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Yesterday, today, tomorrow - the BMW Group sets out its philosophy on safety at the ESV conference.

The BMW Group is presenting a panorama of safety technologies from the past, present and future at the International Technical Conference on the Enhanced Safety of Vehicles.

Munich/Stuttgart. The ESV Conference (International Technical Conference on the Enhanced Safety of Vehicles) is the world's largest and most important conference focusing on the issue of vehicle safety. The 2009 event will take place on 15 – 18 June in the new conference centre in Stuttgart, Germany under the title "Reinventing Safety: Putting Advanced Technology to Work".

Communications are the key to the future: vehicle-to-vehicle communications from BMW ConnectedDrive and BMW Motorrad ConnectedRide.
The BMW Group stand at the Conference offers visitors a glimpse into the future. Performing the role of mobile test beds, a BMW 7 Series car and BMW K 1300 S motorcycle have been fitted with innovative vehicle-to-vehicle communications technology. A range of different scenarios – including warnings of bad weather, obstacles, an emergency vehicle approaching and a braking manoeuvre by a vehicle ahead – can be reproduced in these prototypes with the aim of improving road safety. These systems, in addition to the intersection and traffic light assistance technology already presented, can now also be experienced worldwide on a BMW motorcycle.

The Emergency Vehicle Warning system uses a visual display to give the driver or motorcycle rider an early warning of an approaching emergency vehicle and its distance from the car or motorcycle. The emergency vehicle communicates its current position, route and status of the flashing lights or siren. This allows the driver or rider to make way for the emergency vehicle in good time and avoid a critical situation from arising.

The obstacle warning system flags up immobilised vehicles and accidents in the same lane, as well as roadworks and ends of tailbacks. This warning can be triggered – by the immobilised vehicle itself or by several vehicles at the end of a queue of traffic – through activation of the hazard warning lights or a braking manoeuvre.

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Slippery conditions are highlighted by a bad weather warning or a warning generated by interventions by the control systems (Dynamic Stability Control etc.). Alerts of poor weather are also triggered by several vehicles switching on their fog lamps or windscreen wipers, for example. The activation algorithm is linked up with the outside temperature gauge and other sensors (rain sensor, video camera, weather report etc.) and issues relevant alerts in the Head-up Display, on the instrument cluster or audibly via the BMW motorcycle's communications system. An early warning of slippery road conditions is a major safety factor for motorcycle riders in particular.

In queuing traffic, brake lights are frequently concealed by the next vehicle in the lane. In order to inform the drivers following behind of heavy braking at an early stage, this information is transferred via communications systems so that they can react as required. Here again, this information is relayed via visual or audible alerts.

All of these systems can be seen on the BMW Group car and motorcycle on show at the Conference. However, vehicle-to-vehicle communications only gets really interesting when as many vehicle manufacturers as possible are involved. For this reason, the communications technology at the ESV Conference is also being presented in cooperation with two Daimler AG vehicles.

The highest safety standards can be taken as read.
Klaus Kompass, Head of Vehicle Safety, explains the philosophy of the BMW Group: "The highest standards of safety can be taken as read in cars produced by premium manufacturers. What sets our vehicles apart is the integrated approach of our safety concept."

The latest BMW 7 Series allows the BMW Group to provide evidence of this claim in a series-produced vehicle by taking on the role of prototype for Car2Car communications. An unusual feature here is its integrated approach, which brings together precise driving dynamics, effective driver assistance and optimum occupant protection into an overall package with one extremely ambitious aim: unbeatable safety. Cutting-edge driver assistance and driving stability systems, extremely precise steering and highly effective brakes help the driver to avoid accidents. As well as front and thorax/pelvis airbags, the passive safety features on board also include side-mounted curtain head airbags for both rows of seats as standard. Three-point inertia-reel seatbelts with belt force limiters, backed up by a belt tensioning function and crash-active head restraints on the front seats, round off the safety package, which is underpinned by a central safety electronics system.

The active safety highlights include:

- The Lane Change Warning system, which gives the driver a visual and vibration signal to alert him to vehicles in his blind spot.
- The Speed Limit display, which made its world debut in the BMW 7 Series. This feature keeps the driver informed at all times of the maximum permitted speed on the stretch of road he is currently driving.
- The new BMW Night Vision with pedestrian recognition, which offers preventative pedestrian protection by detecting people up to a distance of 300 metres in front of the vehicle and warning the driver of hazardous situations.
- Side View, which allows the driver to identify cross-traffic at junctions with restricted visibility.

In the brief snapshot of time before an unavoidable impact, the areas of active and passive safety become interlinked. Assistance systems give the driver information or warnings indicating the necessary course of action. For example, the proximity warning system urges the driver to brake. At the same time, Dynamic Brake Control is brought into play. Chassis control systems stabilise the vehicle and can prevent it from rolling over. The sensors supply valuable information to prime the passive safety systems for action. For example, the electrically driven seatbelt retractors pull the belts taut, ensuring optimum restraint at this early stage. The impressive art of the BMW Group safety experts lies in coordinating these processes to maximum effect, thereby gaining critical milliseconds. The goal of all these measures is to reduce the severity of an impact, should it be unpreventable.

And the BMW Group continues to advance the cause of safety even after an unavoidable accident. The hazard warning lights and interior lights of the vehicle are activated, the safety battery terminal is triggered and the Extended Emergency Call function of BMW ConnectedDrive not only alerts the emergency services quickly and reliably, it also supplies them with additional information on the location, model and colour of the vehicle involved in the accident and the severity of injuries suffered by its occupants. The latter is determined by data supplied by passive safety system sensors.

The origins of the integrated safety concept – the BMW Turbo from 1972.
It was back in 1972 that BMW established its integrated safety concept in the BMW Turbo design study. The styling-centric concept offered a look ahead to the later BMW M1 sports car. However, the developers had also focused very much on safety in the design of the car, as underlined by good all-round visibility, a low centre of gravity, well-balanced axle load distribution and a striking shade of paintwork.

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But that was, of course, only one aspect of the "world's first safety sports car". Both cars – the concept unveiled in 1972 and its only slightly modified reincarnation of 1973 – were conceived as research laboratories on wheels. This explains the presence already of ABS, a radar-based distance warning device and a lateral acceleration sensor in the car's active safety package. The extensive line-up of passive safety systems, meanwhile, included seatbelts which completed the electrical circuit for the ignition lock, a safety steering column with three universal joints, door pillars reaching up into the roof – which performed the function of a roll bar – and safety crumple zones with hydraulic dampers at the front and rear.

The BMW Turbo – facts and figures:

- 4-cylinder in-line engine with petrol injection and turbocharger
- Maximum output: 200 DIN hp (rising to 280 hp)
- Displacement 1,990 cc
- Single-plate dry clutch
- Fully-synchronised 4-speed gearbox
- Weight: 980 kg
- Weight-to-power ratio: 4.9 kg/hp
- Top speed: 250 km/h
- Acceleration: 0 – 100 km/h in 6.6 sec

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