



CTA reduces weight and costs

With its over thirty-year experience in the automotive industry, CTA is the leading manufacturer for structures to mount seat belts onboard of recreational vehicles. It specializes in processing metals and, a few years ago, it acquired a piece of machinery for type-approval certification of structures and seat belts. Thus, carrying out the tests required by the legislation in name and on behalf of many Italian motorhome manufacturers. This allowed CTA to experiment and modernize its safety systems by introducing innovative designs and materials. Before, motorhome manufacturers were forced to use external bodies for type-approval certification of the seat belts and, not to risk failing the test, they would rather oversize the structures. Instead, CTA has set weight reduction as its goal from the

start, and three years ago it was the first company to launch 14.5-kg structures on a market where competitors' products weighted 24-25 kg. This success was due to the use of special high-resistance materials (metal alloys with low weight density and five times more resistant than standard iron). Such materials are the result of an accurate research and development project carried out by the Swedish company, which is the world leader when it comes to high-resistance steel. CTA started to use such material (especially designed for use in the automotive industry) five years ago, when it launched the production of this type of structures, an absolute novelty in the motorhome industry. However, weight reduction was not the company's only goal; all its projects have always aimed at producing user-friendly and easy-to-install products.

Tested by Manchester University

Three years ago, the UK based motorhome manufacturer RS Motorhomes Ltd designed and development an anchorage structure incorporating CTA seat frames. RS worked with STATUS (Specialist Transport Advisory and Testing Society) at Manchester Metropolitan University to carry out testing of the CTA frames and anchorage structure. STATUS carried out the in vehicle pull test in accordance to Directive 76/115/EEC as amended by 2005/41/EC. The RS chassis mounted structure and CTA frame assembly presented for test complied with the strength and positional requirements of directive 76/115/EEC as amended by 2005/41/EC. The structures presented for testing were a Mercedes Atego based Evolution model and an Iveco Daily based Endeavour model. Attached to these structures were forward facing and rearward facing double CTA seat frames, both incorporating 3 point seat belts. Both CTA seat

frames are bolted through the vehicle floor to the RS chassis anchorage structure. All belt anchorages are incorporated into the CTA seat frame with the upper anchorages and seat belt reels centrally positioned on the frames vertical column, the lower belt anchorages are located on the horizontal cross beam. The seat base was of timber construction with foam cushions incorporating a backrest surrounding the CTA seat frame." The rig used was a free standing structure with horizontal beams that could be moved into appropriate positions in order to clamp down the vehicle. A total of ten hydraulic rams were fitted to a carrier of which eight were required for the test. The rams were provided with a means vertical and horizontal position adjustment as well as having angular freedom in a vertical plane parallel to the longitudinal plane of the rig. Load were measured using load cells with full bridge strain gauges, which were calibrated using a tensile testing machine



with calibration traceable to primary standards. Voltage outputs were sampled at a rate of 500Hz through a data acquisition card to a computer. These voltages were buffered and then used to generate load against time graphs using the calibration factors previously obtained.



Easy-to-install

Extremely easy-to-install, CTA structures only need two holes in the floor and fixing to the cross members of the chassis with the proper tie rods (threaded rods) and straps. One of the standard models mounts 3-point safety belts for forward-facing seats, and it comes with telescopic side arms to adjust the seat belts fixing points and adapt to different kinds of vehicles (motorhomes, semi-integrated and coach-built, pure camper...).

A model especially designed for semi-integrated motorhomes -with anterior oscillating bed which opens on the living area- comes with a height-adjustable central column, as in some models the column, which was used for fixing seat belts, interfered with the bed mechanism when opened. There are also 3-point designs for single forward-facing and rear-facing seats, both single and double seats, which in this case mount 2-point instead of 3-point seat belts, which are compulsory for forward-facing seats. In addition, as some vehicles have a drop between the driver's cab and the cell floor -consequently raising the dinette so that it is on the same level of the driver's cab seats- the structures come in two different heights, so that they can adapt to the dinette.

Customized design

Design methods differ depending on whether the customer owns 3D design equipment. If it does, CTA simply indicates where to position and fix the structure on the frame; if it doesn't, the customer has to fill in a form with information which is key to the design: such as the type of mechanics, wheel base, frame (drop frame, with cross members,

low loading), positioning (simple or double floor, thickness). The design transfers a 3D drawing of the structure exactly where it will be mounted on the vehicle, with a layout and a list (specifications list) of the components chosen by CTA (code, description, quantity of the pieces). The codes are the same written on the type-approval certification. The cost estimate with the

details of each component is added to the project. Thus, it is very easy for the customer to compare it with its own project. All projects, associated to their customers, are stored by CTA in a customer-history archive, to simplify any modifications which might be necessary in the future. Thus, in case of repeated orders, looking for the correct codes will be almost automatic.

Latest Model: Truma Combi Ready

One of the latest models is Truma Combi Ready, especially designed to host the popular German heater inside the dinette. The project, commissioned by Truma, is aimed at installing the Combi at the center of the vehicle, thus maximizing the distribution of channeled hot air, which is often dispersed because the heater is usually installed in a very decentralized position, such as garage peaks, in the compartments behind the double beds in the back, and at the basis of the closet in the tail; this position also makes more stowage space available.

CTA structures are constantly evolving, not only in terms of weight reduction, which is now approximately 11 kg for the 400 model (2 forward-facing seats with 3-point seat belts), but also in terms of adaptability of different models for specific installations. A structure is being studied, in collaboration with other three Italian companies, which would allow having inside the dinette, integrated with the seat belt structure, either the drinkable water tank alone or the water tank and the Combi heater together.



Company Profile

CTA has a 35-year long experience in the automotive industry, and it is mainly focused on transforming different kinds of technical vehicles and structures. It addresses mainly vehicle manufacturers which need not only the design, production and supply of finished products, but also after-sales assistance. Its great experience and organization capacity lead to a rapid development in production; this is what enables the technical department to carry out extremely innovative studies, while efficiently following up on the progress of purchased orders.

CTA is the leading company in the design and manufacture of fixing structures for seat belts onboard of recreational vehicles; its activity is based on innovation and vanguard solutions.