



CHECKLIST: WHAT'S IMPORTANT WHEN SELECTING ENCLOSURES

Bopla's Katharina Mense walks readers through the key purchasing criteria when sourcing enclosures

The following feature shows what should be considered when selecting an enclosure in order to minimise selection time for mechanical components and ensure the correct enclosure is chosen.

1 Material

The two main choices are between metal (aluminium etc) and plastic (polycarbonate, polyamide, ABS etc). Plastic is a light material and ideal for manufacturing enclosures, however plastic enclosures are not as sturdy as a metal designs which are primarily used in tougher situations. When exposed to rain,

salt water and the like, plastic enclosures are better at resisting such aggressive environmental influences.

2 Ingress protection classification system

Many applications require electrical and electronic equipment to work safely and reliably for many years under difficult environmental conditions. In order to ensure this when selecting an enclosure, one of the main considerations must be protection against accidental contact and foreign bodies as well as against water. These requirements are laid down as protection categories in DIN EN 60529.

The IP categories specify the extent to which the surface of the enclosure is closed, dictating what level of protection the enclosure provides against water and dust. The ingress protection category is defined as follows: the letters IP are always found in the protection classification, followed by a two-digit number. The first number indicates the level of protection offered by an enclosure in respect of contact or foreign bodies while the second number denotes moisture protection.

With regard to protection against accidental contact, the classification starts at zero, which denotes no protection, progressing to a number six, which indicates protection against tools and wires bigger than 1mm diameter. For protection against foreign bodies, the classification extends to 6K which

indicates protection against granular foreign bodies greater than 1mm diameter with no entry of dust.

The second digit relates to protection against water, moving from a zero to indicate no protection to an eight, which denotes protection against constant immersion and even a 9K rating, which indicates protection against water during high-pressure/steam jet cleaning and applies only to road vehicles.

3

Dimensions

For the product manager responsible for a new piece of equipment, the external and internal dimensions of an enclosure are extremely important. In many cases, the PCB dimensions are fixed, making it necessary to find a suitable enclosure to fit. This determines the exact dimensions and is often a matter of millimetres.

4

Modifications

There are many ways of designing enclosures to meet customers' individual requirements. On the one hand, all enclosures can be fitted with input devices such as membrane keypads, front membranes or displays. In addition, enclosure manufacturers generally offer a range of customisation services.

For example, enclosure and input device manufacturer Bopla, offers a series of need-based solutions such as milling, drilling, cutting and sawing of the enclosures' aluminium profiles. There are also various enclosure components such as decor seals and decorative stripes that can be used to make a difference to the design and look of the standard enclosure.

If customers want the enclosures to correspond to the colours of their corporate image, the systems can be printed using a water transfer process, or they can be lacquered. For large manufacturing batches, the enclosures can also be made of coloured injection-moulded plastic. The surface of an enclosure is often used to display assembly and operating instructions and depending on the type of enclosure, these can be applied using screen-printing or pad printing processes.

Up-to-date laser technologies can also be used.

5

Electromagnetic compatibility (EMC)

Electromagnetic compatibility (EMC) is a basic requirement. It ensures that individual technical devices do not interfere with each other as a result of undesirable electrical or electromagnetic influences. Simple plastic enclosures have low EMC characteristics, while metal enclosures offer better EMC protection.

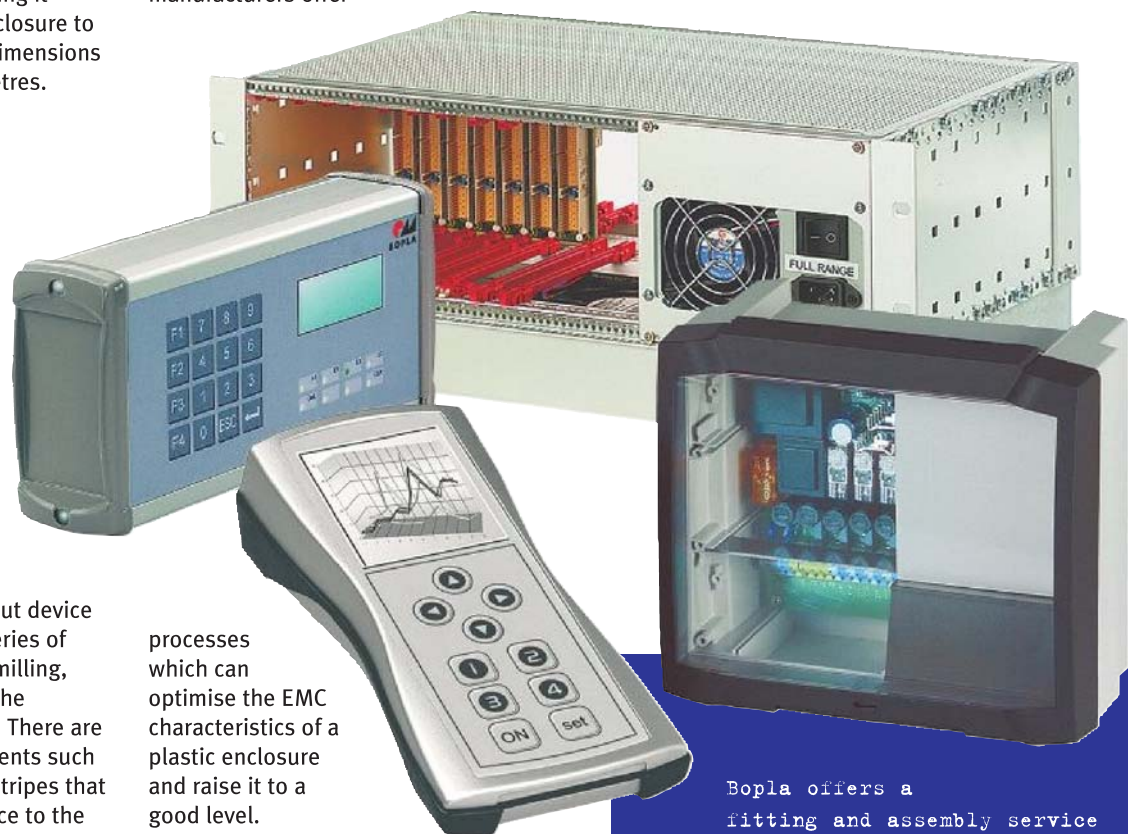
At first sight, it seems obvious that a metal enclosure should be used when electromagnetic compatibility is very important, however, this is not necessarily the case. Many enclosure manufacturers offer

supplies all the components, such as the PCB and connections and in-house specialists assemble these to create the final product, including testing. This kind of service comes under the heading system solutions and it is designed to ensure the customer doesn't have to worry about anything.

7

Summary

The demands made of an enclosure are extremely high and customers often have many specific requirements which must be provided at an acceptable price. The supplier plays an important role in this. For example, does it keep a stock of the enclosures in order to respond quickly to an unexpectedly



processes which can optimise the EMC characteristics of a plastic enclosure and raise it to a good level.

6

Ease of assembly

When selecting an enclosure it is important to consider how easy it will be to fit components. A complicated design and construction will make it much more difficult to assemble electronic components in the enclosure. This problem can be avoided by using enclosures with snap locks or quick-release fastenings.

In addition, companies such as Bopla offer a fitting and assembly service. Bopla

Bopla offers a fitting and assembly service that includes testing

high demand for products? What are the payment and delivery terms on purchasing the enclosures? How reliable is the company? What is its attitude towards environmental aspects?

This is where every equipment manufacturer has to decide for themselves which aspects of selecting an enclosure are relevant to their specific needs.