

# The customised enclosures revolution

New technology is driving new ways to customise electronic enclosures and it is no longer just for high volumes – small batches can benefit from it too. By Neil Tyler.



**N**ot that long ago, any customisation offered by enclosure manufacturers tended to be limited to drilling a few holes for connectors or machining apertures for displays. If you were looking for any additional customisation – whether that was painting, anodising, silk screen printing of legends and logos or EMC shielding – then you had to contend with a long chain of suppliers in which even minor problems could cause long delays or result in enclosures having to be redesigned.

Today, engineers are being pushed by marketing departments to design aesthetically pleasing products which can be differentiated from the competition and they are increasingly

faced with a situation where an off the shelf electronic enclosure no longer meets their requirements.

“Our engineers have lost count of the number of times they’ve been approached at trade shows by customers who ask about basic customisation and are then astounded by how the technology has moved on in the last few years,” says Robert Cox, OKW’s sales and marketing director. “There’s certainly an irony here; enclosure buyers are becoming more demanding, yet most don’t realise the breadth or depth of new solutions that are now available to them.”

Many enclosure manufacturers, such as Hammond, OKW, Metcase and Rolec, now offer a wide range of standard enclosures which means that

*Manufacturers such as OKW offer a wide range of standard enclosures*

designers are less likely to need customisation and when they do, fewer modifications are required.

“It reduces the need for retooling,” explains Cox.

However, the ability to offer a wider range of enclosures, combined with new technologies, is helping to make customisation available at much lower volumes with much reduced costs and lead times.

Specialist distributor Hitaltech supplies DIN Rail mounting, hand held and wall mounting enclosures to the building automation market. Strong growth in this market has resulted in manufacturers looking to not only differentiate their products from those of the competition on a functional level, but also on appearance.

According to Tara Jane Fisher, marketing manager with Hitaltech: "In recent years, a growing number of our customers have found themselves in a trade off between customisation costs and the need to set themselves apart from their competitors.

"As a specialised distributor, we tend to get involved at the very beginning of the design process. Working closely with customers, we can source a broad range of designs.

"We have a close working relationship with our manufacturing partner Italtronic and, as a result, can offer a wide range of DIN Rail enclosures which suit a variety of applications. But we can also offer the option to customise the product to meet specific customer demands."

### Two option approach

According to Fisher, this 'two option approach' gives design engineers the ability to differentiate their product for both low and medium volumes without the need to invest in expensive tooling and processes.

Using a combination of high tech multiple tools, multiple axis CNC machines as well as low cost high quality laser and full colour digital printing processes, Hitaltech can offer a customised DIN rail mounting enclosures at, what it calls a 'very competitive' price.

Alternatively, by using a flexible tooling approach, Italtronic has been able to develop a range of mould tools that can be adapted by the inclusion of relatively low cost custom inserts to produce a finished custom DIN Rail mounting enclosure. This customised housing is produced directly from the injection moulding process, eliminating the need for additional machining.

Fisher also raises a point made by many enclosure suppliers – a desire to see the box design being made more of a priority.

"We'd like to see the PCB being designed to fit the enclosure, rather than, as is usually the case, the enclosure having to be customised to fit the PCB."

"The sooner OKW gets involved in the design process, the better it is for the customer in terms of the end



product and the potential cost savings," suggests Cox. "Ideally, they should be phoning or emailing us before the PCB size has even been fixed."

DIN rail mounting enclosures offer limited opportunities for enclosure design, but one issue that customers are asking distributors like Hitaltech to address is providing proof that enclosure designs meet REACH and RoHS requirements.

"More and more of our customers are asking that we provide proof that our enclosures are meeting changing standards," Fisher suggests.

Commenting on the market Russell Irvine, European account manager for Hammond Electronics, says: "Most of our business is direct or through smaller distributors, but wherever it comes from, everyone is looking for an added value differentiator."

He also suggests that care is required on the part of the customer when defining what 'customised' actually means.

"There is a vast range of standard products available and the cost of tooling parts has come down significantly in the past few years. A great range of 3D printers is available for prototyping, which makes it a lot easier to design and cost customer designs. We can work off anything from a 3D CAD model to a sketch."

*Even die cast industrial enclosures can now be customised*

According to Irvine, Hammond still has to educate people as to what can be done, but he suggests that customisation is not being deployed as a sales channel.

"We're not selling customisation to our customers. We see it as an added service that we can offer, just like buffer stock, design modifications and the like. It's another essential tool in the enclosure manufacturer's armoury."

OKW's Cox agrees that many customers still don't know what is available to them. "A prime example is photo quality digital printing or complete enclosures. Digital printing has much lower set up costs than traditional silk screen methods and going digital enables sequential serial numbers, barcodes and QR codes to be printed quickly and easily."

### Germ killing plastic

Other services from OKW include custom materials (such as carbon neutral bioplastic, germ-killing antimicrobial plastic, flame-retardant V-O), CNC machining, EMC shielding, membrane keypads, protective lacquering (in different lustre degrees, metallic tones and textures – even 'soft feel' artificial leather).

"If all these new developments in customisation and finishing quality are news to you, then you are not alone," he says.

Heavy duty industrial enclosures, such as those designed and manufactured by Rolec, should theoretically be harder to customise because many of the models in the range are die cast, rather than folded from sheet metal.

However that hasn't stopped Rolec from offering a range of custom solutions such as CNC machining, painting, powder coating, printing, engraving, keypad mounting, component assembly and packaging.

So whether you specify plastic, sheet metal or diecast standard enclosures, customisation should always be available.

"Customisation is not just more advanced than you might think," concludes Cox, "it's also quicker and more cost effective."