



## CRASH TESTING

*Crash tests are a crucial factor in passive safety throughout the automotive industry. They give manufacturers and OEMs in-depth knowledge about the structural and energy absorption behavior of vehicles, their components and the vehicle occupants. This demonstrator project focused specifically on the integration of a measurement system to perform dynamic response analysis of a crash dummy rib deformation during impact.*

An optical fibre is installed on the rib, equally dividing eight optical sensors over the circumference of the rib. The **Gator** is used to measure the deformation induced wavelength shifts. From this information the off axis strain is calculated and together with the known distance to the neutral axis of the material, the bending radius is derived to reconstruct the shape of the rib.

The rib deformation demonstrator is finalized by combining the design and the shape reconstruction algorithm into a dedicated visualization software capturing both real-time deformations and high-speed impacts. Full system tests substantiate the actual compression of the rib of e.g. 20mm is accurately recorded by the dedicated software.

This successful proof of concept is ready for ruggedization and integration into a crash test dummy for continuous real-time deformation monitoring during impact!

*Gator*



*Jantina Wijpkema*  
Development Engineer  
[Jantina.Wijpkema@technobis.com](mailto:Jantina.Wijpkema@technobis.com)

