

FRENOS RECEIVES THE SUSTAINABILITY AND ENVIRONMENT AWARD AT THE 14TH CONFERENCE ON INNOVATION.

The 14th Renfe Operadora conference on innovation was held on 14 April at the Fernán Nuñez Palace, headquarters of the Fundación de los Ferrocarriles Españoles (a Foundation whose aim is to promote and improve the railway). Chaired by José Salgueiro, president of Renfe Operadora, awards corresponding to the 2008 competition were presented during the event for winning projects amongst those submitted by innovation and improvement teams made up of Renfe staff.

During the conference, and following the reading of the Jury Minutes for the 14th Innovation Project Competition by its chairwoman, the awards were presented to winning projects by the president and the members of the Renfe Operadora management committee.

The jury was made up of important members of the transport sector, but all of them independent and unrelated to RENFE Operadora and the rail industry.

Amongst others, the award in the Sustainability and Environment category was presented to the INNOFRENO team for the submission of a possible solution to forest fires caused by brakes locking on wagons.

In the case of the team in which Frenos participates, the award was presented by the actual president of Renfe, Jose Salgueiro, the General Manager of Integria Manufacturing and Maintenance, Daniel García Gallego and the General Manager of Traffic Safety, Antonio Lanchares.

In the case of Frenos, which is obviously not part of the RENFE organisation, they were invited to participate in the multidiscipline INNOFRENO team through being the company that designed the valve needed to achieve the proposed aim of eliminating brake locking on wagons in operation and to thereby remove, amongst others, the damage caused to the environment by forest fires as a consequence of this. The team which Frenos forms a part of is made up of members from different business units and corporate departments at RENFE Operadora, such as the Corporate Department for Traffic Safety and the General Department of Manufacturing and Maintenance, via members in the Quality and Engineering departments, and from the Freight Business Unit via members of the general department for Freight and Logistics Services, both from the department of Traction and Locomotives as well as the one relating to Hauled traffic and wagons.

Given the expectations aroused by this new development from its earliest stage, the report necessary to submit the project to the competition was endorsed from the highest echelons of Renfe Operadora by:

Daniel García Gallego, General Manager of Integria Manufacturing and Maintenance, Antonio Lanchares, General Manager of Safety, Organisation and HR and Corporate Manager of Traffic Safety, Javier Bujedo, Technical Rolling Stock Manager of the General Department for Freight and Logistics Services and Gustavo González as the senior executive at the Knorr Group in Spain and CEO of Frenos.

The participation of Frenos in the above Innovation group has been vital for the progress of the work, through the design of a small valve which is installed on the KE distributor valve control chamber and whose purpose is to eliminate overbraking on wagons following an unsuitable operation, either rapid brake release by the driver following emergency braking, the coupling of locomotives with brake control pipes (ABP/HL) at levels different from the nominal brake release level or any other factor related to brake control pipes.

The importance of eliminating this overbraking in wagon operations in Spain is absolutely fundamental since brake locking occurs practically every day and an average of 21 forest fires a year are attributed to this cause. Even though environmental and social costs are impossible to assess, damages claimed by third parties from Renfe Operadora, as the body responsible for vehicles in operation, and from Adif, as the body responsible for infrastructure, have had a financial cost of €390,000 in the last three years. Rolling stock repair costs of around €2500 per incident should also be added to this, as well as payment of the corresponding penalties through lines being cut off and delays caused, with the harm to Renfe's image that all of this entails.

The beginning of this new development relates to 2007 when the Integria Engineering Department (Renfe Operadora Maintenance Unit) got in touch with Frenos, reference marks in brake engineering, due to the proposal received from the Freight Business Unit to fit a device to eliminate overbraking on wagons.

With the information received, S. E. de Frenos studied the possible alternatives existing on the market, including proposals made by other companies in the industry, and initially proposed activating the driver's automatic brake valves in locomotives, a modification that is easy to install on brake controls designed by S. E. de Frenos, but which is either not easy to perform or the possibility is rejected for those locomotives not equipped with the Knorr Group brake control equipment.

As a consequence, Renfe Operadora has considered the need to install this device on wagons with the following premises:

- No reduction at all in braking system safety.
- Redundant valve in its various functionalities.
- Brake functionality shall remain unaltered.
- It should be robust and may not be adjusted.
- Low cost of implementation.
- The same distributor valve maintenance cycles are maintained.
- The initial aim of removing all overbraking.
- Reliable components proven on the railway.
- Elimination of overbraking without requiring any manual operation by the driver on each distributor valve.

Once the above was known, analysis was undertaken of the possibilities existing at that time in the Knorr Group to come up with a solution to the challenge posed, and faced with the existing void Frenos accepted the challenge, both from the technical side and from its Management, starting out on the necessary work to develop the necessary valve.

This same challenge of developing a solution capable of removing the undesirable effects of overbraking was presented to market rivals, without them having provided any proposal at all so far.

Valve development has been headed by Rafael de Felipe, an expert on brake systems with more than 20 years experience in the industry, all of them at S. E. de Frenos, and the test and approval process is being headed by Manuel González Conde, currently in charge of the Engineering After Sales department and also with more than 18 years experience at S. E. de Frenos; and who have at all times had all the collaboration required from the rest of the Frenos organisation.

The overflow valve designed by Frenos has been suitably registered and patented through the corresponding central services of the Group located in Munich, both for its installation on vehicles running in Spain, where criteria promoted by SNCF are applied within the UIC guidelines, as well as for its modification to criteria promoted by the DB, both for Knorr KE distributor valves and for possible modifications to adapt them to other types of distributor valves.

Development of the valve to eliminate overbraking is currently in the testing stage on vehicles in commercial operation, after having passed the stages for prototype design, failure analysis, tests on functionality and in fault mode (degraded conditions) on test benches and durability. Functionality tests on sensorized vehicles have been satisfactorily passed on the vehicle, as well as others relating to quantification of brake lock resolution without using the overbrake removal function available on the locomotive.

The initial potential market share for these valves is the total amount of wagons equipped with Knorr equipment (KE distributor valve) running in Spain, and which is reckoned to be a maximum of 10,000 vehicles at RENFE, but its introduction could extend to other specific vehicles that are currently running on the public general interest network. This potential should in any case be suitably adapted to the current market situation for railway freight traffic, where a drastic reduction has occurred.

The Renfe forest fire prevention campaign for this year and in force since 12/05/2009, owing to the fact that environmental protection has become one of its priorities as a railway transport operator, produces an Annual Forest Fire Prevention Plan, in which all actions carried out by Renfe to minimise the risk of forest fires are outlined and listed.

This Plan forms part of the Contingency Plan that Renfe prepares each year in accordance with the Railway Industry Regulation, which has the status of a law in Spain.

Given the potential to resolve expected incidents, and as a result of the drastic reduction expected in forest fires, the inclusion of this valve on vehicles in operation is considered to be one of the measures, and comes top of the list of actions proposed as a future measure, specifically outlining that its development has been the result of collaboration between Renfe and Knorr-Bremse, a company specialising in the design of railway brake systems and their components.

This fact has also been published on the Renfe Intranet so that its own staff may be aware of it, and in the annual report that the Corporate Department for Safety, Organisation and Human Resources, which includes the Civil Defence department, produces for the Spanish Ministry of transport.

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