Connected Motorcycle demo features Ducati, Lamborghini

The Connected Motorcycle Consortium (CMC) is an international association of leading two-wheeled vehicle manufacturers aiming to include motorcycles in the future of automotive "connected mobility." A recent CMC-organized demo event on the track at Lausitzring, Germany demonstrated systems developed over the course of the consortium's research to date.

While automakers have been developing vehicle-to-vehicle (V2V) communication technologies for years, CMC works on adding information sent by motorcycles (which have different needs and dynamics), so systems can be standardized as the technology is integrated into the entire bike and car fleet in circulation. Automobili Lamborghini and Ducati share t his commitment to a higher level of safety for motorcyclists, via motorcycle-to-car communications.

Founded in 2016 (the same year Ducati joined), CMC began with precise analysis of the most dangerous accidents between motorcycles and cars, by frequency and seriousness of harm to motorcyclists. Cases where connectivity could help most were selected, to develop methodologies to reduce the number of impacts and their physical risk. A crucial aspect of this research is to reduce system reaction times as much as possible, as the risk of an accident depends on how far in advance parties involved are warned.

Lamborghini helped Ducati in the trial stage by providing a Urus for use case simulations. Ducati looked at the most critical and dangerous accident cases—those that place bikes in an obscured position in relation to oncoming cars or in a situation where they don't have visibility of what is happening in front of them—where communication between on-board sensors could help. Analysis demonstrated at the Lausitzring concentrated on three areas.

IMA (Intersection Movement Assist) considers a reduced-visibility intersection where a bike on a busy road approaches an intersection while a car is arriving at the same time from a secondary road. To make this even more critical, Ducati added a fixed obstacle to totally obscure the bike from both the car driver's sight and the car's auxiliary systems. In this case, a warning signal is displayed on the car dashboard alerting that motorist to the bike.

LTA (Left Turn Assist) covers intersections with a car and bike traveling on a main road in opposite directions, and the car planning to turn left. Here, the bike is less visible than the car—even through auxiliary systems—risking the bike not being well evaluated by the oncoming car. In this case, as soon as the car turns on its signal(!), a warning signal is displayed for the bike.

DNPW (Do Not Pass Warning) is for the case where a bike in a line of traffic wants to overtake a large vehicle in front of it, but which in turn has a car ahead of it that wants to make a left turn, but is not visible to the motorcyclist. In this case, it is the motorcyclist that sees the warning as soon as the system detects that both the car and the motorcycle have turned on their blinkers.

The technology was developed in collaboration with a number of suppliers, including Bertrandt for hardware and Nfiniity for the operating system and algorithms. In this phase, the prototype has a dedicated screen on the motorbike with warning signals to let the motorcyclist know about any danger. ■