

Case Study

Monitor frame



Figure 1 Monitor frame

Philips is represented in more than 60 countries and has production sites all over the world. Among the articles it produces are monitors for use in hospitals: these are used for patient monitoring in the operating theater or in intensive care medicine, as emergency monitors in ambulances or as fetal monitors for screening women and their unborn babies. The monitor frame shown in Fig. 1 is used in the 19-inch IntelliVue MX800 patient monitor. This flatscreen device combines an integrated PC and a patient monitor.

Owing to their use in hospitals and operation via touchscreen, the panels of such patient monitors have to be cleaned particularly often. Germs that are becoming ever more resistant necessitate the use of increasingly aggressive disinfectants. Philips was therefore on the lookout for materials that have better resistance to a range of disinfectants than conventional non-reinforced housing materials based on PC+ABS blends.

The requirements profile for a material to solve this problem was as follows:

- Halogen-free flame retardant package
- V-0 at 1.5 mm
- Minimal warpage

OEM: Philips Medizinsysteme GmbH, Germany

Grade: Durethan® BKV 20 FN00

Manufacturer: Gebr. Schwarz GmbH, Germany

- Very high chemical resistance
- Optimal surface quality and esthetics

For the new generation of devices LANXESS offered the glass-fiber-reinforced and halogen-free flame-retardant polyamide grade Durethan BKV 20 FN00, which meets these requirements. Reinforced polyamide has a higher tendency to warp than non-reinforced PC+ABS blends, however. With the help of time-consuming PC simulations, warpage calculations and geometry optimization in collaboration with LANXESS, it has been possible to tackle this issue and thereby bring the parts to the series production stage. Snap-fit latches and screw domes for self-tapping screws can be integrated very easily (see Fig. 2). Owing to its good chemical resistance Durethan BKV 20 FN00 does not tend to stress cracking.



Fig 2 Snap-fit latches and screw domes

Here it has also been possible for the first time to combine a printed disinfectant-resistant film with Durethan by means of film insert molding (FIM), which leads to a high-gloss surface. The FIM tech-

nology is used for the directly visible section of the patient monitors. For other sections the already good surface of Durethan BKV 20 FN00 is sufficient.

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