

Project description

Frankfurt, Germany, 12th October 2015

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The Green Gate at Frankfurt Airport

Frankfurt am Main Airport is the largest commercial airport in Germany and one of the most important hubs for the aviation industry worldwide at the same time. In 2014, a total of 59.6 million passengers were recorded at Frankfurt Airport and around 2.1 million tons of freight was transported. With an average of over 1,300 take-offs and landings per day, the emissions caused by air traffic are joined by a variety of sources of emissions such as air pollutants, greenhouse gases and noise on the ground.

These emissions form the focus of the electromobility initiative E-PORT AN, which was launched by the partners Fraport AG, the Lufthansa Group, the German Federal State of Hesse and the Project Coordination Office for the Rhine-Main Model Region for Electromobility (*Projektleitstelle Elektromobilität Modellregion Rhein-Main*). The aim of the initiative is to reduce the ground emissions involved in the entire aircraft handling process on a long-term basis by achieving an aspired degree of electrification. In order to achieve this aim, E-PORT AN uses individual projects to develop different electromobile technologies and procedures, to test them in day-to-day aircraft handling activities and to conduct corresponding scientific research. When completing these projects, the initiative aims to show that new technologies and procedures can significantly reduce ground emissions in the field of aircraft handling and aircraft taxiing and by doing so, can make an active contribution towards protecting the environment and resources. The initiative also wants to transfer these results to other areas of application and locations by encouraging interdisciplinary cooperation between the individual actors involved and business and industry partners, as well as corresponding specialist bodies on a regional and national level.

An Overview of the Individual E-PORT AN Projects

The **Electromobile Taxiing and Towing of Lufthansa Group Aircraft** project focuses on testing new technological approaches.

1. **The TaxiBot hybrid tractor:** This project involved the development of a special hybrid-electric aircraft tractor with a power of 800 hp and a special cradle for the nose wheels of aircraft. Once the aircraft has been towed back away from the gate, the pilot uses "Pilot Control Mode" to take control of the tractor from the driver and to steer the aircraft to the runway. The pilot then passes control of the tractor back to the driver once the engines have started up at the release position.
2. **The "eSchlepper" tractor:** The "eSchlepper" is an electrically powered towbar-less aircraft tractor on a hybrid basis and is the world's first aircraft e-tractor able to tow long-haul aircraft up to the size of an A380 using electricity alone. The tractor's lithium polymer

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batteries are charged externally using the mains supply, while a small additional diesel engine (range extender) can be used to recharge the batteries during operation where needed.

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3. The eTaxi: The eTaxi project examines the utilisation and technical integration of an electric drive system on the main landing gear of short and medium-haul aircraft for all taxiing movements on the apron. The solely electric drive power of the system is generated and provided by the aircraft's auxiliary power unit (APU). The fact that the system does not depend on a specific infrastructure means that it can be used at every airport.

Under the title of **eLift**, LSG Sky Chefs is working in cooperation with the companies Doll Fahrzeugbau and Euro Engineering and the Technical University of Berlin (TU Berlin) to achieve the objective of developing a electrically powered catering lift truck. The project involves the consideration and implementation of different concepts for the electrification of individual components of the lift truck, for example its lifting mechanism and propulsion system. The basis for the new vehicle is an electrically driven truck chassis. eLift aims to use corresponding electric drive systems to enable the box body to fulfil the same functions as a conventional lift truck.

One of the main activities of the **E-Fleet operated by Fraport** project is testing the use of battery-electric pallet lifting vehicles, an electrically driven container transporter and passenger stairs with a solar power supply in aircraft handling activities. Determining the energy requirements involved in day-to-day operation and optimising battery dimensions form a particularly important focus of the research and development work involved in the project. The E-Fleet project also tests transport services using electrically driven minibuses. Alongside the transportation of ground handling crews, the project additionally aims to test other areas of application, including those for electrically driven vehicles in the field of airport security and in car pools. These e-vehicles are attracting a positive response from employees. In fact, with a focus on its aircraft handling activities, the airport company Fraport AG is currently using approximately 300 electrically driven special-purpose vehicles that are proving their worth in day-to-day use.

E-PORT ON

E-PORT ON is financed by the Rhine-Main Model Region for Electromobility using funds from the German Federal Ministry of Transport and Digital Infrastructure (BMVI). The Model Regions for Electromobility (*Modellregionen Elektromobilität*) are coordinated throughout Germany by the German National Organisation for Hydrogen and Fuel Cell Technology (NOW GmbH). The regional coordination is managed by the Project Coordination Office for the Rhine-Main Model Region, which is based at the public utility company Stadtwerke Offenbach Holding GmbH. The fact that E-PORT ON is integrated into the "Strom bewegt"

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(Electricity Keeps Things Moving) initiative of the German Federal State of Hesse helps to ensure that the project is also visible beyond the airport environment.

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The German Federal Government awarded E-PORT ON the title of "lighthouse electromobility project" (*Leuchtturmprojekt*) in 2013 and is supporting the project with funding totalling 8.1 million euros. In 2014, the initiative won the renowned GreenTec Award in the Aviation category and in 2015, it was listed as one of the ATAG 100 Aviation Climate Solutions. For more information and images, please visit: www.e-port-on.com