs the necessary skills and equipment to achieve the required precision, especially if the complexity of the adaption is extensive, and aspects such as maintaining the integrity of seals is critical. Even with a capable in-house engineering team, the time and resources to complete the work can be high, particularly for complex requirements and high-volume projects.

While outsourced engineering partners may have the required skills and capacity, maintaining customisation work with the enclosure manufacturer not only simplifies the supply chain, but also maintains accountability with a single supplier. What's more, if adaptations to the enclosure involve features such as embossing the walls of the housing itself, finish quality and enclosure integrity can be higher if achieved during the original manufacturing process.

An advantage of plastic-based enclosures, such as those designed from materials like polycarbonate, is that they offer high strength and impact resistance while also being flexible to customisation. Working with these types of enclosures to produce prototypes for testing, or for relatively low production runs, an enclosure supplier with CNC machining capabilities can provide a wide range of customisation services such as drilling, milling, cutting, and tapping. For example, Spelsberg UK's engineering team customises enclosures to accommodate a wide variety of equipment, and to suit virtually any integration configuration. A prototype can be created in 24 hours, and a production run is potentially available within days.

The modular tool concept

OEMs with high-volume demands might require orders in the magnitude of thousands, and production runs of this scale outstretch the advantages of

customisation with CNC machining. For high-volume customisation, the modular tool concept is better suited. With this approach, a tool can be developed to create design features specific to the requirements of the customer, with custom cut-outs or bespoke fastening points directly injected thanks to the modular tool, to efficiently manufacture at volume.

Spelsberg's modular tool production includes a variety of design options, from pre-embossing to create partially formed outlines such as knock-out guides that can be completed by the user during installation, through to completed cut outs of virtually any form. The modular tool service also includes embossing, including raised or recessed features in the enclosure such as internal or external mounting points.

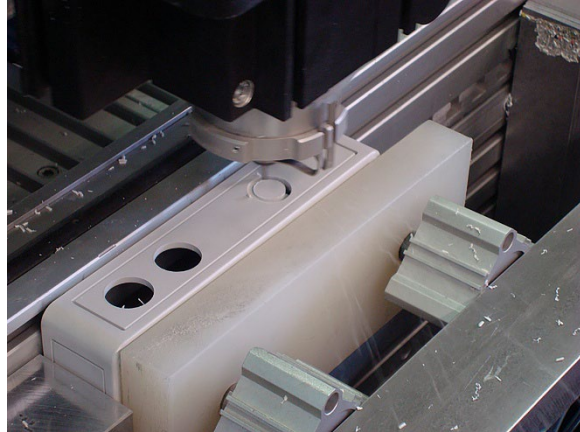
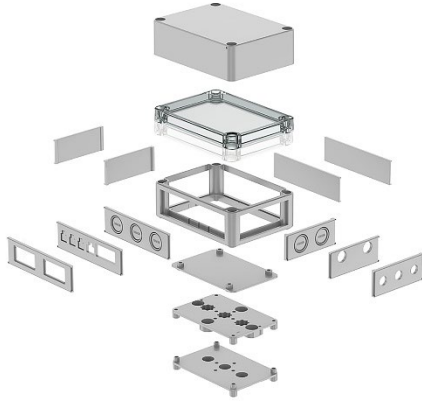
From the customer's perspective, the quality of production and the timescale are virtually the same whether a modular tool or CNC machine is involved as a blended approach to bespoke production can be used. Flexibility and rapid availability are still achieved for high volume orders as an initial run of enclosures can be provided with Spelsberg UK's on-site CNC machining service while modular tooling takes shape, which requires approximately four to six days. The reality is that the transition between on-site customisation and modular tool production is seamless.

Enclosure engineering partnership

With OEM production, cost management is always a priority. However, for volume orders, customers receive a customised enclosure for the price of a standard product. Even for smaller volumes requiring CNC machining, the cost is significantly lower than involving internal resources or working with a third-party engineering team.

Sometimes, customisation of an existing enclosure design still doesn't cover requirements, even when modular tooling changes or CNC machining is involved. For the most specialised projects, Spelsberg can also design and manufacture

completely bespoke housings from scratch, ensuring that even the most complex challenges can be resolved.

Image captions:

Images 1 & 2: Spelsberg combines CNC machining and modular tooling to deliver rapid, cost-effective enclosure customization, while maintaining maximum protection.

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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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