Quiet Tracks for Sustainable Railway Infrastructures

Results in Brief

Novel solutions and tools to mitigate railway noise

An EU initiative's new techniques and tools promise to reduce noisy rail travel, encouraging healthier and more sustainable rail transport for European citizens.

TRANSPORT AND MOBILITY

INDUSTRIAL TECHNOLOGIES

Faster, quieter, safer and more eco-friendly trains are making rail travel more popular across the continent, taking sustainable urban, rural and transnational rail transport to new levels.

Against this backdrop, the EU-funded QUIET-TRACK (Quiet tracks for sustainable railway infrastructures) project sought to ensure that trains travel more quietly through the European countryside and cities. Overall, the aim was to develop track-based solutions for decreasing railway rolling noise through improved noise mitigation and maintenance systems.

Project partners enhanced current rolling noise models with several important features. These include the integration of low-frequency noise emission and actual wheel rail contact conditions for more accurate predictions of the noise emitted by tracks. They developed on-board monitoring systems based on noise measurements and location sensors that continuously monitor rail roughness values, track decay

rate values and wear. These systems help to identify track locations where maintenance is needed or where noise mitigating solutions have to be applied.

The QUIET-TRACK team developed solutions such as embedded track systems that reduce noise by at least 6 dB(A), in comparison with the global rolling noise measured on a well-maintained standard track. The solutions apply to tram, light-rail transit, metro and conventional tracks.

Scientists built and validated rail fixation systems that exhibit minimal rail roughness growth, thus avoiding corrugation in curves. In addition, they devised a track maintenance tool that checks the economic viability of planned maintenance activities, and noise management tools for track maintenance and track-based noise mitigation solutions.

Using relevant project findings as a basis, recommendations were proposed to update the technical specifications for interoperability related to noise.

QUIET-TRACK solutions and tools for mitigating railway noise and harmonised procedures for measuring roughness and decay will help engineers, consultants, railway operators and infrastructure managers to improve rail transport. The project envisions a more sustainable rail system that encourages comfort and health of society.

Keywords

Railway noise, QUIET-TRACK, sustainable railway infrastructures

Project Information

QUIET-TRACK

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Project website

Project closed

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