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Opel presents Fuel Cell Vehicle Fleet with Business Partners in Berlin

Nine companies to participate in Berlin in GM's world-wide zero emission test program

Berlin. The goal of achieving sustainable mobility with zero emissions came a step closer today when Opel announced the European part of GM's biggest-ever test program for fuel cell vehicles during a visit by Germany's Federal Minister of Transport, Building and Urban Affairs Wolfgang Tiefensee.

Nine companies will be the first to operate the GM/Opel HydroGen4 zero emission vehicles in the Berlin area as they go about their regular business: ADAC, Allianz, Coca-Cola, Hilton, Linde, Schindler, Axel Springer, Total and Veolia. This real-world road test will run under the umbrella of the Clean Energy Partnership (CEP), a German Federal Department for Transport, Building and Urban Development funded project focused on proving the day-to-day suitability of hydrogen as a fuel for road transport.

"We are grateful for the German Federal Transport Department's on-going commitment to hydrogen as a propulsion technology, and we are delighted that these high profile business partners have joined us as we take zero emission fuel cell technology forward with the HydroGen4 program," said GM Europe President Carl-Peter Forster.

German Federal Minister of Transport Wolfgang Tiefensee added: "Our future lies in electric vehicles driven by batteries and fuel cell. This technology will allow us to reduce global CO₂ emissions in the long term and also help decrease our dependence on oil. Thanks to research and innovation, marketable products are now being developed. I am happy to share and personally support this vision. In Germany, we have reached a very high level of competence in the hydrogen and fuel cell technology. And we have to strengthen this advantage. My administration spent 500 million euro supporting the National Innovation Program for Hydrogen and Fuel Cell Technology. The industry is committing to the same effort. This program proves to be a huge success."

Subject to alteration.



HydroGen4 on the Road

As an integral part of GM's overall advance technology strategy towards further electrification of the car, this fourth generation fuel cell vehicle is the culmination of more than 10 years of development work with hydrogen and fuel cell technology. The HydroGen4 features improvements in everyday usability, such as performance and durability. Globally, GM deploys more than 100 vehicles of this type in its Project Driveway testing program in the U.S., Japan, Korea, China, and Germany. In the U.S., more than 100,000 people have applied as mainstream drivers for the market test. Up to date, 3,400 people have driven the vehicle and 30 families have used the vehicle on a daily base in a 2-3 month deployment. In total, the vehicles were driven almost 700,000 km. Feedback from these demonstration activities not only gives GM engineers essential validation data, but also provides a valuable insight into the likely ownership and driving experience of future customers.

The vehicles are equipped with a wireless data transfer system that assists engineers by uploading vehicle performance data to a company server. Maintenance of the vehicles deployed in Berlin will be done at a regular Opel dealer equipped with the personnel and tools necessary for servicing fuel cell vehicles.

HydroGen4's fuel cell stack uses 440 single cells which combine hydrogen and oxygen from the air to produce electricity, with water vapor as the only by-product. This means neither combustion nor any CO₂ emissions. The fuel cell stack provides the electric energy for the 73 kW-synchronous electric motor, delivering zero to 100 km/h acceleration in around 12 seconds and a top speed of 160 km/h.

The electric motor's instant torque characteristics also give the vehicle an excellent pick-up from low speed. The HydroGen4 is fitted with a 1.8 kWh buffer battery to store energy from the vehicle's regenerative braking system and cover peak electrical loads. The three carbon-fiber composite tanks hold 4.2 kg of hydrogen at a pressure of 700 bars, sufficient for an operating range of up to 320 kilometers.

HydroGen4 can start and run in sub-zero temperatures, a considerable advance over the previous generation technology and an important benefit for everyday usability. It is



designed to be as safe as conventional vehicles and includes unique hydrogen safety features in each of its major systems.

Statements from our HydroGen4 Partners

“**ADAC** is always open to alternative propulsion systems. That is why we were eager to use a HydroGen4 as part of our Road Patrol. This offers the ideal test conditions because our vehicles are placed in special conditions. General Motors can certainly profit from our experience and pass it on in the further development of this technology,” says Ulrich Klaus Becker, ADAC Vice President for Transport.

“**Alliance Insurance AG** takes the opportunity here to test a concept car in everyday situations in partnership and cooperation with the research department of GM and Opel. As a leading insurer of vehicles, we want and must involve ourselves with new technologies and their special characteristics. More than that, we are all confronted with the question of how we can sustainably secure our mobility,” says Dr. Christoph Lauterwasser, General Manager of the Allianz Center for Technology.

“We are always open-minded for innovations to save our planet. Therefore we support new forms of automotive gear like HydroGen4 as independent and critical test persons,” says Ludger Seggewies, Sales Coordinator BILD Division and Magazines, **Axel Springer AG**.

“Protecting the environment is one of the central challenges of our time. For that we must take new paths and develop new technologies. **Coca-Cola** has done much in the areas of energy-savings and climate-protecting cooling. We are pleased to be able to support General Motors in the development of a zero-emission vehicle as a test partner,” says Christian Cordes, Director, Corporate Identity, Public Affairs & Communications for Coca-Cola Germany.

“Protecting the environment is extremely important to **Hilton**. So we are particularly pleased to be able to participate in a HydroGen4 pilot project. We have been working for years on environmental projects and have been able to drastically reduce our energy consumption in our hotels during the three years of our We Care program. Adding a HydroGen4 car to our fleet at the Hilton Berlin is a continuation of our efforts to make the



world cleaner,” says Olivier Harnisch, Vice President International Operations Hilton Hotels - Germany & Switzerland.

“Opel and **Linde** have a vision: Hydrogen as the fuel of the future. For years, Linde has been a forerunner in the continuous development of environmentally friendly hydrogen technology. The HydroGen4 is the living proof of the everyday possibility of hydrogen technology. We are pleased to support this project,” says Dr. Andreas Opfermann Head of Innovation Management, Linde AG.

“**Schindler** as a mobility manager focuses on opportunities to develop new "transport" technologies with its business partners in line with Schindler's core values of innovation and environmental matters. The HydroGen4 project totally corresponds to these issues. It is to be included as a reference in our Corporate Citizenship report demonstrating Schindler's leading position in our industry with regards to future green technologies,” says Albert Haffert, Managing Director Schindler Germany.

“It is extremely important to **TOTAL** to develop new energies, to be able to offer our customers a wide palette of products. With hydrogen as a form of energy, we can take one step forward in the energy future,” said Patrick Schnell, Head of Sustainable Development and New Energies, TOTAL Deutschland GmbH.

“Environmental protection and sustainable trade are self-evident factors for **Veolia**, the world's leading company for environmental services in the areas of water, environmental service, energy and transportation. We happily support the further development of innovative and environmentally-friendly fuel cell vehicles from General Motors because with them we can contribute daily to the environmental protection of our capital city,” says Christof Schifferings, General Manager, Business Development for Veolia Wasser GmbH.

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