

“The electronics marketplace is changing,” according to Dan Smalley, project manager at CamdenBoss, as the IoT, wearables and products such as the Raspberry Pi open new areas for electronics applications.

Smalley believes the Raspberry Pi could be contributing to the growing popularity of CamdenBoss’ custom cases. “We’re seeing a lot of demand for custom cases, with Raspberry Pis at the base.”

According to Smalley, customers prefer to use a custom case for two reasons. Firstly, standard enclosures can be quite generic, so using a custom case might improve the worth of the product. Secondly, a standard case might not cater to the application’s requirements.

Traditionally, a customer would have had to spend in excess of £10,000 on custom tooling to make a case. CamdenBoss has developed an approach called Flat Sheet Plastic Technology (FSPT), which allows custom cases to be made quickly and cost effectively.

“Giving people that option is opening more doors for them, so we’re seeing more demand for custom cases,” said Smalley.

FSPT uses m2 flat sheet plastic as the base material, with thicknesses ranging from 2 to 10mm. A CNC milling process then cuts parts out of the sheet and these are then heated and folded to form enclosures.

“There are companies who do similar things, but we’re the only one using this technique,” Smalley added.

He has also pointed to a change in the way people want an enclosure to look. “A decade ago, no one wanted anything with colour – it was either grey or black. We’ve offered colourful materials for eight years, but it’s taken until now for people to buy into it and be happy to have bright coloured trim.”

He remains undecided as to whether this change is due to the company expanding into the consumer

# Roll your own

Enclosure manufacturers are developing new techniques to support custom designs. By **Peggy Lee**.



market or whether it is due to customer expectations being higher. “If you compare how mobile phones looked 10 years ago to what they look like now, there’s a vast difference. Design is far more important.”

Robert Cox, marketing director at OKW Enclosures, also believes that design is becoming more important and that this is impacting the way in which the company is developing enclosures.

“Our products are ergonomic, but they’re not overly strong designs because it limits their use across the market,” he explained.

Trends which he says are impacting enclosure design include wearable electronics and touchscreens. OKW’s latest release, BODY-CASE, is a wearable standard

enclosure designed to fit an 18mm wrist strap. Below: BODY-CASE is OKW’s first ever fully wearable standard electronic enclosure.



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“You can wear it like a watch,” said Cox. “We don’t know of any other product like that on the market.”

Touchscreens have also taken over from switches and membrane keypads. “That’s something we see more and more often — and for which we’re developing new products all the time – which is a change that

has happened over the last few years.”

The main change, however, according to OKW, is the shift towards customers wanting complete, finished products – a trend also seen in the electronics market as a whole.

“Companies don’t want a complex sourcing

arrangement, where they buy the box from us, the machine somewhere else, then have it painted, digitally printed and assembled in other places. They prefer to receive the finished product, so all they have to do is assemble the electronics to go inside.”

Cox says OKW offers these services, as well as access to the 3D STEP files of its enclosures. Using these 3D models, customers can build components into the enclosure digitally to check for problems before making a prototype.

CamdenBoss has also recently offered a new service with custom enclosures. Until now, customers had to pay for design time for custom enclosures. Now, they can select from a range of 14 different enclosure constructions – clip, screw, tablet-size, slanted keyboard-shaped and more – and then have them designed to their requirements, with a choice of colour material, as well as where they want cut outs and holes.

“We’ll do that without any design costs,” said Smalley. “Even two or three years ago, the necessary software and the skills weren’t available, but now it seems to be more widespread and we’re seeing a lot of success with this offer. Companies can download and manipulate our files, put in their holes and cut outs, then send it back.”

As well as developing FSPT, CamdenBoss has been working on its digital printing technology, allowing an

HD resolution full colour photograph to be printed directly onto the surface of a box.

“Traditionally, we screen printed our enclosures and you paid per colour. So, if you wanted a five-colour print, you had to pay five times the price. That is no longer the case,” Smalley explained.

OKW is also investing in new machinery, notably a punching machine, which Cox claims can complete tasks three times faster and do twice as many different types of punching hits. “A customer product which used to take three weeks, now takes four days.”

By experimenting with manufacturing moulding techniques, OKW has recently released the TECHNOMET range of instrument enclosures. Using fine tolerances typically employed on plastic enclosures, the company has created a metal housing with a more discrete, smoother finish.

“The product looks more cohesive, more plastic. The trims are hidden, the bezel parts are integrated with the covers, so when you look at it, you don’t see immediately how it was made,” said Cox.

Hylec is also investing in latest moulding techniques. “Obviously, we are always evaluating the latest moulding processes for ABS enclosures,” commented sales director Steve Robbins. ABS – acrylonitrile-butadiene-styrene – is a thermoplastic polymer renowned for

Right: OKW’s latest STYLE-CASE range feature UV-stable materials



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Dan Smalley

its impact resistance and toughness.

Robbins believes demand for IP ratings, to protect against water and dust ingress, and for IK ratings, to protect contents from impact, is increasing.

Particularly with wearables, OKW is also seeing an increase in demand for enclosures that can be used indoors or outdoors, in both dirty and clean environments.

“So, for the same standard housing, we offer the ability to seal it against a dirty environment, to protect it against sunlight or cover it with an anti-microbial finish,” said Cox. Looking to meet these needs, the company recently launched the STYLE-CASE range of high gloss handheld enclosures featuring UV-stable materials.

CamdenBoss has also developed anti-microbial material with medical applications in mind. The material has an additive that stops bacteria from propagating.

Looking at other enclosure accessories, a number of suppliers have noticed a move away from AC fans towards more energy efficient EC and DC solutions with speed control.

As Cox remarked, an enclosure was once just a rectangular box with four screws. Today, enclosures have become more complex and are designed to be tailored to the end application, including features which relate to the electronics that will go inside them.



Customised standard enclosures from CamdenBoss