Enclosure requirements for indoor use with OEM specifications

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OEM designers need industrial enclosure manufacturers to be flexible to their requirements. Typically, footprints are fixed, meaning that industrial housings have to accommodate pre-determined component layouts, as well as accommodating fast, simple installation. For that reason, it's an advantage to work with enclosures that can be readily adapted, through to extensive customisation with CNC machining.

Chris Lloyd, Managing Director at Spelsberg UK, helps OEM designers specify an enclosure for indoor applications.

When an OEM requires an enclosure for dedicated indoor use, its specification, particularly relating to the dimensions, is nearly always predetermined. If the components, as well as their protective housing, have to fit within a control panel or onboard a machine, minimal footprint is vital, and a matching form factor is typically required. To achieve this, access to a wide range of standard, off the shelf enclosures, enables a choice from a scaled variation in box dimensions.

As well as the external dimensions, flexibility over the internal layout gives freedom over the position and type of terminals and connection options, as well as cable routing. Spelsberg's TK range, for example, features knockouts on the side walls of the enclosure that simplify design and enable easier on-site installation. Despite the

benefit of an adaptable internal enclosure layout, customisation is often required to achieve an OEM's specific design. As a result, enclosure manufacturers who are adaptable to the specific design needs of OEMs typically include in-house CNC machining services, equipped to design and create modifications based on milling, drilling and cutting.

In-house customisation

Frequent CNC machining requirements include drilling to achieve specific cable routing for positioning of components inside the box as per the OEM's design, as well as enabling faster and easier installation on-site. Customer-specified cable routing also includes tailor-made glands and seals, achieving a finish that meets required conformity such as IP ratings. The benefit of an experienced machining service also means advising the OEM on what can be achieved, from more complex procedures such as milling with a negative angle of entry to ensure optimum installation of components such as user interfaces. At the same time, advice on customisation is balanced to ensure that integrity of the enclosure is retained long-term.

Of course, machining services can be provided by a third-party, or even by the OEM themselves, but this presents additional challenges. For most OEM projects, speed is crucial and handling multiple parties can extend development time. Alternatively, an enclosure manufacturer that can provide a same-day prototype and then scale up production accordingly, removes complication and provides an assurance on design integration, with a single party accountable for the whole process. A single partner is also likely to mean a lower total cost, both in terms of the final invoice rate as well as the resources required to manage various parties.

When an enclosure is customised, testing is also imperative for the OEM, and maintaining speed over this process is crucial. Especially for more complex modifications and designs, it's important for the enclosure manufacture to provide a sample, that's a near identical match to the final production run, as soon as possible. An enclosure vendor with a 3D printing service that can manufacture an almost identical final production sample within 24 hours will quickly move the OEM onward towards their test procedure.

Achieving the right price point

To quickly achieve customisation in large-scale manufacture, a flexible enclosure design is required at outset. Frequently, the basis is a polystyrene housing, which is fully amenable to fast adaption and machining. As opposed to less robust plastics, polystyrene includes a high impact resistance, up to IK07 or more, and unlike metal enclosures, it won't dent or corrode. A significant advantage, especially in a high-volume, cost driven marketplace, is that polystyrene is also extremely cost effective.

If optimum durability is required, polycarbonate is stronger still, but for many indoor-only applications, the highest levels of durability aren't always necessary. This same approach should also be made regarding ingress protection (IP) rating. If the enclosure needs to protect electrical internals against a pressurised washdown, a box tested and rated to IP65 might be advised. Alternatively, if the device will be installed in a loft environment, the premium required for the highest protection probably won't be necessary.

The advantage of working with an experienced enclosure manufacturer is that they can provide advice on materials and design to ensure that the optimum quality is achieved for the application, environment and lifespan, while balanced against a

critical price point. This removes the potential of overspecification, helping to achieve a more competitively priced end product.

Saving time for the OEM

A common requirement that often complements customisation is an assembly service. As a customised enclosure speeds up installation, the OEM can save additional time if the enclosures are supplied partially or fully assembled with their components. Assembly could include fundamental requirements, such as pre-installation of electrical terminals or DIN rails, through to more complex procedures, such as fitting keypad membranes or digital controllers. The ability to provide an OEM with a completed unit ready for final installation adds significant value, as it reduces their required resources, speeds up production and brings products to market more quickly.

Together with assembly comes procurement of additional components that will eventually be combined with the enclosure. This could include sourcing specific items such from door handles to castor wheels, bringing them into the assembly bill of materials. This reduces the procurement challenge for the OEM and increases the total efficiency of their build.

While enclosures dedicated to indoor use don’t usually face the most challenging conditions, a durable, long-life housing is a prerequisite. Combined, it’s imperative that the box enables a design flexible to the OEM’s required layout, typically reached with an adaptable enclosure range and a dedicated customisation service. This not only supports optimum product quality for the OEM and speeds up their production process, but advice on the right enclosure specification helps achieve the right price point for a competitive marketplace.

Image captions:

Image 1: Spelsberg UK, helps OEM designers specify an enclosure for indoor applications.
Image 2: A wide range of standard off the shelf enclosures enables a choice from a scaled variation in box dimensions.

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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