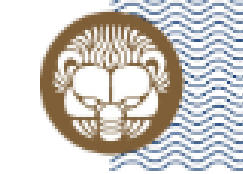




LIFE18 ENV/IT/000201
With the contribution of the LIFE
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LIFE E-VIA

Electric Vehicle noise control by Assessment
and optimization of tyre/road interaction



Università degli Studi
Mediterranea
di Reggio Calabria



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Context

The European **LIFE E-VIA** project (2019-2023) combines knowledge on road surfaces and tyres to test an optimized solution reducing urban noise and life cycle costs. It addresses the perspective of an increasing traffic of electric vehicles.

Action B2 of the project aims to :

- characterize the noise emission of electric vehicles on the existing road surfaces of the Université Gustave Eiffel's reference track (Nantes, France),
- build and evaluate the prototype of an optimised road surface on the same site,
- measure and compare optimised tyre versions on the new pavement.

Action B2.1

Analysis of the existing road surfaces:

Measurement campaigns are carried out for the acoustic characterisation of **electric vehicles** on a selection of 6 road surfaces existing on the reference track of Université Gustave Eiffel:

- 3 dense road surfaces
- 3 absorbing road surfaces



Microphone array measurement at pass-by of a BMW i3s (left) and TESLA Model 3 (right)



Nissan Leaf

Action B2.2

Construction of the prototype road surface:

Prior to construction on a site open to traffic in Florence (Italy), a **prototype** of a low-noise road surface is implemented over a length of 57 m and a width of 8 m on the Nantes test track. It is available in 2 versions, one differentiates by the addition of crumb rubber. The formula for this asphalt was developed by **Università Mediterranea di Reggio Calabria** (Italy), a project partner.



Asphalt implementation: underlayer (left), top layer in BBTM 0/6 (right)



Prototype seen from above

Action B2.3

Experimental characterisation of the prototype:

The prototype of road surface at the Nantes site is subjected to a series of acoustic and mechanical tests, in order to assess its **performance** in terms of skid resistance and noise reduction, particularly for electric vehicles.



Microphone array measurement at pass-by of the Nissan LEAF on the prototype road



3D texture measurement



Measurement of mechanical impedance

Action B2.4

Evaluation of optimised tyres:

Technical demonstrators of tyres developed by the German partner **Continental** (CRD) as part of the project are tested on the Nantes test track in order to assess various concepts on the optimised prototype of road surface.



Infrared cell for speed measurement during vehicle noise measurement at pass-by



On-board continuous noise measurement system (CPX)



Example of a specific tyre for an electric vehicle (ZOE)

Project website: <https://life-evia.eu/>



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