

Astemo Riding Support Systems Concept ACC offset running and sign recognition functions

- **Advanced two-wheel ADAS concept using camera sensing technology.**
- **Equipped with a wealth of ADAS functions in a single package, utilizing the high recognition capability of camera sensing.**



From EICMA2025 actual running images,
LEFT: ACC offset running functions, RIGHT: sign recognition functions

ADAS (Advanced Driver Assistance System) for motorcycles using stereo cameras for forward detection was introduced by Astemo in 2022, and we have presented the latest version of its evolution at EICMA every year since then. At EICMA 2025, we will exhibit a system in which, while maintaining the existing functions, the ACC (Adaptive Cruise Control) function has been expanded. By adding new functions unique to camera sensing technology and linking with other vehicle body control functions, we aim to further advance driving safety performance and improve comfort.

Astemo is committed to realizing a better mobility society through the concerted efforts of all employees under the concept of MISSION/VISION/VALUES. By pursuing technological innovation, we aim to contribute to the goal of zero traffic accidents worldwide. To realize this in the motorcycle domain, we are working on the development of peripheral recognition using cameras (camera sensing technology) and the further advancement of coordination and integration of each control unit of the vehicle body (vehicle integrated control technology).

As a step toward realizing this ADAS technology for motorcycles, we envision the following phased offerings.

The first step is to improve safety by using stereo cameras or mono-cameras for forward and

rearward detection to recognize the running situation of the vehicle and its surroundings, and to send alerts and other information to the rider according to the situation to encourage them to avoid danger. The system uses FCW (Forward Collision Warning), BSD+BCW (Behind Spot Detection + Behind Collision Warning) to warn the rider of danger in front and rear, along with functions to recognize traffic signals and traffic signs.

In the second step, the system will provide safe and comfortable driving support by integrally controlling factors such as engine output, brakes and suspension in accordance to the vehicle status and surrounding conditions detected by the cameras, with the aim of achieving zero fatal traffic accidents. Other functions such as ACC (Adaptive Cruise Control), which recognizes the vehicle ahead and automatically maintains a set distance and speed, EBA (Emergency Brake Assist) and AEB (Autonomous Emergency Braking), which support the rider's braking operation when a collision risk is detected, and ISA (Intelligent Speed Assistance), which recognizes speed signs and automatically adjusts the vehicle's speed to a safe level, will also be available.

In the third step, we will further enhance the affinity between the camera detection function and vehicle body control and attitude control to reduce the risk of accidents involving falls, and at the same time, we aim to provide a new mobility experience by utilizing V2x coordination technology, in which the vehicle and various objects communicate with each other. This will contribute to the elimination of traffic accidents worldwide by enabling early avoidance of hazards in blind spots.

At EICMA 2025, we will add new technology to the first step that we have been presenting as Astemo's ADAS for two-wheeled vehicles, which we are aiming for in the second step. Through actual running images, visitors can experience how the camera detection function and integrated vehicle control system operate in various driving situations to allow riders to ride safely and comfortably.

<Features for Visual Experience>

① Following the preceding vehicle

The system captures the vehicle in front of it traveling in the same lane as the target vehicle and follows it while maintaining a set distance from it. By taking advantage of the unique features of camera sensing, the system can correctly recognize the positional relationship between the vehicle and a motorcycle in front, allowing the vehicle to safely follow the motorcycle diagonally ahead, even when motorcycles are traveling in a series offset in the lane, a positioning which is unique to motorcycles.

2 Speed adjustment for curves

The camera recognizes the shape of the road ahead and automatically adjusts the speed before a curve so that the vehicle can travel at a safe speed for the curvature. In addition, the camera can reliably capture the vehicle ahead in its own lane while driving around curves, allowing the rider to follow the vehicle with a sense of security at a safe speed and distance according to the curve.

3 Speed adjustment to match speed signs

When the camera detects a speed limit sign ahead, it alerts the rider if they are traveling at an excessive speed, or automatically adjusts the speed.

4 Collision avoidance

When there is a risk of collision with a vehicle, obstacle, or pedestrian ahead, the system warns the rider in advance, and if the rider's collision avoidance actions are insufficient, the system safely decelerates or stops the vehicle.

Astemo's concept of ADAS for motorcycles is a technology that supports the rider's cognition, judgment, and operation in the entire range of driving behavior. Camera sensing technology anticipates risks based on the vehicle's own driving conditions, its surroundings, and its movements, while integrated vehicle control technology assists the rider's operation at all times and in all directions. We believe that this will not only contribute to improved motorcycle safety but also provide riders with a sense of safety that leads to comfort and the enjoyment of riding a motorcycle. We want to bring the joy of riding motorcycles to more riders around the world than ever before by providing safety support in situations where it is truly necessary, while respecting the rider's feelings and sense of style. With this in mind, Astemo is working to develop ADAS technology for motorcycles.

ADAS technology has been installed in automobiles on the market vehicles for some time and its functions have been expanding, but its installation in motorcycles requires overcoming various challenges unique to motorcycles. Astemo has camera sensing and simulation analysis technologies cultivated for automobiles, as well as engine, brake, and suspension control technologies specific to motorcycles. We are combining all of the company's strengths to develop ADAS for motorcycles while working to solve issues specific to motorcycles. We would also like to contribute to the installation of ADAS technology in motorcycles in various ways, such as system development, provision of components, and analysis support.

[Main Functions of Astemo Riding Support Systems]

▪ ACC (Adaptive Cruise Control)

The system captures the vehicle in front of it traveling in the same lane as the target vehicle and follows it while maintaining a set distance from it. By taking advantage of the unique features of camera sensing, the system can correctly recognize the positional relationship between the vehicle and a motorcycle in front, allowing the vehicle to safely follow a motorcycle diagonally ahead, even when motorcycles are traveling in a series offset in the lane, a positioning which is unique to motorcycles. In addition, the camera can reliably capture the vehicle ahead in its own lane while driving around curves, allowing the rider to follow the vehicle with a sense of security at a safe speed and distance according to the curve.

▪ AEB (Autonomous Emergency Braking)

When there is a risk of collision with a vehicle, obstacle, or pedestrian ahead, the system warns the rider in advance, and if the rider's collision avoidance actions are insufficient, the system safely decelerates or stops the vehicle.

▪ ISA (Intelligent Speed Assistance)

When the camera detects a speed limit sign ahead, it alerts the rider if they are traveling at an excessive speed, or automatically adjusts the speed.

▪ ARM (Adaptive Riding Mode)

When corners or rough road surfaces are detected, the system automatically adjusts various vehicle body settings (riding modes), such as driving force and braking force output characteristics and suspension damping characteristics, to prepare for unexpected vehicle body behavior and enhance safety.

▪ HWE (Haptic Warning by Engine)

As a means of warning the rider, the engine control system makes the vehicle body vibrate to inform the rider through such means as ignition cutoff. The TSR vibrates the vehicle body to warn the rider when it detects regulatory signs and to provide advance warning when changing speeds during ISA operation.

*Information contained in this Technical Information is current as of November 3, 2025, but may be subject to change without prior notice.