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Feature

Traveling in a Volkswagen that is still to be developed

- Volkswagen Group IT Virtual Engineering Lab develops virtual concept car
- Volkswagen Technical Development is already using digital future technology for the next Golf generation

Wolfsburg – Volkswagen plant, Technical Development, Hall 70: a Golf rolls up. The hall has no windows but the Golf glides through a sunny urban scene. Here too, nothing is real, not even the Golf. This model will only appear on the roads in a few years' time. Nevertheless, Frank Ostermann and Mathias Möhring are already sitting in the car. Ostermann enters a new route while Möhring adjusts the air conditioning. It's all no problem. The virtual Golf and its surroundings are the result of groundbreaking teamwork. The Volkswagen Group IT Virtual Engineering Lab and the Technical Development Department of the Volkswagen brand had a shared goal. They wanted to revolutionize the development of new Volkswagen models. They have succeeded: The next Golf will already be developed virtually.



Frantisek Zapletal (left), Frank Ostermann (mid-left) and Florian Franke (right) from the Group IT's Virtual Engineering Lab have a look at the flow line of the current Golf model. The virtual concept car is already in use for the development of the next Golf generation.

Jan Jacobs (left) and Florian Franke (right) from the Group IT's Virtual Engineering Lab examine the air flow of the air conditioning system. The virtual concept car transfers all design and simulation of a Volkswagen model to a graphic engine.

Ostermann and Möhring are wearing virtual reality (VR) goggles connected to several computers. Möhring suggests that they should check the air flow of the air conditioning system again. What is the air delivery like at full load? At the touch of a button, transparent flow lines surround both of them.

Press contact

Volkswagen Communications

Markus Schlesag
Spokesperson Human Resources
Phone: +49 5361 / 9-87115
markus.schlesag1@volkswagen.de

Jonas Kulawik
Human Resources Communications
Phone: +49 5361 / 9-71121
jonas.alexander.kulawik@volkswagen.de



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Frank Ostermann (52) heads the Virtual Engineering Lab in Wolfsburg, one of six competence centers now operated by Volkswagen Group IT. In the labs, IT experts, scientists and software specialists from Volkswagen work together with research institutes and technology partners on the digital future of the company.

"In the Virtual Engineering Lab, we transform virtual reality into a practical tool for our Technical Development colleagues," says Ostermann. One result is the virtual concept car. The program transfers all the design and simulation data of a Volkswagen prototype to a graphic engine of the type used in video games.

"With the virtual concept car, we are going beyond a purely three-dimensional approach," Ostermann explains. "We combine a full feeling of space with functionality. A driver not only looks at his or her car but also controls it. So that's what we do in the virtual car, simply with hand movements, without a physical control. As in a real car." Ostermann shows how this can be done and selects another radio station on the virtual infotainment system.

Volkswagen is using virtual concept cars for the development of production models. The next Golf generation is being developed with this new tool. Möhring (37), who holds a doctorate in engineering, is responsible for the digitalization of the product creation process with Volkswagen Technical Development. He says: "We use all the possibilities offered by digitalization. The virtual concept car is a good example. And we still have a few ideas up our sleeve. I can tell you more later."

But why do we need virtual reality applications such as the virtual concept car? The virtual concept car saves development costs. The number of physical prototypes which need to be produced individually in a costly process can be reduced. This represents a considerable improvement in efficiency for the Volkswagen brand with its wide model range.

The virtual concept car also saves time. As all the components are designed digitally, their data can easily be transferred to the program. The result is a virtual, properly functioning car of the next generation on which all the development team members can work together at the same time. "We already hold specific discussions at a very early stage; this would not be possible with physical prototypes and represents a gigantic leap forward," Möhring reports.



The specialists from the Group IT's Virtual Engineering Lab are working towards the next goal of the virtual concept car. A system of pressure-sensitive pins simulates all the shapes of the interior. This will allow the user to feel the surfaces and controls. Frantisek Zapletal is testing the current version.

Ostermann and his team at the Virtual Engineering Lab are already working towards the next goal. To develop a virtual vehicle that allows a full experience and is fully operational, they have launched a research project at Stanford University in California. Users are to be able to feel the virtual concept car in the future. To make this possible, a system of fine, pressure-sensitive pins simulates all the shapes and contours of the interior. This will allow the user to feel the surfaces and controls which do not actually exist in the real world. Ostermann: "If we could actually feel a virtual vehicle, that would take us to an entirely new dimension."

About the Volkswagen brand: "We make the future real"

The Volkswagen Passenger Cars brand is present in more than 150 markets throughout the world and produces vehicles at over 50 locations in 14 countries. In 2016, Volkswagen produced about 5.99 million vehicles including bestselling models such as the Golf, Tiguan, Jetta or Passat. Currently, 196,000 people work for Volkswagen across the globe. The brand also has 7,700 dealerships with 74,000 employees. Volkswagen is forging ahead consistently with the further development of automobile production. E-mobility, Smart mobility and the digital transformation of the brand are the key strategic topics for the future..
