Enclosure customisation requires the right experience

09 September 2025

If a standard enclosure can't accommodate a component such as a touch screen, or if a cable requires a specific entry point, customisation might be required. Based on CNC milling and drilling, the structural integrity and ingress protection of the enclosure demands that customisation requires precision techniques and the right experience. The most effective way to achieve this is to involve an enclosure supplier that provides customisation services in-house.

Chris Lloyd, Spelsberg UK's Managing Director, discusses how to approach enclosure customisation.

When a design engineer requires an enclosure to protect electronic components or electrical terminals, customisation of the housing might be required. This process typically means adapting the enclosure using precision tooling to integrate equipment that requires access to, or input from, the outside environment, such as keypads and HMI touch screens, sensors or cameras, or buttons and dials. Creating non-standard entry or exit points is also frequently required to accommodate cabling.

Before powering up our CNC machine, the first stage is to investigate whether a standard production enclosure can fulfil the criteria. A broad range of housings offering flexibility over dimensions, cable entry and exit points with knock-out holes, and internal fixing options, can all potentially achieve the aim without a cut being made. Meanwhile, for effective mounting and to achieve efficient cable routing,

selecting the right location for the enclosure can also impact the scale of customisation required, if any. Research to specify the right enclosure might be possible by reviewing designs online, but a faster and surer way is to present design requirements to an enclosure specialist who can advise on the options available.

If customisation is required to achieve specific needs, it's vital to select an enclosure that can withstand the process while still maintaining its protective integrity. When this involves milling cut outs or drilling holes, it also usually means sourcing the right flange to meet the required IP rating. While the enclosure manufacturer should be able to advise on how far the housing can be customised, the extent of this knowledge often depends on their own experience with CNC machining. A key advantage of working with an enclosure manufacturer that provides customisation, as opposed to working with a third-party or adapting the units in-house, is that accountability over production quality remains with a single point of contact.

CNC machining experience

The first aspect of customisation is design. A CNC machinist will be able to work with CAD drawings or use software that can transpose the customer's plans to make an exact match that can be read by the CNC machine. While an enclosure manufacturer that offers customisation will be able to provide a design if a customer doesn't already have drawings, this service can also save time for OEMs. An experienced enclosure specialist will not only be able to confirm the specification of milling and drilling, but will also advise on broader considerations such as cable routing into and out of the enclosure.

The potential of what designs can be practically achieved also depends on CNC capabilities. This can include techniques such as milling to create slots, holes, contours, 3D shapes, or complex geometries, as well as drilling, countersinking, and tapping to create threaded holes. Micron-level precision is required to ensure that components and cabling fit precisely. This is essential to achieve durability by

removing unwanted freedom of movement, as well as ensuring tight sealing to prevent ingress over time, and enable fast and simple installation.

The precision and repeatability of the CNC machine is vital, but the quality of the process is also reliant on the experience of the machinist, who must take multiple factors into account. In addition to tool selection and set up, including ensuring sufficient sharpness and the right cutting speed, criteria including the melting temperature of thermoplastics is critical, where exacting adjustment of the cutting tools is required alongside appropriate cooling techniques.

Rapid customisation services

To ensure the enclosure isn't strained during CNC machining, housings must be appropriately secured with vacuum technology, balanced with sufficient stability to prevent twisting or deformity. If the process isn't carefully managed, the enclosure's plastic walls can also deform through internal strains released during machining. While tempering is a technique that can avoid this happening, awareness of the required tolerances is the recommended approach.

Speed of production is a further advantage of retaining customisation with the enclosure manufacturer, and Spelsberg's in-house CNC service can return a prototype customised enclosure within 24 hours. Even if a customer has their own CNC capability, an enclosure supplier that quickly provides the service will reduce demand on internal engineering resources.

As well as CNC machining, additional services that save time for the customer include assembly with the insertion of components such as PCBs and keypads. Customisation can also include on-enclosure printing and embossing to add branding or user instructions. Whatever the level of customisation required, the most effective approach is to rely on the services provided by an experienced enclosure manufacturer.

Image captions:

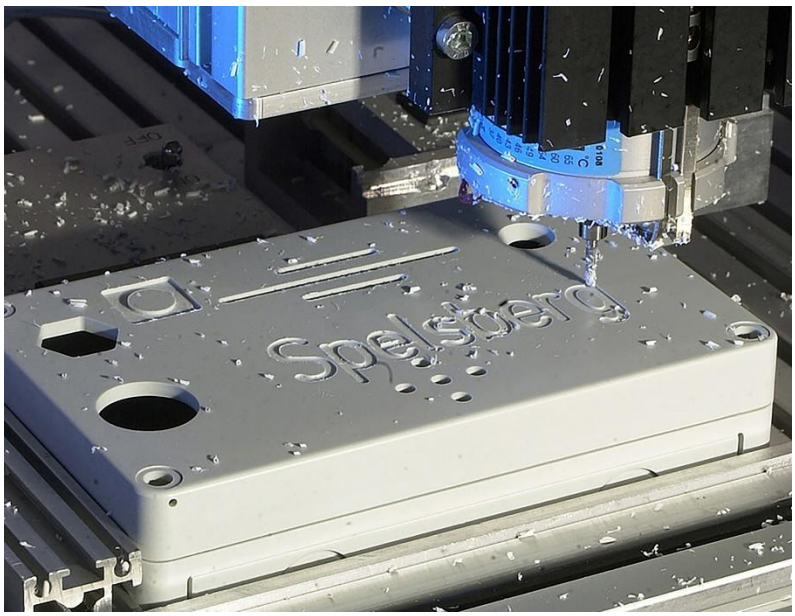

Image 1: Spelsberg's CNC service can also include on-enclosure printing and embossing to add branding or user instructions.

Image 2: Spelsberg enclosures provides customisation services in-house.

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.

Press contact:
Spelsberg els UK Ltd.
Chris Lloyd
Tel.: +44 (0)1952 605849
cll@spelsberg.co.uk

PR Agency:
DMA Europa
Elizabeth Preciado A.
Progress House, Great Western Avenue, Worcester, WR5 1AQ, UK
Tel: +44 (0) 1905 917477
liz.preciado@markettechgroup.com
news.dmaeuropa.com