

The aim is to analyse pilot tests on a Feve laboratory train

Renfe, Alstom and Enagás present a hydrogen-based train locomotive project to the EU LIFE environmental funding programme

- The project will analyse the possibility of achieving a 100% reduction in direct emissions compared to conventional fuel engines, using at least 70% of energy from renewable sources

Madrid, 21st December 2016. Renfe has coordinated the presentation of a new rail transport project based on a hydrogen fuel cell, batteries and super condensers to the European Union LIFE programme, which provides funding for environmental projects for the period 2014-2020. The project, which was originally conceived in 2011, now includes as key partners in the sector Alstom Transporte, Enagás, Audigna/Hidrógena and Nertatec, as well as Bureau Veritas as the certifying body.

The aim of this R&D&I project is to perform pilot tests using a laboratory train/vehicle from the Feve 3100 series and draw conclusions about the technical feasibility of hydrogen-powered rail transport on the Spanish rail network. The key points include the possibility of a 100% reduction in direct emissions compared to vehicles running on conventional fuel, using at least 70% of energy from renewable sources.

The project envisages the development of a supply and refuelling system, the adaptation of the rail vehicle as a test unit, as well as regulations and procedures for the monitoring of traffic to provide data regarding features, performance, emissions, autonomy and noise levels for comparison with convention systems. Simultaneously, financial studies will be completed on the life cycle of the whole system.

This information may be used partially or in full without the need to quote the source.

AVENIDA DE PIO XII, 110
28036 - MADRID
TEL: 91 300 61 48
FAX: 91 300 73 36

Press release

The project is of particular importance in the analysis of rail traffic in the urban and suburban environment, which in the case of Renfe means regional, conventional middle distance and metric gauge services.

With a budget of 2.6 million euros, the project is in line with the Spanish Government's position at the Climate Summit in Paris (21 December 2015) and the target of reducing greenhouse gas emissions by 26% before 2030.

In Paris, Renfe also signed the Railway Climate Responsibility Pledge 2015, coordinated by the International Railway Association, which focuses on reducing the consumption of specific energy and the emission of CO₂ in 2030 by 50% compared to 1990 ("Low Carbon Rail Transport Challenge Action Plan 2015" and its targets for 2030/2050 presented in 2014 to the United Nations).ⁱ

The Environment and Climate Action Programme (LIFE) is the European Union's financial instrument supporting the environment for the period 2014-2020. Its overall goal is based on catalysing changes in the development and application of policies by providing solutions and best practices in order to achieve environmental and climate objectives, as well as the promotion of innovative technologies in environmental and climate matters. It must also support the EU General Environmental Programme for 2020 "We live well, within the planet's ecological limits".

Renfe and the participating companies hope that the EU will complete its assessment of the project during the first quarter of 2017.

More information: <http://ec.europa.eu/environment/life/>

Renfe has for many years been implementing practices for innovation and environmental improvement relating to its activity, such as more efficient driving methods and the reduction of noise pollution. The company has an active policy of ongoing reduction for the low environmental impact of its business, and in 2014 it reached the CO₂ reduction target set for 2020: less than 20 g of CO₂ per unit transported. The company's diesel/electricity fuel distribution, in turn, is 32%-68% compared to the figures for 1990 (41%-59%). Renfe also conducts a yearly environmental and economic impact assessment of the transport sector in Spain, according to the standard external cost analysis methodology in use in Europe, and seeks to improve its competitiveness and positioning over the coming years.

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Alstom develops and sells systems, equipment and services for rail transport. Alstom manages the widest range of solutions - from high speed to metros and trams - including the vehicles, maintenance, infrastructure and signalling. Alstom's turnover in 2015-2016 was 6,900 million euros. Present in over 60 countries, Alstom employees 31,000 people around the world. **Alstom España** is the second largest employer in the rail transport sector in Spain, with almost 2,000 employees in 19 locations. The company has an industrial plant for the manufacturing of trains and 4 innovation centres for the development of R&D programmes in rail safety, signalling, maintenance and rolling stock. <http://www.alstom.com/es/spain>

Enagás, which has extensive experience in logistics with liquefied natural gas (LNG) and the development of R&D&I projects, is taking part in this project in order to promote the development of liquefied natural gas as a raw material for the generation of hydrogen. The goal of the company is to make use of the introduction of LNG into the railway sector and, using the logistical synergies created, validate this technology technically, environmentally and economically. Thus the aim is to quantify the competitiveness of LNG as the facilitator of a mid-term transition to the implementation of hydrogen as an alternative fuel in certain non-electrified railway segments.

Nertatec operates in the field of research, development and innovation in the transport and energy sectors, to offer innovative yet market-appropriate projects and services to business and administrators.

Audigna is a company that focuses on projects or activities relating to R&D, technology and innovation, programme management, product insertion strategies and the creation of "task-forces" for problem solving.

More information: **"El tren y la cumbre de Cambio Climático en París"**
<http://blog.renfe.com/2015/11/24/tren-la-cumbre-cambio-climatico-paris/>

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