PROJECT

ELAAN

Electric drive train for commercial and commercial vehicles

Elektrischer Antriebsstrang für Arbeits- und Nutzfahrzeuge

Funding: National (Austria)

Duration: Oct 2013 - Jun 2017

Status: Complete

Objectives:

The ELAAN project aims at the development of an electrical drive system for utility vehicles and self-propelled working machines which are typically used in municipal transport logistics, gardening and road construction activities, waste management or snow ploughing and street cleaning services. The state of the art drive system in this kind of application is based on a hydrostatic power train in combination with a diesel engine. The power supply for driving the vehicle and operating the accessory equipment is coupled via the hydrostatic system which leads to a high energy consumption and a low efficiency under a typically high dynamic load cycle.

Cities and urban areas are pressurized to implement low emission and environmental zones by legislature which increases the emission standards also for municipal vehicles and machinery. The drive system of a typical utility vehicle platform which is based on an internal combustion engine will be replace by an electrical motor and inverter drive which will be application specific designed and efficiency optimized. The high overall energy demand of the application will be provided by a fuel cell range-extender attached to a battery system for dynamic power management. The vehicle range requirement will be fulfilled by integration of a 350bar hydrogen storage system which enables fast refuelling in less than 3 minutes as well as a high availability of the overall vehicle system.

The design of the drive system including electric motor, battery, range-extender and power electronics and the development and optimization of the operating strategy will be based on system modelling and simulation covering the whole range of different load cycles obtained from field measurements. The final drive system should be defined as a modular concept and under consideration of existing industrial standards in the field. The innovative drive system will be integrated into the 'LADOG' as a typical utility vehicle platform and provided as a prototype for testing the system under practical conditions.

Parent Programmes:

MOTF - Mobility of the Future

Institute type: Public institution

Institute name: FFG - Die Österreichische Forschungsförderungsgesellschaft

Funding type: Public (national/regional/local)

Other programmes: Mobilität der Zukunft - 1. Ausschreibung (2012)

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Fronius International Gmbh

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Technologies:

Electric road vehicles
Electric drivetrain for full and hybrid EVs

Development phase: Research/Invention

STRIA Roadmaps: Transport electrification, Vehicle design and manufacturing

Transport mode: Road transport

Transport sectors: Freight transport

Transport policies: Environmental/Emissions aspects

Geo-spatial type: Other