
Case study: Seatbelt anchorage points on fibreglass body

The LVVTA was approached by a car enthusiast who wanted to create compliant seatbelt anchorage points on the cab of his fibreglass-bodied Ford F100.

THE ISSUE

Fibreglass reproduction bodies are a popular solution to replacing the ageing (and usually dissolving) metal bodywork on a number of vehicles, from 1930s American cars through to 1980s Land Cruisers.

Fibreglass bodies present extra challenges for creating compliant seatbelt anchorage points, because fibreglass doesn't have the strength of steel.

Because a seatbelt anchorage needs to be able to withstand significant crash forces, owners of fibreglass-bodied vehicles will typically construct a metal seatbelt support frame, which mounts to the steel of the vehicle's chassis, or will use 'fully stressed' seats (which means all of the seatbelt anchorages are contained in the seat), again mounted to metal.

THE SOLUTION

The vehicle owner used his boat fabrication expertise and extensive knowledge of fibreglass to find a solution. He created a design using multiple layers of fibreglass strand mat and foam core, and alloy inserts for the seatbelt anchorage bolts.

His calculations showed that in theory the design would withstand the required forces, but the next step was to carry out physical safety testing to see if the practical construction backed up the theory.

An existing test rig, specifically designed to test seat and seat belt anchorages, was used for this safety testing.

Members of the LVVTA's Technical Advisory Committee (TAC) were interested to see the test in action, so they attended. The TAC is the method by which vehicle owners gain approval for solutions that don't fit conventional construction requirements.

The cab passed its safety testing with no issues, and subsequent ultrasonic tests confirmed there was no delamination or hidden damage resulting from the test.

THE RESULT

The design was approved by the TAC and was able to achieve safe compliance. This example shows the benefits of careful planning and testing when using innovative solutions.

Fibreglass body in test rig

