R&D PROJECT

COMSA CORPORACIÓN

Title of the project

Resilience of Railway Infrastructures to Climate Change

Acronym

RESILTRACK

Content of the project

Currently, maintenance actions are carried out based on a series of historical or statistical data on the useful life of the different components of the railway infrastructure, giving rise to "pseudo-preventive" maintenance, in which action is taken not based on a failure or damage but according to the probability of itself. These maintenance techniques fail to take advantage of the opportunities offered by new technologies, both in terms of sensorisation in real time, and in terms of collecting, processing and integrating large amounts of data (Big Data and BIM), as well as in the advances in computer calculation that allow a wide range of simulations with predictive capacities to be used in decision-making.
The use of an integrated BIM system with real-time sensors facilitates the conditioned maintenance of infrastructures, making it possible to intervene on elements before a possible failure. The BIM system is currently being implemented very gradually, with relatively little presence in linear works compared to building projects.

General objectives

The aim of RESILTRACK is to design a system that makes knowing the state of the railway infrastructure possible and how it is affected by adverse climatic phenomena in real time, as well as to forecast its behavior in order to act where it is necessary, thus obtaining railway infrastructures that are resilient to the effects of climate change.

Results and conclusions

The advantages of applying the RESILTRACK system for planning and executing predictive railway maintenance have been qualitatively demonstrated.
Criteria of infrastructure reliability and objective estimation of the useful life of materials have been introduced (in the case of fatigue and wear algorithms for rails, turnouts and catenary HC). Early detection systems (and in real time) of incidents due to structural deterioration were also taken into consideration, thus avoiding risk situations or unplanned interruptions of operation and unplanned maintenance activities, with immediate positive consequences on the quality of service to the end user.
The environmental advantages are direct due to a more efficient and lasting use of fixed assets and of the human and material resources assigned to maintenance. The developed cases of prediction and optimisation demonstrate this indirectly and should be further demonstrated and refined during the regular use of the system by the maintenance companies.

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COMSA, S.A.

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2018-2021

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6.451.472€

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Maintenance, railway infrastructure, BIM, climate change, prediction

COORDINATOR
Joan Peset

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CDTI

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