

# Electro-magnetic compatibility

European EMC directive 2004/108/EC was developed within the framework of the standardization of national regulations and has been in force since 20<sup>th</sup> July 2007. This makes it necessary to submit to EMC tests not only radio equipment but also all electrical and electronic equipment, plants and systems. The purpose of this test is to obtain the awarding of the CE mark which is the pre-condition for the operation of all electrical equipment.

If electro-magnetic compatibility cannot be achieved by means of EMC compatible circuit design and/or metallic internal encapsulation, appropriate measures can be taken in respect of the enclosure. For the choice of an enclosure, this means that an electrical component with EMC can be used in any desired enclosure in 90% of cases without any further work or costs. To achieve shielding, there is no need to sacrifice the essential advantages of plastic enclosures:

- an attractive design
- considerable price savings
- much lighter and more variable

## Shielding with plastic enclosures

Plastic enclosures can also be screened effectively without losing the advantages of plastic. Shielding is also achieved by adding a metal coating inside or outside the enclosure.

We prefer to use copper conductive lacquer for reasons of cost and time. In view of the regulations relating to the disposal of electrical scrap, these costs now have to be taken into consideration when calculations are made. Please note that we are unable to take back enclosures which have been specially coated at the customer's request. The aluminium vapour-blasting process is performed in high-vacuum plants. We use a coating of at least 2.5 µm as standard. However, greater thicknesses are possible at any time depending on the enclosure material.

The mechanical properties of the plastic are not altered by the vapourblasting, so no brittleness or tears will result. The new type of copperchrome-nickel coating (CU/Ni/Cr) gives the modular and fully-insulated enclosures an increased level of EMC protection. Coating masks are now available for most of our standard enclosures so that these can be screened at very low cost. In all cases where the procedures described above are not sufficient to provide shielding, the use of contact seals may increase the shielding efficiency. We can recommend or specify these special seals and then deliver them on the basis of customer-specific requirements as well as the type of enclosure used.

Another effective screening measure is to provide an inner metal cap for components, component groups or the entire electronics, if these parts are highly sensitive to radiation interference. This capping can also intensify the screening measures described above.

To complete EMC measures, for cable insertion we supply the appropriate plastic or metal cable glands with the possibility of connecting the cable screening to the enclosure earthing connection. If you require information on the damping values for various BOPLA enclosures with the appropriate screening, please ask for our specific EMC information.

## Shielding in the case of aluminium enclosures

Under certain circumstances, the material used for aluminium enclosures may provide some EMC reduction. However, the joints (tongue and groove) need to be fitted with the appropriate conductive seals for optimal EMC applications. Please also note that the lacquer coatings must be bridged. This can be done with the appropriate conductive seals or by removing the lacquer coatings. The amount of work involved must be made clear when the requirements are specified. If necessary, we will give you the addresses of competent contact persons and institutes who will help you with EMC problems. They will carry out the necessary tests and measurements for you and can issue certificates.

### **IMPORTANT**

**All technical details are provided to the best of our knowledge but do not release the user from the obligation to test the suitability of these details in respect of the intended processes and purposes. The customer bears the responsibility with regard to the suitability and use for the intended purpose of our products. All liability on the part of Bopla Gehäuse Systeme GmbH in connection with technical information of any kind whatsoever is excluded. We reserve the right to optimise products, to change materials and to amend drawings.**