

Housing made from Ultramid® B3GK24: Fuse-relay box from Tyco Electronics

Case Study

Tyco Electronics, a globally active manufacturer of electronic components, has developed and is now serially producing intelligent vehicle control modules, so-called fuse relay boxes, for use in a new vehicle platform. The housings of these large, multi-part electromechanical modules are made primarily of Ultramid® B3GK24, a BASF polyamide 6 reinforced with a mixture of glass fibers and glass beads. The material is a very good choice for this application, offering an optimized balance between rigidity / strength, flowability and especially low warpage.

The system consists of a front box in the engine compartment and a rear box located in the car interior. The two modules serve not only to supply and distribute power while safeguarding against short circuits in the vehicle but they also centrally control the entire electronic system of the car. In other words, they control the fuel pump, the lighting and the electric power steering as well as numerous other functions in the engine compartment and in the comfort zone. The integration of power and control reduces the number of lines and plug-in connectors as well as the requisite assembly work.

The frame of the front box has a particularly complex shape. The precisely dimensioned webs make the component lightweight and yet very resistant to mechanical stress, so that a single screw is sufficient to fasten it to the vehicle. At the same time, the frame has several snap-on connectors and a special holding system to affix the top functional part – the power distribution module – without any additional screw-in connections. When the material is used in front boxes, it has to be sufficiently resistant to chemicals as well as adequately rigid and tough. “Temperature and shock resistance, excellent dimensional stability with large components – these fuse relay boxes push plastics to their specific limit values. The BASF plastic is very well-suited for these demanding applica-

tions,” confirms the head of development for the automotive division of Tyco Electronics in Bensheim, Germany.

About Tyco Electronics

Tyco Electronics, a business division of Tyco International Ltd., is the world’s largest manufacturer of passive electronic components and a global leader in power supply technology as well as in designing and producing components for the wireless sector. Moreover, Tyco Electronics offers components and systems for premises cabling and is a supplier of wireless communication systems for critical applications in public safety as well as in the realms of power supply and industry.

