Have a safe trip – wherever you are!
A world without road accidents – that is Continental’s goal and the reason why the company is supporting Global NCAP. This non-governmental organization (NGO) advocates and promotes the safety of both vehicles and roads. David Ward is Secretary General of Global NCAP.
Speaking with VisionZeroNews, Ward, a philosophy graduate, sets out his vision of an accident-free world, explains why mandatory and globally valid crash tests are so important, particularly in emerging economies such as India and China, and argues that auto suppliers like Continental are the real innovators in the automotive world. Read the full interview on page 10 – 11.
...that Continental had already been driverless 50 years ago?

“The future has already begun” and “Ghost driver takes to the track” ran the international headlines the day after the big event. What had happened to generate such excitement? Let’s backtrack 24 hours and find out. On September 11, 1968 representatives of more than 400 newspapers, magazines, radio and TV stations had gathered at the Contidrom test track in Northern Germany to witness a piece of automotive history in the making.

For fifty years ago, this was where Continental gave the first electronically controlled driverless car its first outing. The actual purpose of this visionary project was to research how tires could be tested with scientific accuracy under predetermined conditions. And Continental’s engineers were not holding back. By pushing the envelope of what was technically feasible in the day, they laid the foundations for the future of driving.

In a Mercedes Benz 250 Automatic (also known as the “Stroke Eight”), Continental’s engineers had installed an electromechanical steering system and an electromechanical acceleration regulator, as well as radio equipment for transmitting the measured values - all state-of-the-art technology at the time. Several antennas were mounted on the bumpers, and the control electronics and an electro-pneumatic braking system were fitted in the trunk. From the control station beside the test track, the engineers sent commands – brake, accelerate, honk – to the car via a wire running along the track. The advantage of this novel test system was that human factors could be ruled out, significantly improving the precision of the measured values. And the capacities of the Contidrom, which had only been opened a year earlier, could be fully exploited for the first time. Measurement technology was still in its infancy, so we developed a lot of things ourselves,” says Herbert Ulsamer (76), who began his career as a young vehicle construction engineer with Continental in 1965 and retired from the company in 2006.

“We salute the ideas and the pioneering spirit of our engineers who developed the first driverless car a whole five decades ago.”

if necessary. “When all’s said and done it was a car that drove on a wire,” says Hans-Jürgen Meyer (78). At the time, Meyer was responsible for the development of new measurement methods for the objective evaluation of tires. These then complemented the existing tire evaluation methods, which for the most part were purely subjective. Measuring coils fitted to the vehicle detected a magnetic field generated by the wire attached to the track, in a system that enabled precise electronic control.

“For us as young engineers, the E-car was always like a big toy,” said Meyer with a grin. At an anniversary event at the Contidrom in July 2018, he swapped memories with former colleagues Herbert Ulsamer and Klaus Weber (81). And where these three retired engineers talk about an ’e-car’ they’re not referring to a modern electric vehicle but to their electronically controlled car from all those years ago. The driverless e-car was one of the star attractions at numerous events hosted by the Contidrom between 1968 and 1974.

One thing that has not changed over the past half century is that Continental is still working to shape the future of mobility. “Today at the Contidrom, where in 1968 a magnetic field helped ‘navigate’ the car, Continental uses on-board microchips, as well as satnav and driver assistance systems. And where once there was a central computer collating the findings from the electronically controlled car, now increasing numbers of cars are permanently connected to the internet. Today, Continental is on the way to realizing automated and autonomous driving – on highways and urban streets and for parking maneuvers.

“The future has already begun.”
Don’t underestimate the danger

The northern hemisphere is back in the grip of the cold season, complete with hazards like sudden downpours, slush-covered roads and aquaplaning. And Continental is busy developing new technologies that will deliver greater safety in the wet.

When the mist rises off the meadows in the early mornings, heavy frost casts a sparkling net over all of nature, and night-time snowfalls are transformed into slush as the daytime traffic increases, then you know it’s winter. For drivers, though, there is another side to the cold season – because with mist, frost and sudden downpours, dangers can arise in the blink of an eye. The risk of accidents is many times greater in winter. In Germany, extreme weather conditions such as snow, ice and rain are responsible for around 39 percent of all road crashes. One of the most dangerous – and most seriously underestimated – dynamic situations is aquaplaning, a hazard that for drivers and even for automated vehicles is as hard to predict as it is to master. Cloudbursts or slush can often literally flood the roadway. In the spray thrown up by vehicles ahead, standing water or water-filled grooves are difficult or impossible to spot. And with road conditions like this, in no time at all a wedge of water can build up in front of the tires, a wedge that at some point the tread can no longer fling entirely aside. The wedge pushes its way under the contact patch and the tire loses contact with the road. At this point the car is out of control, because the tires need to offer at least a minimum of grip for assistance systems like electronic stability control (ESC) or anti-lock brakes (ABS) to have any stabilizing effect.

The Wedge

Warning system spots risk of aquaplaning early on

State-of-the-art safety technologies can help drivers and vehicles to reduce the risk of aquaplaning. “Even with the best tires, sudden aquaplaning is always a frightening moment and can mean the danger of an accident. We are currently developing a high-performance technology based on sensor information and software that detects a potential risk of aquaplaning and warns the driver in time,” explains Frank Jourdan, member of the Continental Executive Board and head of the Chassis & Safety division.

In time and can better adjust their speed ahead and feeds information to the driver assistance systems. The outcome is a kind of solidarity network where one vehicle acts as a ‘safety sensor’ for all the others – not just those in the immediate vicinity. The aquaplaning warning transmitted via V2X or eHorizon enables drivers potentially at risk to adapt their style of driving to the conditions in good time.

Communication via V2X technology

But what if aquaplaning occurs unexpectedly with no time for any advance warning? Then at least the potential risk to other vehicles can be mitigated by informing them via V2X (Vehicle-to-Everything) technology and eHorizon – a cloud-based big data solution that offers drivers a preview of the road ahead.

First the basics: Check your tires regularly to ensure that they still have enough tread. With summer tires a minimum of 3 millimeters is recommended while winter tires should have at least 4 millimeters of tread. And make sure your tire pressures are right. You will find the correct pressures on a label on your vehicle.

There are clear warning signals when aquaplaning threatens – apart from your windshield wipers running at top speed – such as the loud noise of water striking the underfloor and the steering becoming increasingly spongy. If you do encounter aquaplaning, here’s what to do:

- Keep both hands on the steering wheel.
- Do not attempt to steer or brake because this can cause a skid.
- Take your foot off the gas and reduce speed gradually - without braking.
- Leave a bigger gap to the vehicle in front.
- Depress the clutch or shift into neutral and wait for your speed to drop to a level at which the tires have contact with the road again.

How best to deal with aquaplaning


Cameras recognize a specific splash and spray pattern that indicates aquaplaning at a very early stage.

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This means that drivers will be warned in time and can better adjust their speed before things get critical. Initial production of the technology, which is currently at the predevelopment stage, could begin as early as the next generation of vehicles.

Tires help identify risk of aquaplaning

In addition to the camera data, Continental is also planning to use information from the tires to identify the risk of aquaplaning. This will involve checking the accelerometer signal from the electronic Tire Information System (eTIS) for a specific pattern. As the eTIS sensors also measure the remaining tread depth, a safe speed for the given wet road conditions can be computed and communicated to the driver.
Making trams safer

Targeting Vision Zero on rails: At InnoTrans, the international trade fair for transport technology in Berlin, Continental showcased new high-tech solutions that deliver greater safety in urban rail transport.

Pedestrians, joggers with earphones, cyclists, kids on kick scooters, teens on kick scooters... urban streets and sidewalks are home to mobility in endless different forms. And then of course there are cars and trams. And believe it or not, in the increasingly dense traffic of the world’s ever-expanding metropolises, trams, too, are frequently involved in accidents. In Germany alone there were some 1,500 accidents involving trams that led to persons being injured in 2017. So now Continental is aiming to transfer its “Vision Zero” of zero road accidents to local rail transport as well. “Safe mobility in the future also means safe mobility on the rails and is by no means restricted to cars. We have the technological expertise and the know-how to be able to reduce serious or even fatal accidents involving rail vehicles,” explained Continental Executive Board Member Hans-Jürgen Duensing. At the international InnoTrans fair in Berlin at the end of September, the technology company presented its concepts for the rail industry along with technological highlights and innovations for rail vehicles. The focus was on advancing digitalization and the opportunities this presents for greater safety, reduced emissions and lower noise in the rail vehicle sector.

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“Smart trams

In local mass transit systems in Germany, every day more than ten million people put their trust in the safe mobility provided by buses and trams. At InnoTrans, Continental presented ideas and concepts for reducing the number of accidents and improving safety. “We offer connected active and passive assistance technologies that we can adapt for the tram segment,” said Duensing. And indeed, technologies developed for cars, such as radar sensors and cameras, can also be used in trams to promptly detect pedestrians, cyclists and vehicles crossing the tracks. Head-up displays provide tram drivers with continuous information about the movements of pedestrians, vehicles and other obstacles in the vicinity of the tracks or of the tram itself. And in an emergency, the system can initiate immediate automatic braking. “Inattentiveness, carelessness and ignorance often lead to accidents that could have been avoided,” says Duensing. “Our technology can improve both the active and passive safety of trams.”

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Autonomous local transport

In addition to trams, which often share road space with other vehicles, driverless subway rail systems and monorails have been in use in urban transport for decades. The world’s first self-driving underground train took to the tracks in Lille, France, in 1983 and today transports roughly 100 million passengers around that region of northern France every year. Driverless trains are on the move in around 40 cities worldwide. In Germany, Nuremberg was the trailblazer in 2008. Active and passive assistance systems are supporting the trend toward greater automation. At the same time, with its expertise in mobility and its technologies, Continental is also bringing greater efficiency and sustainability to rail transport. Lightweight products such as air springs and surface materials help reduce weight and thus the energy needed to drive the vehicle. For more than 90 years now, Continental has been helping to assure greater safety, comfort and fire protection in high-speed, mass transit, commuter rail and freight trains and to reduce the noise generated by rail vehicles in the best interests of people and the environment. Across the globe, the technology company works at crossfunctional levels to deliver products, systems and service solutions for passenger zones, drivers’ cabs, drive units, chassis and bodywork.

“Rail sensor technology”: In the future, smart sensor technology for the rail sector will be able to reduce the number of accidents involving rail vehicles.

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Interview

David Ward, 63, is Secretary General of Global NCAP. This NGO is engaged in the global promotion of greater road safety and of safer vehicles in particular. Under the umbrella of Global NCAP there are currently eight regional NCAP organizations worldwide – Euro NCAP in Europe, for example, or US NCAP in North America – all of which regularly conduct crash tests with new vehicles, so as to classify them in line with generally recognized safety standards. Automotive industry players like Continental support the work of Global NCAP.

David Ward, you’ve been working to promote greater road safety for more than 20 years. In what areas have you witnessed the most important progress during this period?

By far the most significant improvement has doubtless been occupant safety. Almost exactly 20 years ago, on October 1, 1998, new EU regulations governing crash tests came into force, including what is known as the offset deformable crash test. This heralded in a new era of occupant safety, because since then, cars have been constructed in a whole new way – initially in Europe, but in the meantime almost all over the world. In Europe, the number of occupant deaths in cars has been halved and that alone represents significant progress.

The automobile industry and above all the car itself are currently undergoing vast changes under the influence of the megatrends of digitalization, electrification and automated driving...

...if I can just stop you there. I would say that the biggest changes in the automotive world are not the ones that people talk about. In my view, the biggest change happening in the industry is geographic. More and more cars are being produced in more and more countries. China, for example, is now the number one car producer, while developments in India and Latin America are going ahead at a similar high pace. This is the really big change. The number of autonomous vehicles is tiny by comparison.

What does that mean in terms of road safety?

The main problem associated with the immense growth in vehicle production and sales in many of these emerging economies is the lack of safety-specific regulations. Lots of new cars sold in these parts of the world would be illegal in the EU, North America or Japan, for instance, because they don’t comply with the safety standards here. So the main challenge facing Global NCAP right now is to get universal agreement around the world on minimum safety standards and apply those crash test standards everywhere. The good news is that this is starting to happen. Last year India started applying the basic crash test standards introduced in the EU in 1998, while in Mexico they will apply from 2019. The next stage on from that is to move towards more crash avoidance technology and our single biggest priority over the next decade is to increase the use of electronic stability control (ESC) at Global NCAP because they provide the technology that we need to make the roads a safer place. And here I’m not talking about a endless succession of new high-tech systems, but about things like electronic stability control – ESC – that has been available in Europe for around 20 years now, which makes it old hat. In some emerging markets, though, the introduction and spread of ESC is still bringing a substantial increase in safety. In any case, it looks as if the suppliers are becoming the real innovators in terms of automotive engineering – more so than the OEMs themselves. For our part we are extremely glad to have companies like Continental on our side in the Stop the Crash initiative. And in return we share Continental’s aspirations in terms of Vision Zero.

You can read another interview with David Ward at www.continental-reifen.de/autoreifen/media-services/visionzeroworld.

How can that be achieved?

As I see it, this can only be achieved through a holistic approach. This would include not only intelligent road design, but also safer cars and ongoing efforts to foster more considerate and attentive road user behavior. In countries in which they succeeded in making improvements in all three areas, we see the sharpest drop in the number of road deaths. This is encouraging, above all in view of the global situation. Because we hope that the UN will also be able to push through the goal of halving the number of road deaths as the universally accepted goal of all safety-related efforts.

What part do partners like Continental play in making road traffic safer around the world?

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Recently a new model from Indian production received a 4-star rating at the Crash test, it was already the fourth model from India with this safety level. Photo: Global NCAP.

What do you mean by road safety?

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