1st Place Winner and Runner-Up Project Abstracts

Runner-Up

School: Institut für Fahrzeugtechnik Trier, Germany

Project Title: System to Measure and Evaluate the Seat Belt Usage Rate in Coaches

Competition Category: Test Devices and Test and Evaluation Procedures

Region: Europe

Abstract
Seat belt use is very important in all vehicle categories and particularly in coaches. Indeed many fatal accidents in coaches are due to the fact that either no seat belts are installed or passengers do not use the existing seat belts. Since 1999, it is mandatory for each passenger in Germany to use a seat belt if one is installed. With regard to the adaptation of the EC directive 2003/20/EC, belt usage in coaches is now mandatory in all EC countries. In this context the question concerning the usage rate is posed. In fact there exists no scientific study for coaches worldwide, whereas for cars seat belt usage rates are monitored regularly. It is expected that the usage rate in coaches is very low compared to that in cars.

The team of undergraduate and graduate students has developed a system to acquire the seat belt use in coaches. Therefore, a coach enterprise was asked for help and provided a coach. This coach was fully equipped with sensors that are utilized for occupant detection and belt use. A data logging system was installed that scans and records a set of data every 10 minutes. A cable loop, consisting of network cable, connects the sensors to the logging system. It is regarded as important that the system works without knowledge of the passengers, so all components were attached unrecognizable. The recorded data can be requested at the coach enterprise via data interface. The information will be used to develop methods to raise the acceptance of seat belts in coaches. First tests are already running.