SABIC Innovative Plastics™

SABIC Innovative Plastics' Xenoy* resin and Suzuki Motor Corporation, a swift solution for Suzuki

Suzuki Swift pedestrian protection energy absorber featuring Xenoy resin wins the first SPE Automotive Innovation Award for Safety

Since 1920, Suzuki Motor Corporation has pioneered advances in the automotive industry. Their first mass production car (the Suzulight) was a technical marvel ahead of its time. Since the onset of the new Swift development program, dedicated teams of designers and engineers from Suzuki and SABIC Innovative Plastics have worked together to help Suzuki develop a pedestrian-safe solution for Suzuki's best compact car ever. The Xenoy resin-based energy absorber was a swift solution for Suzuki.

SABIC Innovative Plastics and Suzuki Motor Corporation

When Suzuki Motor Co. decided to build the Swift automobile, pedestrian impact performance was a major concern. This pedestrian safety technology, especially pedestrian leg protection, was the engine driving the design of the Xenoy resin-based energy absorber used in the Swift.

The process began with the development of an idealized set-up, incorporating the car styling parameters critical for pedestrian protection requirements.

Then, the vehicle and energy absorber geometries were parameterized and a one-of-a-kind process was set-up to investigate the design space using proprietary finite element impact analysis, with a commercially available lower leg form impactor.

Tests were conducted at Suzuki's Experiment and Analysis Department. They demonstrated that the front-end safety energy absorbers molded from Xenoy resin have the ability to manage energy sufficiently to help reduce deceleration, bending and shear of the lower leg model well below the limits of the negotiated agreement between ACEA and the European Commission. This agreement is also known as ACEA Phase 1.

The Suzuki energy absorber also meets the EU regulation and contributes to obtain Euro NCAP3.

Using Xenoy resin for its ideal balance of stiffness and ductility for this application, the co-work between Suzuki and SABIC Innovative Plastics to study the design of energy absorber accomplished this great work.

The application also fulfills Suzuki's other quality specifications. Use of the Xenoy resin enables weight reduction and lowers total application costs. It's easy to assemble and, with technical support from SABIC Innovative Plastics' automotive specialists, it helps cut development time.

SABIC Innovative Plastics' global supply capability ensures material availability and delivery continuity to satisfy Suzuki's manufacturing demands currently underway in Japan.

Energy absorbers molded from Xenoy resin are positioned to meet EU pedestrian protection legislation, which entered into effect in 2005. In support of these efforts, SABIC Innovative Plastics has installed a new pedestrian impact test system at its Moka Technology Center in Moka City, Tochigi, Japan to help automotive customers validate new material technologies for front-end safety systems.

The Suzuki energy absorber application – featuring Xenoy resin – was recently named the first-ever winner in the Safety System category of the 2005 SPE Automotive Innovation Awards program.

Case Study