

Seeing double



The MUSE consortium is working to improve motorcyclist safety by studying the main collision scenarios and possible countermeasures, and developing tools to improve and evaluate these systems

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Nowadays, Euro NCAP protocols assess ADAS technologies that can detect cars, pedestrians and bicyclists, but they don't consider powered two wheelers (PTWs). UTAC CERAM has initiated the Motorcycle Users Safety Enhancement (MUSE) consortium, bringing together 14 industry partners, including several OEMs and Tier 1 companies, to address the issue.

Despite representing a small portion of road users, PTW users account for the highest percentage of road deaths in the vulnerable road users group. Testing equipment that could enable the industry to develop and evaluate an emergency braking system involving a motorcycle doesn't yet exist, nor is there a test protocol defining the main scenarios and their characteristics. The aim of the MUSE project is to address these gaps and provide OEMs and Tier 1 companies with the tools to test and optimize their systems.

Collision statistics

While the number of car occupant deaths decreased by 50% between 2005 and 2014 in Europe, the motorcyclist death rate fell by just 30%, according to a 2016 report by the European

Commission's Directorate-General for Transport. PTW deaths represent around 20% of road deaths in Europe. In Germany and France, around 50% of motorcyclist deaths involve another vehicle. In France, the responsibility is evenly distributed; in Germany most cases happen because of other vehicles.

To ascertain which systems would protect riders well, and to define the technical characteristics that test equipment must meet, we first need to understand the collisions in which motorcyclists are involved. Therefore various national and European databases are being studied.

PTW dummy

4activeSystems is developing a new and fully 3D PTW dummy, focusing on ensuring a realistic response to all automotive sensor technologies, including camera, radar, infrared and lidar. The typical structures of a PTW – including wheels, reflectors, active lights and license plates – must be displayed to camera and lidar systems in a realistic manner, for example with detailed and specific surface properties, and by ensuring the 'wheels' touch the ground. To test the car's radar response, the dummy must

[Above] Complex scenarios can be depicted using the new PTW dummy from 4active Systems

mimic the typically very uneven ride characteristics of a motorcycle. The dummy must also represent rotating wheels, so that the radar can gather differential speed information, which is used for better classification. The structure must be stable for traveling speeds up to 80km/h and it must be possible to crash into the dummy from any direction without damaging it or the vehicle under test.

While the PTW dummy should respond in a realistic manner, the equipment that moves it should be invisible to sensor systems. The existing 4activeFB is an extremely flat GNSS/IMU-controlled platform powered by a high-performance driving unit. It has a very low radar cross-section and is designed for testing small road users such as pedestrians and bicyclists, as well as motorcyclists at higher speeds. ◀

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