

LIFE E-VIA

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



Dissemination and participation photo album

By Vie en.ro.se. Ingegneria



Vie en.ro.se.
Ingegneria

With the contribution of
the LIFE programme of
the European Union



LIFE18 ENV/IT/000201



Kick off meeting of partners

Issued on: September 2019

By: All partners

MEETING



| TYPE OF ACTION | TYPE OF ACTIVITY | CODIFICATION | LIFE E-VIA (LIFE18 ENV/IT/000201) DISSEMINATION PLAN | | | | | | | | | | | | |
|------------------------|----------------------------------------|--------------|------------------------------------------------------|------|--|--|------|--|--|------|--|--|------|--|--|
| | | | 2019 | 2020 | | | 2021 | | | 2022 | | | 2023 | | |
| Dissemination products | Dissemination Plan | DP | | | | | | | | | | | | | |
| | Life E-VIA Website | DP_W | | | | | | | | | | | | | |
| | Noticeboard in English language | DP_NE | | | | | | | | | | | | | |
| | Noticeboard in Italian language | DP_NI | | | | | | | | | | | | | |
| | Noticeboard in French language | DP_NF | | | | | | | | | | | | | |
| | Noticeboard in German language | DP_NG | | | | | | | | | | | | | |
| | Scientific papers | DP_SP | | | | | | | | | | | | | |
| Promotion activity | Articles for journal and magazine | PA_PJ | | | | | | | | | | | | | |
| | Report on yearly participation in INAD | DP_BI | | | | | | | | | | | | | |
| | Layman's report | DP_BI | | | | | | | | | | | | | |
| | Press conferences | PA_C | | | | | | | | | | | | | |
| Event | Radio campaign | PA_BC | | | | | | | | | | | | | |
| | Video of the prototype construction | PA_VP | | | | | | | | | | | | | |
| | EV FESTIVAL video | PA_EV | | | | | | | | | | | | | |
| | Final event | E_F | | | | | | | | | | | | | |
| | Workshop | E_W | | | | | | | | | | | | | |



Vie en.ro.se. Ingegneria

Action D1 – Proposals for the Project's logo overview

1. Stylized 'VIA' with a green gear and a yellow car icon.
2. 'Life' in script above a wheel with 'VIA' below it.
3. 'Life eVIA' in a stylized, colorful font.
4. A circular logo with 'Life' and 'VIA' around a central gear.



9th international FKL Symposium

Issued on: September 2019

By: Vie en.ro.se. Ingegneria

EVENTS

Code: E_1



S. Cesario di Lecce, 3-6 October 2019

The lost sounds rediscovered by the students of the schools that participated in the INAD 2019 initiative



Chiara Bartalucci, Sergio Luzzi, Raffaella Bellomini,
Sara Delle Macchie, Rossella Natale



Meetings and workshops with acoustics experts
In the frame of EU-funded projects



Methodologies for Noise low emission Zones introduction
And management



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

Bartalucci, Luzzi, Bellomini, Delle Macchie, Natale



EUROCITIES- Meeting in Oslo during the Environment Forum

Issued on: October 2019

By: Comune di Firenze and Vie en.ro.se. Ingegneria

MEETINGS OF THE EUROCITIES
Code: M_1

« E-VIA » Electric Vehicle noise control by Assessment and optimisation of Tyre/road interaction

PROJECT LOCATION: Florence Italy

BUDGET INFO:

Total amount: 1.797,030 €

55% EC Co-funding: 933,295 €



DURATION: Start: 01/07/2019 - End: 31/01/2023

PROJECT'S IMPLEMENTORS:

Coordinating Beneficiary: Florence Municipality

Associated Beneficiary(ies):

- Continental Reifen Deutschland
- Ifsttar
- Ipool S.r.l.
- University of Reggio Calabria
- Vie en.ro.se Ingegneria S.r.l

Eurocities Environment Forum
Oslo 23-25 Ottobre 2019

Arnaldo Melloni
Project Manager





LIFE 18 ENV and GIE Welcome meeting in Brussels

Issued on: November 2019

By: Comune di Firenze

MEETING



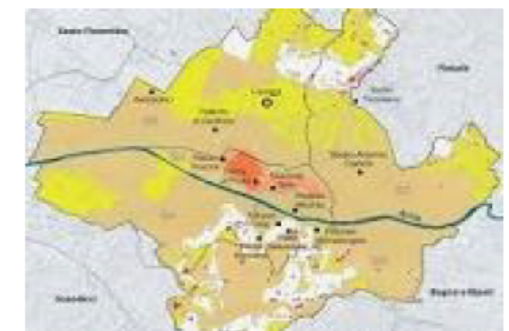
« E-VIA » Electric Vehicle noise control by Assessment and optimisation of Tyre/road interaction

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Ipool S.r.l.
University of Reggio Calabria
Vie en.ro.se Ingegneria S.r.l

LIFE18 ENV and GIE Welcome Meeting,
Brussels, 7-8 November 2019

Arnaldo Melloni
Project Manager





Development and launch of LIFE E-VIA website

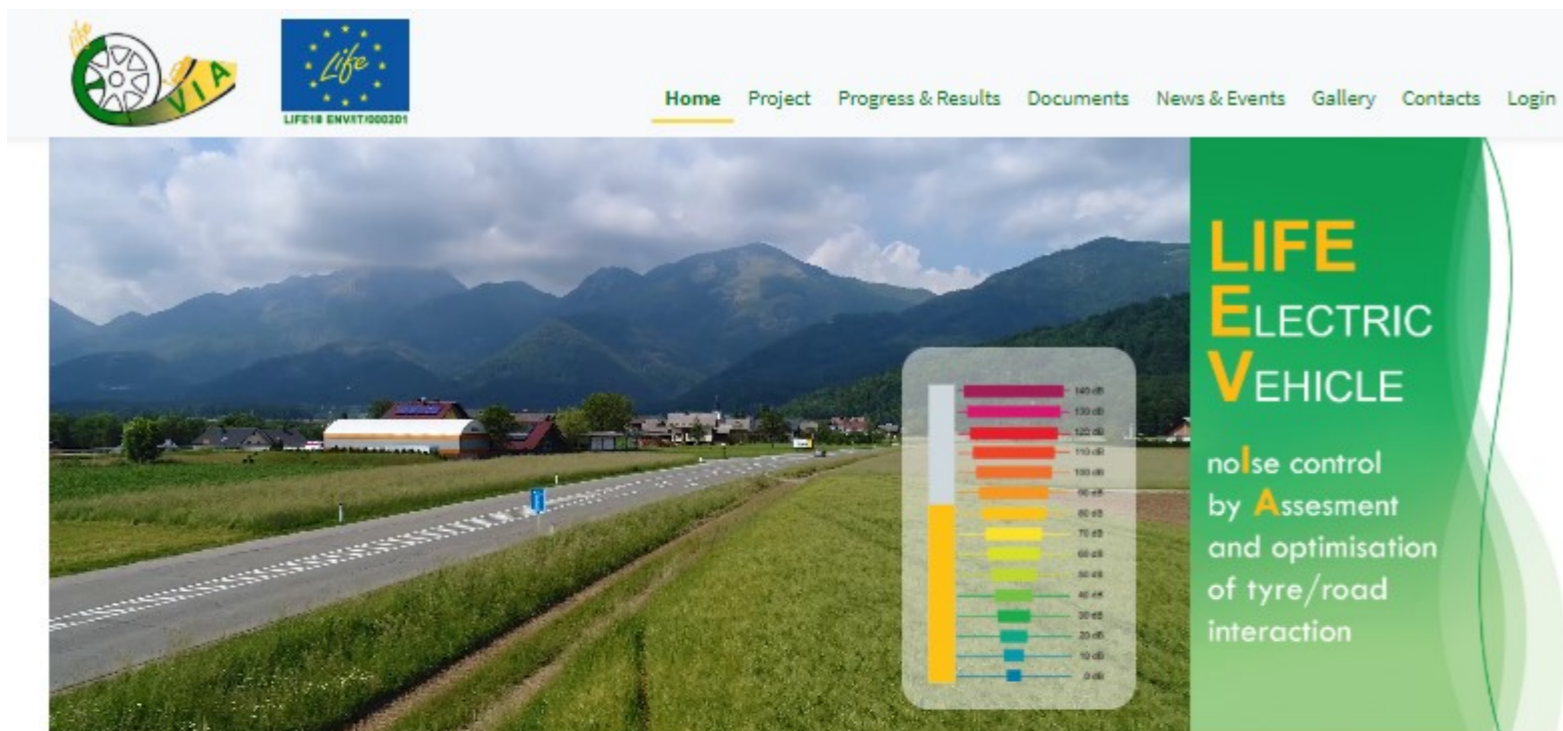
Issued on: December 2019

By: Vie en.ro.se. Ingegneria

Deadline: 01/12/2019

LIFE E-VIA WEBSITE

Code: 3



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



THE PROJECT LIFE E-VIA

Exposure data from the European Environment Agency (EEA) demonstrate that more than 100 million EU citizens are affected by high noise levels negatively impacting human health. Traffic noise alone is harmful to the health of almost every third person in the WHO (World Health Organization) European Region. 20% of Europeans are regularly exposed to night sound levels that could significantly damage health, especially in urban areas. As emerged in Noise in Europe Conference (April 2017) and in the WHO guidelines published in October 2018, the increased stringency of EU at source standards needs to be balanced against other effective measures such as road surface and/or tyre improvements and urban planning measures as well.

One of the solutions universally recognized as the best to reduce noise in urban areas, from both the point of view of noise and air quality, is the introduction of electric mobility.

Similar effects can also be observed for the contribution of the tyre rolling resistance to the vehicle's energy consumption.

Thus, for the changed requirements of Electric Vehicles (EVs) there is a need for in-depth investigations of tyre/road interaction. Last but not least, even for the application of the Directive 2002/49/EC, the coefficients to apply the CNOSSOS model (Directive 996/2015/EC) to new traffic spectra and new vehicles are completely missing.

Therefore, the project intends to:

- tackle noise pollution from road traffic noise focusing on a future perspective in which electric and hybrid vehicles will be a consistent portion of flow;
- combine knowledge of road optimization and tyre development in order to test an optimized solution for reducing noise in urban areas and Life Cycle Cost with respect to actual best practices.

[READ PROJECT](#)

RICERCA

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[t](#) TWITTER

[in](#) LINKEDIN

LINK CORRELATI

- SITO WEB LIFE
- NEREIDPROJECT
- FOREVER
- PERSUADE
- LIFE MONZA





SC4Life- SmartCity 360°

Scientific Contribution

Issued on: December 2019

By: UNIRC

Deadline: 31/03/2023

SCIENTIFIC PAPERS

Code: 36_1



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HOME REGISTRATION COMMITTEES PROGRAM FOR AUTHORS CALLS PRACTICAL INFO SPONSORSHIP SMARTCITY 360°

<http://sc4life.org/full-program/>



SESSION 1: Cities and Territory

Session Chair: Paulo Pereira

Keynote Speech: Filippo Pratico

Title: *LIFE E-VIA: Electric Vehicle noise control by assessment and optimisation of tyre/road interaction*

SC4Life conference will take place on the 5th December in the room #3

11:30 – 13:00 **SESSION 1:** Cities and Territory

Session Chair: Paulo Pereira

Keynote Speech The LIFE E-VIA project

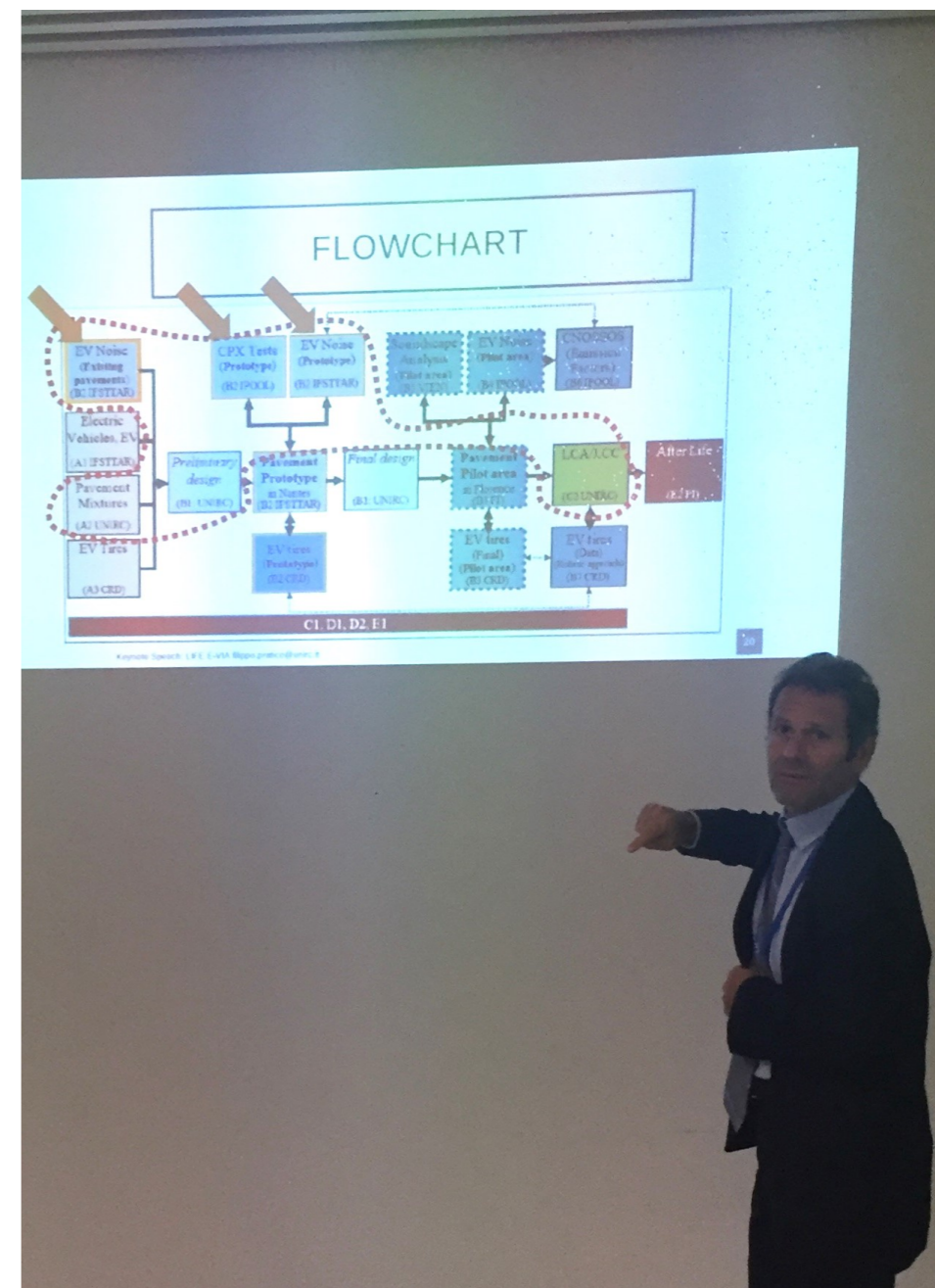
Electric Vehicle noise control by assessment and optimisation of tyre/road interaction
(LIFE18 ENV/IT/000201)

<http://life-avia.eu> http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=7210

Filippo Giammaria Praticò,

University Mediterranea of Reggio Calabria; Italy

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Paper published on Sustainability 2020 about the sustainable pavement materials for the urban roads.

Issued on: January 2020

By: UNIRC

Deadline: 01/12/2022

ARTICLES FOR OPEN ACCESS JOURNAL
Code: 20_1

<https://www.mdpi.com/2071-1050/12/2/704/html/>



Article

Energy and Environmental Life Cycle Assessment of Sustainable Pavement Materials and Technologies for Urban Roads

Filippo G. Praticò ¹, Marinella Giunta ^{2,*}, Marina Mistretta ³ and Teresa Maria Gulotta ⁴

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 - ² Department of Civil, Energy, Environmental and Material Engineering (DICEAM), via Graziella, Feo di Vito, University Mediterranea of Reggio Calabria, 89100 Reggio Calabria, Italy
 - ³ Department of Heritage, Architecture, Urbanism (PAU), Via dell'Università, 25, University Mediterranea of Reggio Calabria, 89124 Reggio Calabria, Italy; marina.mistretta@unirc.it
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Received: 18 December 2019; Accepted: 16 January 2020; Published: 18 January 2020



Abstract: Recycled and low-temperature materials are promising solutions to reduce the environmental burden deriving from hot mix asphalts. Despite this, there is lack of studies focusing on the assessment of the life-cycle impacts of these promising technologies. Consequently, this study deals with the life cycle assessment (LCA) of different classes of pavement technologies, based on the use of bituminous mixes (hot mix asphalt and warm mix asphalt) with recycled materials (reclaimed asphalt pavements, crumb rubber, and waste plastics), in the pursuit of assessing energy and environmental impacts. Analysis is developed based on the ISO 14040 series. Different scenarios of pavement production, construction, and maintenance are assessed and compared to a reference case involving the use of common paving materials. For all the considered scenarios, the influence of each life-cycle phase on the overall impacts is assessed to the purpose of identifying the phases and processes which produce the greatest impacts. Results show that material production involves the highest contribution (about 60–70%) in all the examined impact categories. Further, the combined use of warm mix asphalts and recycled materials in bituminous mixtures entails lower energy consumption and environmental impacts due to a reduction of virgin bitumen and aggregate consumption, which involves a decrease in the consumption of primary energy and raw materials, and reduced impacts for disposal. LCA results demonstrate that this methodology is able to help set up strategies for eco-design in the pavement sector.



Sustainability 2020, 12, 704

10 of 15

all the scenarios. In detail, it accounts for more than 60% of the majority of environmental indicators, with the exception of EF_w, HT-ce, HT-nce, and ME.

The negative values of Fto_x and HT-ce in Scenario 1 (addition of waste plastics in the bituminous mixture) are essentially due to the avoided impacts of virgin plastics.

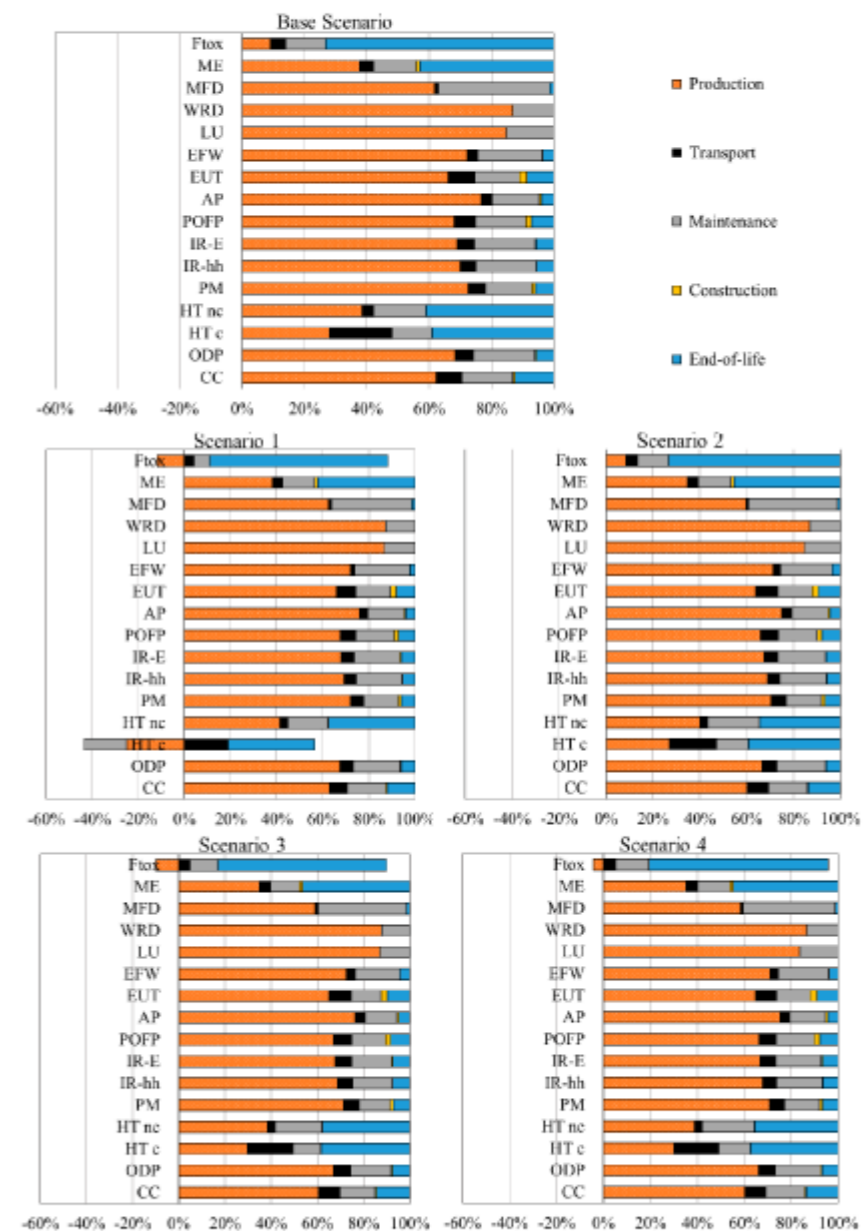


Figure 2. Contribution analysis of life-cycle environmental impacts.



LIFE E-VIA: objectives and actions

Issued on: February 2020

By: : Vie en.ro.se. Ingegneria

Deadline: 01/12/2022

**NOTICEBOARD IN
ENGLISH LANGUAGE**

Code: 18_1



LIFE E-VIA

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



Background

Exposure data from the European Environment Agency (EEA) demonstrate that more than 100 million EU citizens are affected by high noise levels negatively impacting human health. Traffic noise alone is harmful to the health of almost every third person in the WHO (World Health Organization) European Region. 20% of Europeans are regularly exposed to night sound levels that could significantly damage health, especially in urban areas. As emerged in Noise in Europe Conference (April 2017) and in the WHO guidelines published in October 2018, the increased stringency of EU at source standards needs to be balanced against other effective measures such as road surface and/or tyre improvements and urban planning measures as well. One of the solutions universally recognized as the best to reduce noise in urban areas, from both the point of view of noise and air quality, is the introduction of **electric mobility**. Thus, for the changed requirements of Electric Vehicles (EVs) there is a need for in-depth investigations of tyre/road interaction. Last but not least, even for the application of the Directive 2002/49/EC, the coefficients to apply the CNOSSOS model (Directive 996/2015/EC) to new traffic spectra and new vehicles are completely missing.

Objectives

- 1 To **reduce noise** for roads inside very populated urban areas through the implementation of a mitigation measure aimed at **optimizing road surfaces and tyres of EVs**. Two road surfaces, at least 5 different EV types, one reference ICE Vehicle (ICEV) and at least 3 types of tyres per vehicle type (including tyres specifically designed for EVs) will be tested
- 2 To **estimate the mitigation efficiency and potential of tyres, pavements and traffic** (traffic spectrum, speeds, handling conditions) at a higher and comprehensive level: a Life Cycle Analysis (LCA) and a Life Cycle Cost Analysis (LCCA) will be performed to demonstrate the individual and synergistic efficiency of pavement surfaces, tyres and vehicles (including the comparison between internal combustion vehicles, mixed traffic, and EV traffic)
- 3 To contribute to **EU legislation effective implementation** (EU Directives 2002/49/EC and 2015/996/EC), providing rolling noise coefficients within the Common Noise Assessment Method (**CNOSSOS-EU**), specifically tuned for EVs which are actually in need of data for practitioners, agencies, and departments aiming at developing future scenarios
- 4 To contribute to **national and Italian regional policies**, issuing **guidelines** about use and application of the methodology output of the project, which will be adopted, through the Regional Env. Agency (ARPAT), supporting the project, by Tuscany Region, Calabria Region and Città di Reggio Calabria also expressed their interest.
- 5 To **raise people's awareness** of noise pollution and health effects explaining the opportunities provided by EVs through specific dissemination and promotional events, also investigating people perception regarding noise in terms of soundscape methodology and involving them in noise data acquisition.
- 6 To demonstrate and **promote sustainable road transport mobility (electric)**, reducing noise emission by 5 dB(A) at receivers' roadside and achieving also CO2 emissions reduction (21%), based on the Italian context (LPG, CNG, Hybrid, EV, petrol cars, diesel cars) and the concerned literature
- 7 To **encourage low-noise surfaces implementation in further EU and extra-EU scenarios**, demonstrating durability and sustainability, through in-depth LCA&LCCA

Actions

- A. Preparatory actions**
 A1 Electric vehicles and their noise emission
 A2 Quiet pavement technologies and their performance over time
 A3 Tyre role in the new context of EV and ICEV
- B. Implementation actions**
 B1 Tracks design
 B2 Tyre-pavement coupling study and prototype implementation
 B3 Pilot area. Implementation. Replication and transferability
 B4 Track efficiency tests in the pilot area
 B5 Soundscape analysis
 B6 Evaluation of EV noise emissions
 B7 Holistic performances of tyres
- C. Monitoring of the impact of the project actions**
 C1 Monitoring of the impact of the project actions
 C2 Life cycle analysis (LCA) and life cycle costing (LCC)
- D. Public awareness and dissemination of results**
 D1 Information and awareness raising activities
 D2 Technical dissemination activities to stakeholders
- E. Project management**



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

The sole responsibility for the content of communications/publications lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained therein.

LIFE E-VIA

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





Roll-up

Issued on: February 2020

By: : Vie en.ro.se. Ingegneria

Deadline: 01/12/2022



With the contribution of the LIFE programme of the European Union
LIFE18 ENV/IT/000201

**NOTICEBOARD IN
ENGLISH LANGUAGE**

Code: 18_2

LIFE E-VIA

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



Coordinating beneficiary



Partners



Journées Techniques Acoustique et Vibrations

"LIFE E-VIA: noise control of electric vehicles by optimizing tire-road interaction"

Issued on: March 2020

By: : Université Gustave Eiffel

Deadline: 01/03/2023

SCIENTIFIC
PRESENTATION IN
NATIONAL CONGRESS

Code: 36_2



umr ae Journées Techniques Acoustique et Vibrations Lille – France – 11-12 mars 2020

jt av JOURNEES TECHNIQUES ACOUSTIQUE ET VIBRATIONS

LIFE E-VIA : contrôle du bruit des véhicules électriques par optimisation de l'interaction pneumatique-chaussée

Julien CESBRON, Marie-Agnès PALLAS, Philippe KLEIN, Simon BIANCHETTI, Adrien LE BELLEC, Vincent GARY

Université Gustave Eiffel – UMRAE

Université Gustave Eiffel Cerema

umr ae Action B21 - Acoustical characterization of EVs

- o Planned vehicles:
 - One ICE Vehicle (Renault Kangoo Diesel)
 - Several EVs (Renault Kangoo ZE, Renault Zoe, C-Zero, Nissan Leaf, BMW i3, Tesla Model 3)
- o Already tested in August 2019:
 - Renault Kangoos (ICEV and EV) and Renault Zoe

JTAV 2020 – Lille – France

12

11/03/2020

umr ae Action B22 – Prototypage construction

- o Construction of a B1-based test track prototype:
 - Located on IFSTTAR reference test track in Nantes
 - Call for tender planned in April 2020 based on B1 recommendations
 - Construction planned in July 2020



JTAV 2020 – Lille – France

13

11/03/2020







11th International Conference “Environmental Engineering”
Vilnius Gediminas Technical University
Lithuania, 21–22 May 2020
Section: Environmental Protection and Water Engineering
<http://enviro.vgtu.lt>

eISSN 2029-7092 / eISBN 978-609-476-232-1

Article ID: enviro.2020.622

<https://doi.org/10.3846/enviro.2020.622>

Particulate Matter from Non-exhaust Sources

Filippo G. Praticò , Paolo G. Briante *

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Mediterranea University, Reggio Calabria, Italy*

Received 04 February 2020; accepted 24 March 2020

Abstract. Air pollution is an important issue worldwide. Solid components in air (particulate matter, PM) originate from a variety of natural or anthropogenic sources and have different morphological, physical, and chemical properties. Their presence in the air also depends on meteorological conditions, such as humidity, rainfall, and wind speed. PM pollution has adverse effects on environment and human health. Therefore, it is very important to address sources and processes involved in PM generation. Among the existing sources, a special attention must be paid to PM emissions from road traffic, i.e., exhaust sources (e.g., fuel combustion) and non-exhaust sources (e.g., road, tyre, brakes). These traffic-related sources contribute to PM concentrations in cities, and this calls for research into new possible systems and/or mitigation measures. In light of the facts above, the objectives of this study are 1) To evaluate the contribution to PM emission from traffic-related sources. 2) To evaluate existing mitigation measures and to identify new ones to reduce PM production. First results show that: 1) Non-exhaust sources have a different role in PM generation and they differently affect PM₁₀, PM_{2.5}, and PM_{0.1}. 2) Even if emissions-related regulations have led to reductions in exhaust emissions from road traffic, other mitigation measures could reduce the non-exhaust part of emissions (e.g., brakes wear, road wear, and tyre wear). 3) New technologies could be developed to reduce PM from non-exhaust sources.

Keywords: particulate matter, non-exhaust sources, tyre wear, road wear, brake wear, mitigation measures.



Smart Road Infrastructures Through Vibro-Acoustic Signature Analyses

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Abstract. Smart cities need “intelligent” infrastructures designed or managed bearing in mind crucial characteristics, such as sustainability, efficiency, safety, and resiliency. Several solutions can be adopted, but the key factor for the success of the solution selected is its ability of improving the management process. The objective of the study described in this paper is to develop a solution that can be used to make smarter the road pavement monitoring and maintenance. In particular, a Non-Destructive Test (NDT)-based method is presented and applied aiming at extracting crucial information about the Structural Health Status (SHS) of the monitored road pavement. Results show that the method is able to recognize the presence and the growing of induced cracks using meaningful features extracted from the vibro-acoustic signatures (acoustic signals) of the road pavement loaded by a light vehicle. The above-mentioned features can be used to build innovative P-F curves able to improve the road pavement management process.

Keywords: Smart roads · Sustainability · Vibro-acoustic signature



Acoustic Impact of Electric Vehicles

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Abstract— Electric vehicles (EV) diffusion depends on many factors among which policies, people options, and economic factors. Their noise-related performance could appear favourable. This notwithstanding, despite partisan opinions, the analyses carried out suggest that research and industry will have to minimise the collateral issues posed by a quite probable EV diffusion. The objective of the study presented in this paper is to analyse the acoustic impact of electric vehicles (EV) and to set up an overall framework for an effective management of their diffusion. After the objectives, EV overall characteristics are analysed. EV acoustic performance are then analysed. In the final discussion, the main characteristics of the required holistic approach are highlighted. This can benefit both researchers and practitioners.

Keywords— *Electric Vehicle, Noise, Surface Properties, Environmental Impact*



Paper submitted to Forum Acusticum Congress "LIFE E-VIA project: noise, electric vehicles and tyres".

SCIENTIFIC PAPERS

Code: 36_6

Issued on: November 2020

By: Comune di Firenze, Vie en.ro.se. Ingegneria

Deadline: 31/03/2023

LIFE E-VIA PROJECT: NOISE, ELECTRIC VEHICLES AND TYRES

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ABSTRACT

The LIFE E-VIA project tackles noise pollution from road traffic noise focusing on a future perspective in which electric and hybrid vehicles will be a consistent portion of traffic flow. Others main objectives of the project consist in: the combination of knowledge of road optimization and tyre development in order to test an optimized solution for reducing noise in urban areas and Life Cycle Cost with respect to actual best; the noise reduction for roads inside very populated urban areas through the implementation of a mitigation measure aimed at optimizing road surfaces and tyres of EVs (electric vehicles). From a practical point of view, two road surfaces, and at least five different EVs (including tyres specifically designed for EVs) will be tested. Finally, the soundscape holistic approach will be used to evaluate the performance of EV vs ICEV in the newly built scenario.



LIFE E-VIA PROJECT: NOISE, ELECTRIC VEHICLES AND TYRES

Arnaldo Melloni, Gessica Pecchioni – Municipality of Florence (Italy)

Sergio Luzzi, Raffaella Bellomini – Vie en.ro.se Ingegneria s.r.l, Florence (Italy)

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IYS 2020 Steering Committee Meeting

Issued on: January 2021

By: Vie en.ro.se. Ingegneria

EVENTS

Code: E_2



HEAD-Genuit-Stiftung

IYS2020 Steering Committee Meeting
16 January 2021

Student competition and Italian events
State of the Art

Sergio Luzzi
Chiara Bartalucci



Promotion – EU Projects

LIFE18 ENV/IT/000201 Electric Vehicle noise control by Assessment and optimization of tyre/road interaction
2019- ongoing
Organization of a student contest for high schools and music academy teachers/students to develop a proposal for the optimal "EV sound" (low-speed issue).

Creative Europe AURA Auralisation of acoustic heritage sites using Augmented and Virtual Reality
2021-ongoing
With the project AURA, music and opera houses in Berlin, Florence and Lviv – supported by tech and marketing partners – strive to tap into the potentials that auralisation opens up for music performing arts and establishments. Three use cases will show auralisation experiences with 3D-models of the music venues, creating perfect replica and producing exciting new ways of experiencing music.

Other EU/International projects about “positive sound” to be related to IYS?



Articles published on Italian journals

Issued on: March 2021

NETWORKING ACTIVITIES

Arpatoscana
30 marzo alle ore 09:30 · 🌐

A #Firenze, nell'estate 2021, grazie al Progetto europeo LIFE E-VIA, si sperimenterà con un progetto pilota la riduzione del #rumore da #traffico in una strada densamente abitata e trafficata della città.

Il progetto prevede la stesa di asfalto a bassa emissione di rumore e la realizzazione di test legati alla durabilità dell'asfalto.

Per saperne di più: <http://www.arp.at.toscana.it/.../life-e-via-un-progetto.....> Altro...



AMMINISTRAZIONE TRASPARENTE | ALBO ONLINE | GARE | LAVORA CON NOI | PEC | CONTATTI

ARPAT Agenzia regionale per la protezione ambientale della Toscana

INSIEME PER UN FUTURO SOSTENIBILE

Sistema Nazionale per la Protezione dell'Ambiente

REGIONE TOSCANA

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Agencia Temi Ambientali Attività Documentazione Notizie Dati e Mappe URP

Sei in: Home → Notizie → ARPATnews → 2021 → 069-21

ARPAT NEWS *giornaliero*

Martedì 30 marzo 2021

LIFE E-VIA: un progetto europeo per città meno rumorose

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Tra gli obiettivi principali del progetto la riduzione del rumore da traffico stradale all'interno di aree urbane molto popolate attraverso l'ottimizzazione di superfici stradali e degli pneumatici dei veicoli elettrici. Il caso pilota sarà realizzato in una strada densamente abitata e trafficata della città di Firenze con la stesa di asfalto a bassa emissione di rumore e test legati alla durabilità dell'asfalto.

Notizie

- Schiume sul Torrente Resco a Reggello (FI)
- Le attività di laboratorio ARPAT nel triennio 2017-2019
- M'illumino di meno promuove il salto di specie
- Distilleria Deta: sopralluogo ARPAT a seguito di numerose segnalazioni di cattivi odori

Dati e Mappe

- Dati del controllo dei campi elettromagnetici (CEM) ad alta frequenza
- Concentrazione di attività alfa totale, beta totale e radon-222 in acqua destinata al consumo umano - anni 2015-2017 e 2019
- Concentrazione di cesio-137 nelle acque superficiali - anni 2011-

Documentazione

- Relazione sull'attività dei laboratori ARPAT - anno 2019
- La Marine Strategy in Toscana
- Il controllo dei depuratori di acque reflue urbane nel 2019
- Piano delle azioni positive 2020 - 2022

ARPAT @arpatoscana · 30 mar

Il progetto @LIFEEVIA1 ha l'obiettivo di ridurre il #rumore da traffico stradale in città. #Firenze - che coordina il progetto - ospiterà il caso pilota: in una strada di S.Jacopino verrà steso asfalto a bassa emissione e ne sarà valutata efficacia/durata arp.at.toscana.it/notizie/arpatn...



Articles published on Italian journals

Issued on: April 2021

NETWORKING ACTIVITIES

la Repubblica FIRENZE
Dir. Resp.: Maurizio Molinari
Tiratura: 0 - Diffusione: 14521 - Lettori: 109000: da enti certificatori o autocertificati

Via Paisiello

L'esperimento dell'asfalto che riduce i rumori del traffico

Ridurre il rumore del traffico nelle strade urbane grazie a un nuovo asfalto. È l'obiettivo E-Via, che vede la sperimentazione: sarà steso durante l'estate in via Paisiello a San Jacopino. Dopo i test sulle prestazioni, saranno individuate altre tre aree per la sperimentazione in città e poi per la diffusione in Italia e in Europa. «Grazie al progetto Life che come Direzione Ambiente ci siamo aggiudicati lo scorso anno - ha detto l'assessore all'Ambiente **Cecilia Del Rio** - possiamo dare il via alla sperimentazione del nuovo asfalto antirumore per contribuire a ridurre l'inquinamento acustico nelle aree urbane. Partiremo da via Paisiello per poi individuare altre aree analoghe e verificare i risultati della sperimentazione con l'obiettivo di rendere Firenze più confortevole dal punto di vista acustico. I progetti europei sono una grandissima opportunità per innovare gli strumenti di intervento e dare risposte sempre più efficienti a temi urgenti e complessi come quelli ambientali».

«Partiamo da una viabilità da ripristinare e risanare - ha aggiun-

Asfalto anti rumore a Firenze, collabora l'Università Mediterranea

L'ateneo di Reggio Calabria tra i partner del progetto Life E-Via. Sperimentazione per ridurre l'inquinamento acustico

🕒 Pubblicato il: 04/04/2021 - 9:17

METROPOLITANO.it
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APRI

LA NAZIONE FIRENZE
Dir. Resp.: Agnese Pini
Tiratura: 0 - Diffusione: 19762 - Lettori: 139000: da enti certificati

Asfalto silenzioso. La sperimentazione parte da via Paisiello

Anche i cittadini dovranno esprimere le proprie opinioni. Poi saranno scelte altre aree della città da sperimentare.

FIRENZE
Ridurre il rumore del traffico nelle strade urbane grazie a un nuovo asfalto a bassa emissione. È l'obiettivo del progetto europeo Life E-Via, che vede Firenze città capofila e caso pilota per la sperimentazione: il nuovo asfalto sarà steso durante l'estate in via Paisiello a San Jacopino. Dopo i test sulle prestazioni, saranno individuate altre tre aree per la sperimentazione in città e poi per la diffusione in Italia e in Europa. «Grazie al progetto Life che come Direzione Ambiente ci siamo aggiudicati lo scorso anno - ha detto l'assessore all'Ambiente **Cecilia Del Rio** - possiamo dare il via alla sperimentazione del nuovo asfalto antirumore per contribuire a ridurre l'inquinamento acustico nelle aree urbane. Partiremo da via Paisiello per poi individuare altre aree analoghe e verificare i risultati della sperimentazione con l'obiettivo di rendere Firenze più confortevole dal punto di vista acustico. I progetti europei sono una grandissima opportunità per innovare gli strumenti di intervento e dare risposte sempre più efficienti a temi urgenti e complessi come quelli ambientali».

«Partiamo da una viabilità da ripristinare e risanare - ha aggiun-

FIRENZE TODAY Sezioni life

San Jacopino: arriva l'asfalto anti rumore: Firenze città pilota in Europa per la sperimentazione

Si parte in estate da via Paisiello per poi estendere il progetto ad altre aree

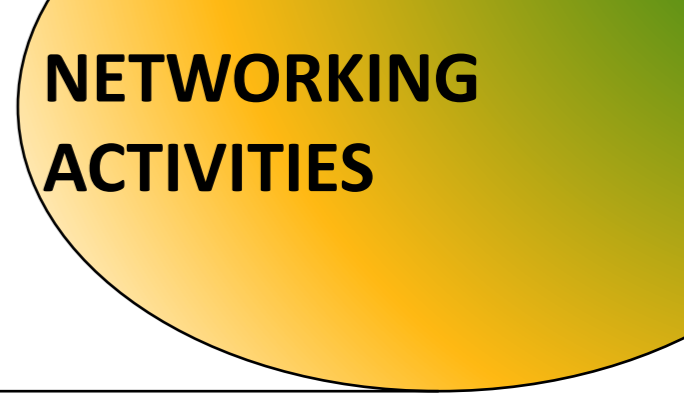
Redazione 05 APRILE 2021 10:45

FIRENZE TODAY

Ridurre il rumore del traffico nelle strade urbane grazie a un nuovo asfalto a bassa emissione. È l'obiettivo del progetto Life E-Via, che vede Firenze città capofila e caso pilota per la sperimentazione: il nuovo asfalto sarà steso durante l'estate in via Paisiello a San Jacopino. Dopo i test sulle prestazioni, saranno individuate altre tre aree per la sperimentazione in città e poi per la diffusione in Italia e in Europa.

e sperimenta un asfalto in grado di ridurre l'inquinamento acustico

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Asfalto anti rumore, Firenze lo testa per l'Europa

Mi piace 15 Condividi Tweet Condividi



A San Jacopino arriva l'asfalto anti rumore

Si parte in estate da via Paisiello. Consolidamento di un muro in via Bolognese, ripavimentazione in via di Castelnuovo

n Redazione Nove da Firenze
03 aprile 2021 16:20

si tratta di un nuovo asfalto a ba Jacopino. Dopo i test sulle prest poi per la diffusione in Italia e i

"Grazie al progetto Life che con l'assessore all'Ambiente Cecilia anti rumore per contribuire a rid Paisiello per poi individuare alt l'obiettivo di rendere Firenze pi grandissima opportunità per inn temi urgenti e complessi come o ha aggiunto l'assessore alla Mo provenienti dalla strada ottimizz

Il progetto Life E-Via prevede il per capire come cambia la perce pneumatici. Le interviste sarann

Il Progetto, co-finanziato dall'U 2019 e terminerà a gennaio 202 partner l'Università Mediterran Gustave Eiffel e I-Pool.



Arriva l'asfalto anti rumore, Firenze città pilota in Europa per la sperimentazione

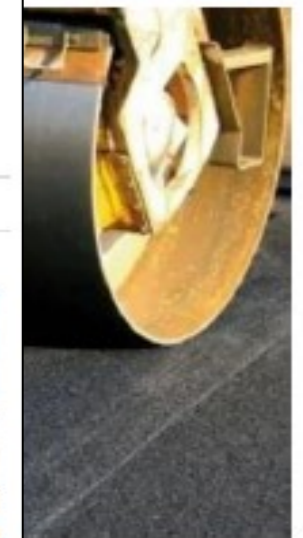
Si parte in estate da via Paisiello a San Jacopino per poi estendere il progetto ad altre aree

ANSA2030

Asfalto anti rumore, Firenze città pilota in Europa

Per sperimentazione progetto Life E-Via dalla prossima estate

Redazione ANSA FIRENZE 03 aprile 2021 18:30



nelle strade urbane o del progetto Life E- a sperimentazione: il San Jacopino.

HOME ATTUALITÀ E POLITICA ARTE E CULTURA SOCIALE INCHIESTE INTERVENTI IL PUNTO DEL DIRETTORE SPORT SPETTACOLI

Life E-via

A S. Jacopino arriva l'asfalto anti rumore:

3 APRILE 2021 // La Martinella Di Firenze

Firenze città pilota in Europa per la sperimentazione del progetto Life E-via. Si parte in estate da via Paisiello per poi estendere il progetto ad altre aree

Life VIA

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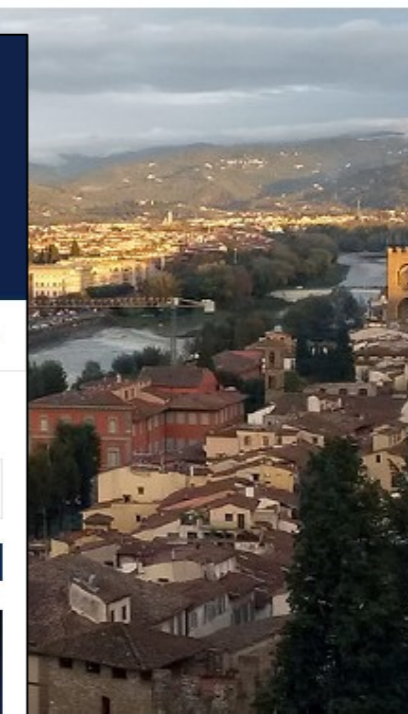
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La Martinella di Firenze 1038 "Mi piace"

LA MARTINELLA UN ALTRO MODO DI RACCONTARE FIRENZE

Mi piace Invia un messaggio

Il Punto Del Direttore





Press release: "A San Jacopino arriva l'asfalto anti rumore: Firenze città pilota in Europa per la sperimentazione"

Issued on: April 2021

By: Comune di Firenze

Deadline: 31/07/2022

PRESS CONFERENCES

Code: 11_a

The screenshot shows the top navigation bar of the Comune di Firenze website with the logo on the left and menu items: "Il Comune", "Servizi", "Ambiente", "Cultura", "Educazione", and "Tutti gli argomenti". The main content area features the title "A San Jacopino arriva l'asfalto anti rumore: Firenze città pilota in Europa per la sperimentazione" in bold black text. Below the title is a red "ambiente" tag and the date "03 aprile 2021". The sub-headline reads "Si parte in estate da via Paisiello per poi estendere il progetto ad altre aree". The main text describes the project's goal to reduce urban traffic noise using low-emission asphalt, with the first test on Via Paisiello in San Jacopino. It quotes the Director of Environment, Cecilia Del Re, stating that the project is a chance to innovate and address urgent environmental issues.





LIFE E-VIA: objectives and actions (IT)

Issued on: May 2021

By: Vie en.ro.se. Ingegneria

Deadline: 31/12/2022

NOTICEBOARD IN
ITALIAN LANGUAGE

Code: 23_1



LIFE E-VIA

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



Background

I dati sull'esposizione dell'Agenzia europea dell'ambiente (EAA) dimostrano che più di 100 milioni di cittadini dell'UE sono esposti ad elevati livelli di rumore che hanno un impatto negativo sulla salute umana. Il solo rumore del traffico stradale è dannoso per la salute di quasi una persona su tre nella regione europea dell'OMS (Organizzazione Mondiale della Sanità). Il 20% dei cittadini europei è regolarmente esposto a livelli sonori notturni che potrebbero danneggiare significativamente la loro salute, soprattutto nelle aree urbane. Come emerso nella conferenza Noise in Europe (aprile 2017) e nelle linee guida dell'OMS pubblicate nell'ottobre 2018, la maggiore severità delle norme UE riferite alla sorgente di rumore deve essere bilanciata con altre misure efficaci come il miglioramento della superficie stradale e/o dei pneumatici e anche misure di pianificazione urbana. Una delle soluzioni universalmente riconosciute come la migliore per ridurre il rumore nelle aree urbane, sia dal punto di vista del rumore che della qualità dell'aria, è l'introduzione della **mobilità elettrica**. Quindi, per le mutate esigenze dei veicoli elettrici (EV) c'è bisogno di indagini approfondite sull'interazione pneumatico/strada. Infine, anche per l'applicazione della direttiva 2002/49/CE, risultano attualmente assenti i coefficienti necessari per applicare il modello CNOSSOS (Direttiva 996/2015/CE), in riferimento ai nuovi spettri di traffico e ai nuovi veicoli.

Obiettivi

- 1 **Ridurre il rumore da traffico stradale** all'interno di aree urbane densamente abitate, attraverso l'attuazione di una misura di mitigazione volta a **ottimizzare le superfici stradali e i pneumatici dei veicoli elettrici**. Saranno testati due superfici stradali, almeno 5 diversi tipi di EV, un veicolo con motore a combustione interna di riferimento (ICEV) e almeno 3 tipi di pneumatici per tipo di veicolo (compresi i pneumatici specificamente progettati per EV).
- 2 **Stimare l'efficienza e il potenziale di mitigazione di pneumatici, asfalti e traffico** (spettro di traffico, velocità, condizioni di movimentazione) ad un livello più alto e completo: saranno eseguite un'analisi del ciclo di vita (LCA) e un'analisi dei costi del ciclo di vita (LCCA) per dimostrare l'efficienza individuale e sinergica di superfici, pneumatici e veicoli (incluso il confronto tra veicoli a combustione interna, traffico misto e traffico EV).
- 3 Contribuire all'**effettiva implementazione della legislazione UE** (Direttive UE 2002/49/CE e 2015/996/CE), fornendo coefficienti di rumore di rotolamento all'interno del metodo comune di valutazione del rumore (CNOSSOS-EU), specificamente per i veicoli elettrici, per i quali i professionisti, le agenzie e i dipartimenti che mirano a sviluppare scenari futuri necessitano di dati.
- 4 Contribuire alle **politiche nazionali e regionali italiane**, emettendo **linee guida** sull'uso e l'applicazione della metodologia prodotta dal progetto, che sarà adottata, attraverso l'Agenzia Regionale per l'Ambiente (ARPAT) e la Regione Toscana. Anche la Regione Calabria e la Città di Reggio Calabria hanno espresso il loro interesse.
- 5 **Sensibilizzare le persone sull'inquinamento acustico e sugli effetti di quest'ultimo sulla salute**, spiegando le opportunità offerte dai veicoli elettrici attraverso **specifici eventi** divulgativi e promozionali, indagando anche la percezione delle persone riguardo al rumore in termini di paesaggio sonoro e coinvolgendole nell'acquisizione dei dati sul rumore.
- 6 Dimostrare e promuovere la **mobilità sostenibile del trasporto su strada (mobilità elettrica)**, riducendo l'emissione di rumore di 5 dB(A) in corrispondenza dei ricevitori a bordo strada e raggiungendo anche la riduzione delle emissioni di CO2 (21%), sulla base del contesto italiano (GPL, CNG, Hybrid, EV, auto a benzina, auto diesel) e la letteratura in materia.
- 7 **Incoraggiare l'implementazione di superfici a bassa rumorosità in ulteriori scenari UE ed extra-UE**, dimostrando durata e sostenibilità, attraverso un'approfondita LCA&LCCA.

Azioni

A. Azioni preparatorie

- A1 Veicoli elettrici e la loro emissione di rumore
- A2 Pavimentazione a bassa emissione di rumore e performance nel tempo
- A3 Ruolo dei pneumatici nel nuovo contesto di EV e ICEV

B. Azioni implementative

- B1 Progettazione degli asfalti
- B2 Studio dell'accoppiamento pneumatico-pavimentazione e realizzazione del prototipo
- B3 Area pilota: Attuazione. Replicazione e trasferibilità
- B4 Test di efficienza dell'asfalto nell'area pilota
- B5 Analisi del paesaggio sonoro
- B6 Valutazione delle emissioni acustiche dei veicoli elettrici
- B7 Prestazioni olistiche dei pneumatici

C. Monitoraggio dell'impatto delle azioni del progetto

- C1 Monitoraggio dell'impatto delle azioni del progetto
- C2 Analisi del ciclo di vita (LCA) e calcolo dei costi del ciclo di vita (LCC)

D. Sensibilizzazione del pubblico e diffusione dei risultati

- D1 Attività di informazione e sensibilizzazione
- D2 Attività di divulgazione tecnica alle parti interessate

E. Project management

Stakeholders



Sito web: <https://life-evia.eu/>

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LIFE E-VIA

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





LIFE E-VIA: objectives and actions (DE)

Issued on: May 2021

By: : Continental

Deadline: 31/12/2022

NOTICEBOARD IN
GERMAN LANGUAGE

Code: 22_1



LIFE E-VIA

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



Hintergrund

Belastungsdaten der Europäischen Umweltagentur (EEA) zeigen, dass mehr als 100 Millionen EU-Bürger durch gesundheitsbelastende Geräuschpegel beeinträchtigt sind. Laut Weltgesundheitsorganisation (WHO) ist dabei in etwa jede dritte Person in der Europäischen Region Verkehrslärm ausgesetzt, der ungesund ist. 20 % aller Europäer, insbesondere in urbanen Gebieten, sind regelmäßig nächtlichen Schalldruckpegeln ausgesetzt, die gesundheitsschädlich sein können. Wie in der *Noise in Europe Conference* (April 2017) und den WHO Richtlinien (Okt. 2018) ausgeführt wird, müssen EU-Regeln zur Schallquellennormierung auch mit weiteren effektiven Maßnahmen wie Verbesserungen an Straßenoberflächen oder Reifen, und städtebaulichen Maßnahmen kombiniert werden. Eine Maßnahme, die allgemein als der beste Ansatz zur Geräuschreduzierung und Minimierung gesundheitsschädlicher Luftverschmutzungen im städtischen Umfeld angesehen wird, ist die Einführung der Elektromobilität. Aufgrund der im Vergleich zu klassischen Verbrennungsfahrzeugen geänderten Eigenschaften von Elektrofahrzeugen (EV) gibt es einen Bedarf zur Untersuchung der Reifen-/Fahrbahninteraktion. Weiterhin fehlen, selbst unter Berücksichtigung der Richtlinie 2002/49/EC, entsprechende Koeffizienten, um das CNOSSOS-Modell (Richtlinie 996/2015/EC) für die neuen Fahrzeugtypen und Geräuschspektren anwenden zu können.

Ziele

- 1 Eine Lärmreduzierung für dichtbesiedelte urbane Gebiete durch die Implementierung von Minderungsmaßnahmen die auf **optimierte Straßenbeläge und Reifen für EVs** abzielen. Zwei Straßenoberflächen, mindestens fünf verschiedene Elektrofahrzeuge, ein Referenzfahrzeug mit Verbrennungsmotor und mindestens drei verschiedene Reifen pro Fahrzeugklasse (inkl. spezieller EV-Reifen) werden getestet
- 2 Eine Abschätzung der **Minderungseffektivität und -potentials** von **Reifen, Fahrbahnbelägen und Verkehrseigenschaften** (z.B. Verkehrsspektren, Geschwindigkeiten, Fahrweisen) auf einem höheren Verständnisniveau: Lebenszyklus-/Lebenszykluskostenanalyse (LCA und LCCA) werden durchgeführt um die individuelle und synergetische Effizienz verschiedener Fahrbahnbeläge, Reifen und Fahrzeugen zu zeigen, inkl. eines Vergleichs zwischen reinem Verbrennungs-, Misch- und reinem EV-Verkehr).
- 3 Beizutragen zur **effektiven Umsetzung von EU-Gesetzgebung** (EU Richtlinien 2002/49/EC und 2015/996/EC) durch die Bereitstellung von speziell für elektrische Fahrzeuge angepasste Rollgeräusch-Koeffizienten für die Common Noise Assessment Methode (CNOSSOS-EU). Dies ermöglicht beratenden, planenden und umsetzenden Personen und Organisationen die Betrachtung zukünftiger Szenarien.
- 4 Beizutragen zur **National- und Regionalpolitik** durch die Herausgabe von **Richtlinien und Empfehlungen** zur Nutzung und Anwendung der Projektergebnisse. In Kollaboration mit dem Projekt wird beispielsweise durch die regionale Umweltbehörde der Toskana (ARPAT) geschehen. Weitere italienische Kommunen und Regionen haben ebenfalls ihr Interesse bezeugt.
- 5 Eine **Verbesserung des öffentlichen Bewusstseins** für schädliche Geräuschbelastungen, die daraus resultierenden Gesundheitsgefahren und die damit zusammenhängenden Möglichkeiten der Elektromobilität, mittels zielgerichteter Informationskampagnen und -veranstaltungen, sowie einer Beteiligung der Bevölkerung durch Soundscape-Befragungen und einer der Einbeziehung in die Geräuschdatenerfassung..
- 6 Das **Demonstrieren und Bewerben eines nachhaltigen (elektrischen) Straßenverkehrs** durch Reduzierung der Schallbelastung um 5 dB(A) im Bereich der straßenzugewandten Außenfassade bei gleichzeitiger Reduzierung der CO2-Emissionen um 21% (Werte im Kontext der Gegebenheiten der italienischen Pilotanwendung und des Stands der entsprechenden Literatur)
- 7 Eine **Förderung der Nutzung geräuschoptimierter Straßenoberflächen** in entsprechenden Szenarien **innerhalb und außerhalb der EU** durch die Zuschaustellung der Haltbarkeit und Nachhaltigkeit entsprechender Lösungen mittels LCA und LCCA

Maßnahmen

- A. Vorbereitende Maßnahmen**
- A1 Elektrofahrzeuge und ihre Geräuschemissionen
 - A2 Technologien für leise Fahrbahnbeläge und ihre zeitliche Leistungsfähigkeit
 - A3 Die Rollen des Reifens im neuen Kontext von Elektro- vs. Verbrennungsfahrzeugen
- B. Implementierungsmaßnahmen**
- B1 Fahrbahnoberflächendesign
 - B2 Reifen-/Fahrbahninteraktionsstudie und Prototypimplementierung
 - B3 Pilotanwendung, Implementierung, Replikation und Transferierbarkeit
 - B4 Fahrbahneffizienztests im Rahmen der Pilotanwendung
 - B5 Soundscape-Analyse
 - B6 Auswertung von EV-Geräuschemissionen
 - B7 Holistische Leistungseigenschaften von Reifen
- C. Monitoring der Wirkung der Projektmaßnahmen**
- C1 Monitoring der Wirkung der Projektmaßnahmen
 - C2 Lebenszyklusanalyse (LCA) und Lebenszykluskosten (LCC)
- D. Öffentliches Bewusstsein und Verbreitung der Ergebnisse**
- D1 Informations- und Sensibilisierungsmaßnahmen
 - D2 Verbreitungsmaßnahmen and technische Interessengruppen
- E. Projektmanagement**



Projektwebsite: <https://life-evia.eu/>

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LIFE E-VIA

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





WEBINAR: 'Mobilità elettrica e asfalti a bassa emissione di rumore: il progetto LIFE E-VIA e altri contributi'

Issued on: May 2021

By: Comune di Firenze, Vie en.ro.se. Ingegneria, UNIRC

EVENTS

Code: E_3



LIFE/ENV/IT000201 LIFE E-VIA

Project co-funded by the European Commission into the LIFE+2018 Programme.



Con il patrocinio di



organizzano il

WEBINAR

**Mobilità elettrica e asfalti a bassa emissione di rumore:
il progetto LIFE E-VIA e altri contributi**

14 maggio 2021 h 14.00-16.10

In modalità online sulla piattaforma Microsoft Teams

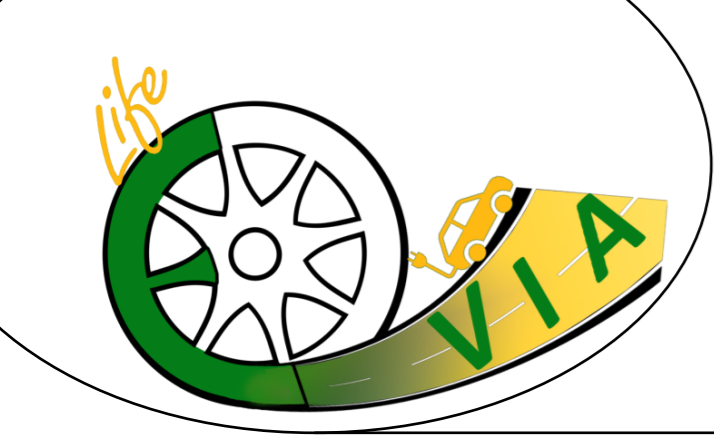
In collaborazione con



2 ore di aggiornamento per Tecnici Competenti in Acustica

L'aggiornamento per i TCA è riservato ai primi 36 iscritti

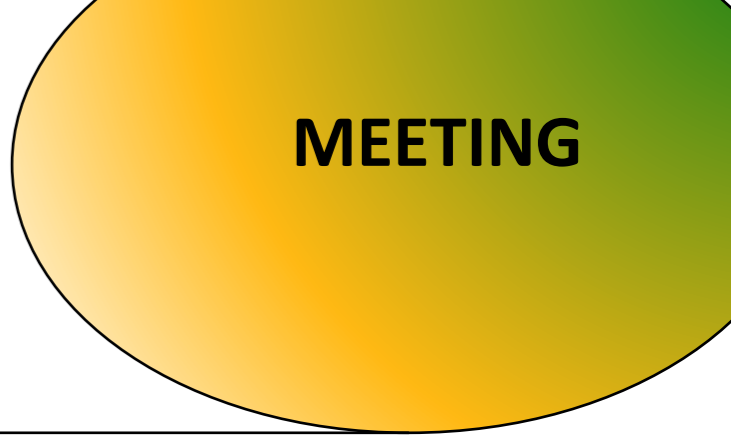
Il corso è riconosciuto dalla Regione Toscana con Prot. n. 0177764 del 21/04/2021



EUROCITIES: ENVIRONMENTAL FORUM

Issued on: April 2021

By: Comune di Firenze



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EEF: people and planet for the green transition (28-30 April) Tweet

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| date | 17-03-2021 |
| publication date | 17-03-2021 |
| document type | |
| start date | 28-04-2021 |
| end date | 30-04-2021 |

We are delighted to announce the theme of our EEF hosted online by Porto and Guimaraes as "people and planet for a green transition". Join us for three mornings between **28, 29 and 30 April** as we discuss what it means to transition to a healthy and thriving city for all, explore case studies and analyse how we can achieve the status of a thriving city moving forward.

Registrations will open very soon. Watch this space! A hint of what's to come? Oh alright...

Driving the green transition through recovery

Wednesday 28 April @ 09.30-13.30 CET

What does it mean to have a 'green transition'? How can we use recovery strategies to drive the green transition?

Join us as we explore what it means to transition, hold a high-level political debate on driving the transition through recovery and network with our cities to learn how we can localise the European Green Deal through a city showcase (open call – got something to showcase? Get in touch!).

How to enact the green transition locally

Thursday 29 April @ 09.30-12.20 CET





Paper submitted to AIA Congress

"IL PROGETTO LIFE E-VIA"

Issued on: May 2021

By: Comune di Firenze, Vie en.ro.se. Ingegneria, UNIRC

Deadline: 31/03/2023

SCIENTIFIC PAPERS

Code: 36_7



Associazione Italiana di Acustica
47° Convegno Nazionale
24-28 maggio 2021

IL PROGETTO LIFE E-VIA: CONTROLLO DEL RUMORE DEI VEICOLI ELETTRICI MEDIANTE VALUTAZIONE E OTTIMIZZAZIONE DELL'INTERAZIONE PNEUMATICO/ASFALTO

Raffaella Bellomini (1), Chiara Bartalucci (1), Arnaldo Melloni (2), Filippo G. Praticò (3)

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2) Comune di Firenze, Firenze, arnaldo.melloni@comune.fi.it

3) Università Mediterranea di Reggio Calabria, Reggio Calabria, filippo.pratico@unirc.it

SOMMARIO

Il progetto Life E-VIA "Electric Vehicle noise control by Assessment and optimisation of tyre/road interaction", co-finanziato nell'ambito dell'obiettivo prioritario del Programma Life2018 collegato all'inquinamento acustico, affronta la problematica del rumore da traffico stradale, ponendosi in una prospettiva futura in cui i veicoli elettrici e ibridi saranno una parte consistente del traffico stradale e combinando asfalti a bassa rumorosità con pneumatici specifici per i veicoli elettrici.



Presentation of the project to the European Tire and Rim Technical Organisation (ETRTO)


Issued on: May 2021

By: Continental

Deadline: 31/03/2023


SCIENTIFIC PAPERS

Code: 36_8




LIFE E-VIA

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



Carsten Hoever – Continental Reifen Deutschland GmbH
carsten.hoever@conti.de



LIFE18 ENV/IT/000201
With the contribution of the LIFE programme of the European Union

Objectives

- To **reduce noise** for roads inside very populated urban areas through the implementation of a mitigation measure aimed at **optimizing road surfaces and tyres of EVs.**





25/05/2021



LIFE E-VIA project: noise, electric vehicles and tyres



LIFE18 ENV/IT/000201

Objectives

- To contribute to **EU legislation effective implementation** providing rolling noise coefficients within the Common Noise Assessment Method (**CNOSSOS-EU**), specifically tuned for EVs, aiming at helping to developing **future scenarios.**

25/05/2021




LIFE E-VIA project: noise, electric vehicles and tyres



LIFE18 ENV/IT/000201


Pilot Area Florence

- As a pilot implementation a section of a road in Florence will be paved with the new low-noise road surface.
- The pilot area will be the focus of further actions relating to
 - performance and wear/ageing monitoring of the new surface,
 - LCA/LCAA analysis,
 - Soundscape analysis,
 - ...
- The re-pavement of the road will also be linked to an EV festival planned to be held in Florence which shall promote Electric Mobility.

25/05/2021

LIFE E-VIA project: noise, electric vehicles and tyres



LIFE18 ENV/IT/000201



Lesson carried out by CRD to students the University of Applied Sciences in Hanover

Issued on: June 2021

AWARENESS ACTIVITIES



LIFE E-VIA

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



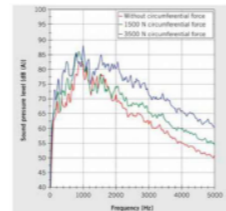
Carsten Hoever – Continental Reifen Deutschland GmbH
carsten.hoever@conti.de

Warum besondere Anforderungen an Reifen und Straße für Elektrofahrzeuge?

Im Vergleich zu Fahrzeugen mit Verbrennungsmotoren...

- ...sind EVs schwerer.
 - Höhere Reifenlast → höheres Rollgeräusch.
 - Stärkere Abnutzung von Reifen und Straße.
- ...haben EVs in einem weiten Drehzahlbereich ein höheres Drehmoment.
 - Zusätzliche Rollgeräusch-Anregemechanismen.
 - Stärkere Abnutzung von Reifen und Straße.
- ...gibt es einen nochmals verstärkten Fokus auf niedrigem Rollwiderstand.
 - Niedrigerer Rollwiderstand → höhere Fahrzeugreichweite → höhere Kundenakzeptanz.

Akustische Aspekte
Weitere relevante Aspekte



Quelle: F. Stalter et al.: Influence of driving torque on tyre noise, Auto Tech Review 10/2013, 34-38.

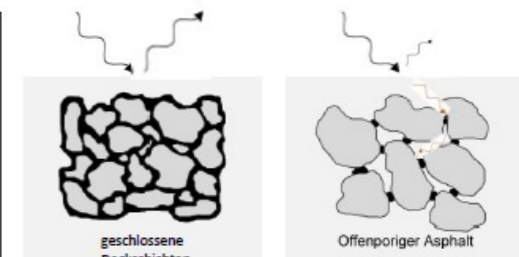
07.06.2021

LIFE E-VIA project: noise, electric vehicles and tyres



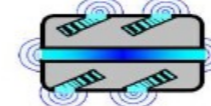
Absorbierende Straßenbeläge

Absorption entlang der Luftschallausbreitung



Auftreffender Schall wird nahezu komplett reflektiert
Ein Teil des Schalls dringt in die Deckschicht ein und durch viskose Reibung dissipiert

Minderung von akustischen Resonanzen in der Aufstandsfläche



Reduzierung des Horneffektes



Horneffekt: effiziente Abstrahlung aufgrund kontinuierlicher Impedanzenanpassung in der Horngeometrie

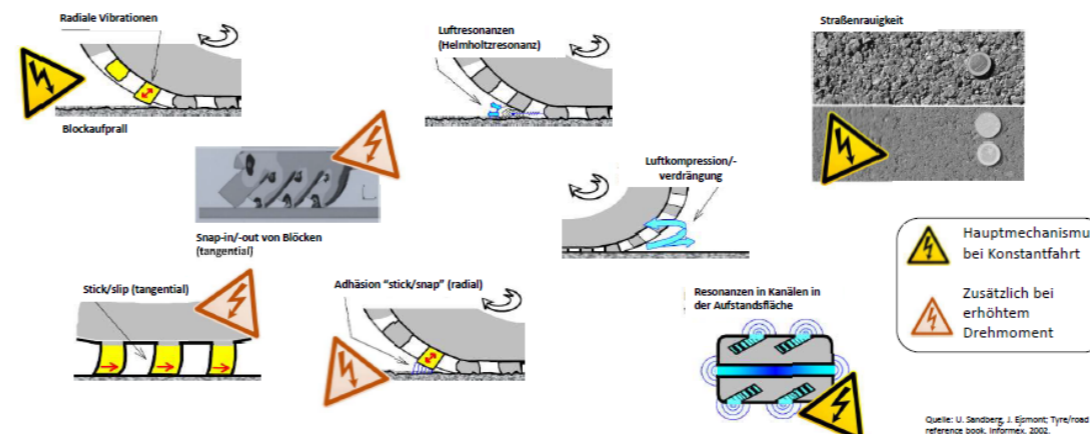
- Nachteile:
- Verstopfung der Poren
 - Kürzere mechanische Lebensdauer

07.06.2021

LIFE E-VIA project: noise, electric vehicles and tyres

8

Anregungsmechanismen des Reifen-/ Fahrbahngeräusches



- Hauptmechanismus bei Konstantfahrt
- Zusätzlich bei erhöhtem Drehmoment

Quelle: U. Sandberg, J. Epmont: Tyre/road noise reference book, Informa, 2002.

07.06.2021

LIFE E-VIA project: noise, electric vehicles and tyres

6



Article published in an open access journal

NOISE MAPPING

Issued on: June 2021

By: Université Gustave Eiffel

Deadline: 31/12/2022

ARTICLE IN A TOP
RANKED JOURNAL
Code: 15



Open Access Published by De Gruyter Open Access on June 4, 2021

Road surface influence on electric vehicle noise emission at urban speed

Julien Cesbron, Simon Bianchetti, Marie-Agnès Pallas, Adrien Le Bellec, Vincent Gary and Philippe Klein

<https://doi.org/10.1515/noise-2021-0017>

<https://doi.org/10.1515/noise-2021-0017>

Cite this



DE GRUYTER

Noise Mapp. 2021; 8:217–227



Research Article

Julien Cesbron*, Simon Bianchetti, Marie-Agnès Pallas, Adrien Le Bellec, Vincent Gary, and Philippe Klein

Road surface influence on electric vehicle noise emission at urban speed

<https://doi.org/10.1515/noise-2021-0017>

Received Jan 29, 2021; accepted Apr 23, 2021

Abstract: Considering the relative quietness of electric motors, tyre/road interaction has become the prominent source of noise emission from Electric Vehicles (EVs). This study deals with the potential influence of the road surface on EV noise emission, especially in urban area. A pass-by noise measurement campaign has been carried out on a reference test track, involving six different road surfaces and five electric passenger car models in different vehicle segments. The immunity of sound recordings to background noise was considered with care. The overall and spectral pass-by noise levels have been analysed as a function of the vehicle speed for each couple of road surface and EV model. It was found that the type of EV has few influence on the noise classification of the road surfaces at 50 km/h. However, the noise level difference between the quietest and the loudest road surface depends on the EV model, with an average close to 6 dBA, showing the potential effect of the road surface on noise reduction in the context of growing EV fleet in urban area. The perspective based on an average

the European area, where about 2.5 million of electric passenger cars were in circulation at the end of 2020. This figure comprises battery electric vehicles (BEVs) and plug-in electric vehicles (PHEVs). The market share of new EV registrations over the European area has been reaching 9.4% in 2020 against 3.7% in 2019. Depending on projection scenarios [2], it is expected to reach 15% to 30% of the global vehicle fleet by 2030.

A main advantage of EVs is that there is no exhaust emission while driving in pure electric mode, locally improving air-quality. EVs also contribute to the reduction of CO₂ emission in the struggle against global warming [3]. Another key asset of EVs is the relative quietness of electric motors. This leads to the predominance of tyre/road noise from about 20 km/h at steady speed [4, 5]. According to EEA [6], in 2019 at least 20% of the European population was still exposed to noise levels that are considered harmful to human health. This burden is mainly due to road traffic noise, with more than 100 million EU citizens affected by high noise levels exceeding WHO recommendation [7]. Therefore, the development of low emission zones



Journées Techniques Acoustique et Vibrations JTAV 2021

"Projet LIFE E-VIA : Influence du revêtement de chaussée sur l'émission sonore des véhicules électriques"

Issued on: June 2021

By: : Université Gustave Eiffel

Deadline: 31/03/2023

SCIENTIFIC
PRESENTATION IN
NATIONAL CONGRESS
Code: 36_9



JTAV 2021 - SÉMINAIRE DE TRANSFERT COP ▾ ARCHIVES ▾

Accueil (/jtav-2021-seminaire-de-transfert-cop/) / JTAV 2021 - Séminaire de transfert COP (/jtav-2021-seminaire-de-transfert-cop/) / Programme

JTAV 2021 - SÉMINAIRE DE TRANSFERT COP

(/JTAV-2021-SEMINAIRE-DE-TRANSFERT-COP/)

PROGRAMME (/JTAV-2021-SEMINAIRE-DE-TRANSFERT-COP/PROGRAMME/)

ARCHIVES ▾

(/ARCHIVES/JTAV-2020/)

Programme

Lundi 7 juin (séminaire de transfert COP)

- 9h30 - 9h40 Présentation du COP - Axe 3 J. Lelong (Univ. G. Eiffel/UMRAE)
- 9h40 - 10h05 Présentation de l'UMRAE J. Picaud (Univ. G. Eiffel/UMRAE)
- 10h05 - 10h45 Elaboration de modèles d'émission sonore représentatifs de nouvelles catégories de sources routières M.-A. Pallas (Univ. G. Eiffel/UMRAE)
- 10h45 - 11h25 Amélioration des méthodes de caractérisation des émissions de bruit ferroviaire O. Chiello & M.-A. Pallas (Univ. G. Eiffel/UMRAE)
- Pause
- 13h30 - 14h30 Présentation de NoiseModelling - Utilisation dans le cadre de la recherche
 - Présentation de NoiseModelling et application P. Aumond (Univ. G. Eiffel/UMRAE)
 - Couplage Symuvia/MatSim A. Can @ V. Lebescond (Univ. G. Eiffel/UMRAE)
 - Nouveaux développements pour la prise en compte des façades végétalisées B. Gauvreau (Univ. G. Eiffel/UMRAE)
- 14h30 - 14h50 Présentation de l'outil PLAMADE et couplage avec NoiseModelling S. Cariou (Cerema/DTeclTM) & D. Ecotière (Cerema/DterEst/UMRAE)
- 14h50 - 15h30 Impact du bruit des avions sur la santé : le projet DEBATS A.-S. Evrard (Univ. G. Eiffel/UMRESTTE)
- 15h30 Table ronde A. Kavaj & M.-C. Bihoreau (DGITM), Ph. Maraval & F. Leray (DGPR), XX (DGAC)

Mardi 8 juin (JTAV)

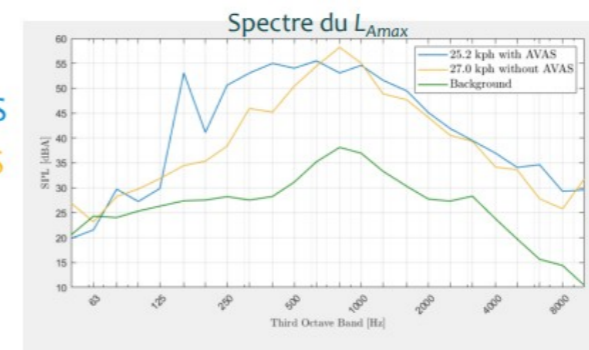
- 9h30 - 9h55 **Projet LIFE E-VIA : Influence du revêtement de chaussée sur l'émission sonore des véhicules électriques J. Cesbron - S. Bianchetti, M.-A. Pallas, A. Le Bellec, V. Gary, Ph. Klein (Univ. G. Eiffel/UMRAE)**
- 9h55 - 10h20 Projet LIFE Cool & Low Noise Asphalt : suivi des performances acoustiques des revêtements de chaussée à faible bruit dans le centre ville de Paris C. Ribeiro (BruitParif)
- 10h20 - 10h45 Méthode d'estimation des incertitudes du bruit éolien en conditions favorables à la propagation B. Kayser (Univ. G. Eiffel/UMRAE)
- 10h45 - 11h10 Estimation du coefficient d'absorption acoustique moyen par des méthodes de machine learning C. Foy (Cerema/DterEst/UMRAE) A. Deleforge & D. Di Carlo (INRIA)
- 11h10 - 11h35 Evaluation environnementale d'une conduite autonome : méthodologie acoustique et vibratoire Ph. Dunez (Cerema/DterNP/TEER/ABV)
- Pause
- 13h30 - 13h55 Création d'une base de données des Points Noirs du Bruit dans les Quartiers Prioritaires du NPNRU L. Mazouz Cerema/DterNP/TEER/ABV)
- 13h55 - 14h20 Réseau à grand nombre de microphones et problèmes inverses mis en jeu Ch. Vanwinsberghe (ISEN Yncréa Ouest)
- 14h20 - 14h55 Plate-forme expérimentale de mesures acoustiques en temps réel S. Carra, V. Janillon (Acoucté)
- 14h55 - 15h20 Prédiagnostic sonore en milieu industriel : développement d'un "kit smartphone" Isabelle Smith Yamane & A. Alarcon (EDF)
- 15h20 Questions diverses - clôture des JTAV 2021



- **Projet européen LIFE E-VIA (2019-2023) :**
 - Electric Vehicle Noise Control by Assessment and Optimisation of Tyre/Road Interaction
 - Julien Cesbron et al., *Projet LIFE E-VIA : influence du revêtement de chaussée sur l'émission sonore des véhicules électriques*, JTAV 2021, 8/06/2021
 - <https://life-avia.eu/>
- **Signal d'alerte AVAS : caractérisation sous une approche environnementale**
 - Comparaison aux niveaux d'émission CNOSSOS-EU / CNOSSOS-FR



Spectre avec AVAS
Spectre sans AVAS



Séminaire COP - Univ. Eiffel

25

7/06/2021



Video of the prototype construction in Nantes

"Low-noise road surface prototype for electric vehicles"

Issued on: June 2021

By: Université Gustave Eiffel

Deadline: 31/12/2022

**VIDEO OF THE
PROTOTYPE
CONSTRUCTION**
Code: 8

LOW-NOISE ROAD SURFACE PROTOTYPE FOR ELECTRIC VEHICLES
PROTOTYPE DE SURFACE ROUTIÈRE PEU BRUYANTE POUR LES VÉHICULES ÉLECTRIQUES

COMUNE DI FIRENZE Continental iPOOL Université Gustave Eiffel Università degli Studi Mediterranea di Reggio Calabria Vie en.ro.se. Ingegneria



Video available on the official YouTube channel of UMRAE-UniEiffel and on the UMRAE website

[Low noise road surface prototype for electric vehicles \(EU LIFE E-Via project, LIFE18 ENV/IT/000201\) - YouTube](#)



LIFE E-VIA: objectives and actions (FR)

Issued on: July 2021

By: Vie en.ro.se. Ingegneria

Deadline: 31/12/2022

NOTICEBOARD IN FRENCH LANGUAGE

Code: 21_1



LIFE E-VIA

Contrôle du bruit des Véhicules Électriques par l'évaluation et l'optimisation de l'interaction pneumatique/chaussée



Contexte

Les données d'exposition de l'Agence Européenne pour l'Environnement (AEE) montrent que plus de 100 millions de citoyens de l'UE sont affectés par des niveaux de bruit élevés ayant un impact négatif sur la santé et la qualité de la vie. À la suite de la circulation routière est reconnue pour la santé de plus d'une personne sur trois en Europe, d'après l'Organisation Mondiale de la Santé (OMS). 30 % des Européens sont régulièrement exposés à des niveaux sonores nocturnes susceptibles de nuire considérablement à la santé, en particulier dans les zones urbaines. Comme cela a été mis en évidence lors de la conférence Mario in Europe (avril 2017) et dans les recommandations de l'OMS publiées en octobre 2018, le développement des normes européennes à la source doit être complété par d'autres mesures efficaces telles que l'amélioration des revêtements routiers et des pneumatiques, ainsi que l'atténuation urbaine.

L'une des solutions environnementales les plus efficaces pour réduire le bruit en milieu urbain, tant en matière de bruit que de qualité de l'air, est l'introduction de la mobilité électrique. Ainsi, pour répondre aux nouvelles exigences des véhicules électriques (VE), il est nécessaire d'approfondir les connaissances sur l'interaction pneumatique/chaussée. De plus, pour la mise en œuvre de la directive européenne 2002/49/CE, les coefficients permettant d'appliquer le module CMC8000 (directive 2002/49/CE) aux nouveaux spectres de trafic et aux nouveaux véhicules restent totalement inexistants.

Objectifs

- 1 Réduire le bruit routier au sein des zones urbaines très peuplées par la mise en œuvre d'une solution visant à optimiser les revêtements routiers et les pneumatiques des véhicules électriques (VE).** Deux revêtements routiers, au moins 5 modèles de VE, un véhicule à mesur thermique (VMT) de référence et 3 types de pneumatiques (y compris des pneus spécialement conçus pour les VE) seront testés pour chaque technologie de véhicule.
- 2 Estimer l'efficacité et le gain potentiel de réduction des pneus, des revêtements et de trafic (spectre du trafic, vitesses, conditions de conduite) à une échelle plus complète :** Une Analyse du Cycle de Vie (ACV) et une Analyse du Coût du Cycle de Vie (ACCV) seront réalisées pour évaluer l'efficacité respective et synergique des revêtements de chaussée, des pneus et des véhicules (y compris la comparaison entre trafics caractéristiques de véhicules thermiques uniquement, de véhicules électriques ou mixtes).
- 3 Contribuer à la mise en œuvre effective de la législation européenne (directives 2002/49/CE et 2015/996/CE), en fournissant des coefficients de bruit de roulement pour la méthode commune d'évaluation de bruit (EN15196-2:2015), spécialement adaptés aux VE, données encore non disponibles pour les professionnels, les organismes et les ministères en charge d'élaborer des scénarios futurs.**
- 4 Contribuer aux politiques nationales et régionales italiennes, en publiant des recommandations sur l'utilisation et l'application de la méthodologie issue du projet, qui seront adoptées par la Région Toscane, via l'Agence Régionale pour l'Environnement de Toscane (ARPAE) soutenant le projet. La Région de Calabre et la ville Reggio de Calabre ont également exprimé leur intérêt.**
- 5 Sensibiliser le public à la pollution sonore et aux effets sur la santé en expliquant les possibilités offertes par les véhicules électriques par le biais d'événements, de communications et de promotions spécifiques, tout en élargissant la perception des personnes vis-à-vis du bruit sous l'angle méthodologique de paysage sonore et en les impliquant dans l'exécution de données sur le bruit.**
- 6 Développer et promouvoir la mobilité visuelle partagée (électrique), en réduisant les émissions sonores de 3 dB(A) en bord de route et simultanément celles de CO₂ (g/kWh) sur la base du contexte futur (véhicules GPL, BVC, hybrides, électriques, à essence, diesel) et de la littérature spécialisée.**
- 7 Encourager la mise en œuvre de revêtements à faible niveau de bruit dans d'autres scénarios européens et extra-européens, en démontrant leur durabilité et leur pérennité, grâce à une analyse du cycle de vie (ACV) et une évaluation du coût du cycle de vie (ACCV) approfondies.**

Actions

- A. Actions préparatoires**
- A1 Les véhicules électriques et leurs émissions sonores
 - A2 Les technologies de réduction des bruits et la pérennité de leurs performances
 - A3 Le rôle du pneumatique dans le nouveau contexte des VE et des VMT
- B. Actions de mise en œuvre**
- B1 Conception de la formulation du revêtement de chaussée
 - B2 Étude du couplage pneumatique-chaussée et réalisation de prototypes
 - B3 Zone pilote - Mise en œuvre, Production et homologation
 - B4 Tests d'efficacité des voies dans la zone pilote
 - B5 Analyse du paysage sonore
 - B6 Évaluation des émissions sonores des VE
 - B7 Performance globale des pneumatiques
- C. Suivi de l'impact des actions de projet**
- C1 Suivi de l'impact des actions de projet
 - C2 Analyse du cycle de vie (ACV) et coût du cycle de vie (ACCV)
- D. Sensibilisation du public et diffusion des résultats**
- D1 Activités d'information et de sensibilisation
 - D2 Activités de diffusion technique auprès des parties prenantes
- E. Gestion du projet**



Site web du projet: <https://life-evia.eu/>

LIFE E-VIA

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





Articles published on Italian journals

Issued on: July 2021

NETWORKING ACTIVITIES

| | | |
|-----------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------|
|  | Bimestrale | <p>Data 07-2021</p> <p>Pagina 74</p> <p>Foglio 1</p> |
|-----------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------|



L'obiettivo dei progetti europei Life Nereide e Life E-Via è quello di studiare una risposta all'inquinamento acustico causato dal traffico nei centri urbani, che ogni anno affligge 100 milioni di persone in tutta Europa

PROGETTI EUROPEI LIFE NEREIDE E LIFE E-VIA

Asfalti con materiali riciclati contro l'inquinamento acustico e a favore della mobilità elettrica

In Italia sono in corso due progetti europei, Life Nereide e Life E-Via, che intendono proporre soluzioni contro l'inquinamento acustico: uno dei problemi ambientali che toccano maggiormente la salute e la qualità della vita della popolazione europea. L'Agenzia Europea dell'Ambiente (EEA) stima infatti che siano oltre 100 milioni i cittadini europei esposti in maniera prolungata a livelli di rumore eccessivi e che, per questo, rischino conseguenze anche gravi per la salute. Stima inoltre che l'inquinamento acustico stradale notturno, ancora più dannoso per la salute, colpisca almeno il 20% della popolazione europea che vive nelle aree urbane. Alcune tra le azioni più efficaci introdotte per risolvere questo problema riguardano la realizzazione di pavimentazioni stradali a bassa emissione sonora, ottenute anche con materiali di riciclo, e la progressiva diffusione della mobilità elettrica. Nati per analizzare i benefici possibili derivanti da tali soluzioni, Life Nereide e Life E-Via sono due progetti finanziati dal programma Life, volto a sostenere azioni a favore dell'ambiente e del clima. Il progetto Life Nereide, che si sta avviando alla conclusione, ha portato alla definizione delle migliori soluzioni per realizzare pavimentazioni estremamente silenziose e sostenibili, capaci di ridurre il rumore del traffico fino a 5 dB grazie a un uso intelligente di materiali quali il polverino di gomma riciclata e il freato d'asfalto, ottenuto dalla rimozione di vecchie pavimentazioni. Il progetto è guidato dal Dipartimento d'Ingegneria Civile e Industriale dell'Università di Pisa e vede come partner la Regione Toscana e l'agenzia regionale Arpat, il centro di ricerca belga BRRC, l'Idasc-CNR e il consorzio Ecopneus. Grazie al progetto sono state definite 12 differenti mescole bituminose, posate su diverse strade della Toscana; sono state poi effettuate misurazioni acustiche sulle pavimentazioni e indagini sulla popolazione, per conoscere gli effetti concreti su chi vive nei pressi di strade a elevato scorrimento. Dal canto suo, il progetto Life E-Via si sta invece concentrando sui veicoli elettrici e ibridi, studiandone l'interazione pneumatico-strada per individuare e implementare misure di mitigazione del rumore attraverso l'ottimizzazione sia degli pneumatici sia del fondo stradale, anche attraverso lo sviluppo di un nuovo asfalto "silenzioso" messo a punto grazie a un approccio simile a quello adottato da Life Nereide. Il progetto vede coinvolti il Comune di Firenze, in qualità di coordinatore, e i partner: Continental, iPool, Università Gustave Eiffel, Università degli Studi Mediterranea di Reggio Calabria e Vie En.Ro.Se. Ingegneria.

ELASTICA - Giugno/Luglio 2021

| | | |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
|  | <p>LA NAZIONE FIRENZE</p> <p style="font-size: x-small;">Dir. Resp.: Agnese Pini Tiratura: N.D. Diffusione: 19762 Lettori: 120000 (0005822)</p> | <p>15-LUG-2021 da pag. 1-9 / foglio 2 / 2</p> |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|

IN VIA PAISIELLO

Arriva l'asfalto anti rumore

Sono iniziati ieri i lavori di asfaltatura in via Paisiello. Non si tratta di semplice bitume, ma di un nuovo asfalto anti rumore che viene sperimentato proprio a Firenze. Un materiale, che permette una riduzione delle emissioni rumorose prodotte dalle auto e rientra nel progetto Life E-Via, che vede Firenze città capofila. I lavori proseguiranno fino a venerdì con restringimenti di carreggiata su via Paisiello tra via Rinuccini e via Lagorio e chiusura delle traverse laterali. «Grazie a questo progetto - hanno detto l'assessore all'Ambiente Cecilia Del Re e l'assessore alla Mobilità Stefano Giorgetti - possiamo contribuire a ridurre l'inquinamento acustico nelle aree urbane». L'obiettivo è quello di ottimizzare asfalti e pneumatici per ridurre il rumore. Il Progetto, co-finanziato dall'Unione europea ha avuto inizio a luglio 2019 e terminerà a gennaio 2023.

© RIPRODUZIONE RISERVATA



Un passo avanti per la costruzione del sistema tramviario dell'area metropolitana

ARTICOLO NON CEDIBILE AD ALTRI AD USO ESCLUSIVO DEL CLIENTE CHE LO RICEVE - 5822



Report INAD Italia 2020-2021 (ITA)

Issued on: July 2021

By: Vie en.ro.se. Ingegneria

Deadline: 31/12/2022

REPORT ON YEARLY PARTICIPATION IN INAD
Code: 25_1



INTERNATIONAL NOISE AWARENESS DAY

INAD Italia 2020-21 "AscoltiAMO i suoni"



Report finale

È stata inoltre svolta una intensa comunicazione sui social network e attraverso contatti diretti con molte redazioni giornalistiche, con scuole musicali e conservatori italiani.

LIFE E-VIA project (LIFE18 ENV/IT/000201): il progetto, finanziato dall'Unione Europea, si concentra sulle potenzialità di utilizzo dei veicoli elettrici ed ibridi, che in futuro avranno un ruolo importante nel mercato automobilistico. Il progetto studia l'interazione pneumatico-strada per individuare ed implementare misure di mitigazione del rumore, attraverso l'ottimizzazione sia degli pneumatici dei veicoli elettrici sia del fondo stradale. Inoltre il progetto prevede un'intensa attività di disseminazione e sensibilizzazione sul tema del rumore, organizzando anche attività negli istituti scolastici, in accordo e in collaborazione anche con l'attività portate avanti nelle diverse Nazioni dei partner del Progetto (Italia, Francia e Germania) nell'ambito di INAD.

L'evento è stato diffuso principalmente attraverso i seguenti canali:

CONVEGNI:

- Convegno Nazionale AIA – Online 24-28/05/2021



- IYS 2020-2021 Steering Committee Meeting – Online 16/01/ 2021



WEB:

- siti internet di: Associazione Italiana di Acustica, EAA, Documenta Acustica, IYS 2020-21
- siti internet delle scuole e degli Enti partecipanti.

SOCIAL NETWORK:

- pagina facebook: INAD Italia;
- gruppo facebook: Noise Awareness Day Italia;
- pagina facebook: International Year of Sound.





Paper submitted to ICSV27 "THE INTERNATIONAL YEAR OF SOUND: WORLD WILD PROJECTS AND INITIATIVES"

SCIENTIFIC PAPERS


Code: 36_11

Issued on: July 2021

By: Vie en.ro.se. Ingegneria

Deadline: 31/03/2023

27th International Congress on Sound and Vibration
The annual congress of the International Institute of Acoustics and Vibration (IIAV)



11-16 July, 2021

ICSV27

Annual Congress of the International Institute of Acoustics and Vibration (IIAV)

THE INTERNATIONAL YEAR OF SOUND: WORLDWIDE PROJECTS AND INITIATIVES

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Sound plays an important role in the enjoyment of landscapes as well as in all human activities included education and it is also an essential part of communication between humans, in the form of speech and listening, creative sounds and music. The International Year of Sound (IYS) is a global initiative under the UNESCO Charter of Sound No. 39C/59. Its purpose is to highlight the importance of sound and the related sciences and technologies in the society and the world, considering landscape aspects and noise control in nature, in the built environment and in workplaces. IYS 2020-21 includes activities organized at the regional, national and international level by the International Commission for Acoustics (ICA). Among them there is a competition for students from around the world on the theme of "My World of Sounds". In particular, primary and middle school students are asked to produce drawings, images, patchwork, collages and similar related to their world of sounds, while high school students are asked to write a verse of the song entitled "We are the sounds of our world", inspired by the melody and refrain of the latter. Moreover, several events such as conferences, seminars, workshops but also performances, exhibitions had been included in the program of national IYS initiatives, as long as they are consistent with the message of the initiative. Due to the spread of the Covid-19 pandemic, only few initiatives took place, nevertheless some international projects have been carried on. In this paper a general updated overview on activities organised in the frame of the IYS is given and the state of implementation of some projects connected with IYS are shown.

Keywords: International Year of Sound, UNESCO, worldwide activities, LIFE projects

🕒 13:52:15 CEST
🔔 📧 🗣️ 👤 Sergio Luzzi

Congress Lobby
Program ▾
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📅 12.07.2021 - Monday ⌚ 13:45 - 14:00

📍 **T13 SS03 Education and awareness about importance of sound and noise effects**
Chairs: [Sergio Luzzi](#)


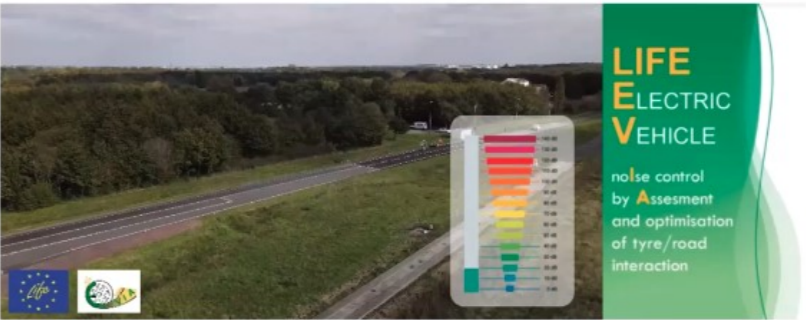
🎯 **#818 THE INTERNATIONAL YEAR OF SOUND: WORLDWIDE PROJECTS AND INITIATIVES**
Speakers: [Sergio Luzzi](#)

The International Year of Sound (IYS) and Projects

The connection between LIFE E-VIA project and IYS

The LIFE E-VIA project "Electric Vehicle noise control by Assessment and optimisation of tyre/road interaction", which started in July 2019 and will end in January 2023, has been co-financed under the priority objective of the Life2018 Programme related to noise pollution issues.

The project addresses noise pollution due to road traffic noise, focusing on a future perspective in which electric and hybrid vehicles will be a major part of the traffic flow. The main objectives of the project are to propose solutions for the reduction of vehicular traffic noise within highly populated urban areas through the optimisation of road surfaces and tyres of electric vehicles (EVs)

Sergio Luzzi - International Year of Sound: worldwide projects and initiatives 10



Paper submitted to ICSV27 "THE LIFE E-VIA PROJECT"

Issued on: July 2021

By: Comune di Firenze, Vie en.ro.se. Ingegneria

Deadline: 31/03/2023

SCIENTIFIC PAPERS

Code: 36_12

27th International Congress
on Sound and Vibration
The annual congress of
the International Institute
of Acoustics and Vibration (IIAV)



ICSV27

Annual Congress of the International Institute of Acoustics and Vibration (IIAV)

THE LIFE E-VIA PROJECT: NOISE CONTROL OF ELECTRIC VEHICLES THROUGH ASSESSMENT AND OPTIMISATION OF TYRE/ASPALT INTERACTION

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European Environment Agency (EEA) data shows that some 100 million EU citizens are affected by high noise levels, negatively impacting their health. Traffic noise alone is harmful to the health of 40 million EU citizens of which 8 million are regularly exposed to high traffic noise level at night. European policies to reduce environmental noise, and in particular road traffic noise, in densely populated cities are focused on the introduction of low-noise asphalts and a progressive increase in the use of electric vehicles. The LIFE E-VIA "Electric Vehicle noise control by Assessment and optimization of tyre/road interaction" project, co-funded under the priority objective of the Life2018 Programme related to noise pollution, addresses the issue of road traffic noise. Specifically, it looks ahead to a future where electric and hybrid vehicles will be a major part of road traffic and combining low-noise asphalts with tyres specifically for electric vehicles. The LIFE E-VIA project, started in July 2019 with a foreseen duration of 42 months, will foster the application of Directive 2002/49/EC on the assessment and management of environmental noise and of Directive 996/2015/EC on establishing common noise assessment methods (CNOSSOS model), in the context of the promotion and use of electric vehicles (EVs) and hybrid vehicles. The project will seek to develop a solution to reduce the rolling noise of electric and hybrid vehicle tyres in urban areas, taking account of the current best practices, also addressing the soundscape analysis and citizens involvement.

In the present article, after an introduction on the future policies for the reduction of road traffic noise in Europe, the objectives of the LIFE E-VIA project and its methodology are described, demonstrating how the expected results are in line with European strategies. Finally, recent preliminary results achieved by some key actions of the project are mentioned.

Keywords: Rolling noise, electric vehicles, EU policies.

1 11:00 #505 LIFE PROJECT E -VIA
Arnaldo Melloni



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the International Institute
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LIFE18 ENV/IT/000201
With the contribution of the LIFE
programme of the European Union

The LIFE E-VIA project: noise control of electric vehicles through assessment and optimisation of tyre/asphalt interaction

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11:00:00 CST 11:00:00 CST

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1 #505 LIFE PROJECT E -VIA Speakers: Arnaldo Melloni

State of progress

1. After a design phase followed by several laboratory experiments, tests have been carried out at the Nantes test area in France of the two "Bralloy" mixtures, which are similar but differ in the presence of crumb rubber from recycled tyres.



2. In the next week the pilot asphalt will be laid in the pilot area in Florence.

The pilot road

Paisiello street is the selected pilot road (significant population density, without curves, busy road, close to public offices, the most relevant park, new intervention of urban requalification, fashion school).





Presentation/ paper at the DAGA 2021 - 47. Jahrestagung für Akustik

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LIFE E-VIA
Electric Vehicle noise control by Assessment and optimisation of tyre/ road interaction

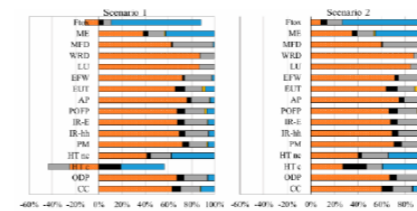
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Objectives

- To estimate the mitigation efficiency and potential of tyres, pavements and traffic at a higher comprehensive level: Life Cycle Analysis (LCA) and Life Cycle Cost Analysis (LCCA) is performed to demonstrate the individual and synergistic efficiency of pavement surfaces, tyres and vehicles.



Source: F. Praticò et al., Energy and Environmental Life Cycle Assessment of Sustainable Pavement Materials and Technologies for Urban Roads, Sustainability 2020, 12, 704

LIFE E-VIA project: noise, electric vehicles and tyres

LIFE E-VIA: Electric Vehicle Noise Control by Assessment and Optimisation of Tyre/Road Interaction

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Introduction

Data collected by the European Environment Agency (EEA) shows that more than 100 million EU citizens are affected by noise levels negatively impacting human well-being. Although noise associated with rail and air traffic cannot be ignored, a significant contributor to these high noise levels is the road transportation sector. According to a World Health Organization (WHO) report [1], ca. 50% of the EU population are habitually subjected to road traffic noise levels above 51 dBA (the WHO guideline value for outdoor sound levels [2]), and roughly 10% to levels exceeding 65 dBA, which for example have shown to lead to a 20% to 40% increased risk for cardiovascular diseases [3]. Consequently, the WHO states that "at least one million healthy life years are lost every year from traffic-related noise in the western part of Europe" [1].

Road traffic noise comprises of the vehicle's power train noise, rolling noise and aerodynamic noise. Traditionally, rolling noise is the primary noise source for typical urban combustion engine vehicles (ICEV) at common urban driving speeds of roughly 40 km/h to 100 km/h [4]. Below these speeds, powertrain noise dominates, and above aerodynamic noise. For electric vehicles (EV) tyre/road noise starts to dominate the overall exterior noise of the vehicle at even lower speeds because of the lower engine noise. Still, at slower speeds EVs exterior noise levels are lower than for ICEVs which is why electric mobility has been identified as an important way to reduce urban noise levels. As an additional benefit also (local) emissions of CO₂ and other air pollutants are reduced.

One of the key focus areas of the LIFE E-VIA project is road traffic noise reduction in densely populated urban areas. Noise mitigation measures are usually most efficient when addressing the problem directly at the source. In terms of the remaining EV traffic noise this means that measures aimed at providing noise optimized road surfaces and tyres have a high noise mitigation potential. Thus, it is one of E-VIA's objectives to develop noise optimized roads and tyres for future electric mobility traffic scenarios.

For the optimization of a low noise EV tyre different boundary conditions than for an ICEV application need to be considered. For EVs the relative contribution of the tyre noise to the overall vehicle noise is considerably increased because of the drastically lower drivetrain noise. Because of the higher drivetrain efficiency of electrical engines also the tyre rolling resistance has a relatively higher contribution to

the energy consumption of an EV than for an ICE vehicle. Depending on how the electric energy used for charging the EV is created, this also can have a significant contribution to the emission of CO₂ and other air pollutants. More importantly, the tyre rolling resistance has a large impact on the achievable mileage of an EV. A large mileage, in turn, is crucial for the public acceptance of EVs as means of transportation. Therefore, a low noise, low rolling resistance tyre is considerably more beneficial for EVs than for comparable ICE vehicles.

From a purely acoustical point of view, tyre requirements for EV applications also change because typically EVs are heavier than comparable ICEVs and have higher available torque values in a wide range of RPMs. Both increased tyre load, and increased tyre torque are known to lead to higher tyre/road noise [4].

To sum up, the LIFE E-VIA project focuses on noise pollution due to road traffic in a future urban environment in which electric and hybrid vehicles will be a consistent portion of the traffic flow. A major objective will be the development of a holistic low noise tyre and a low noise road surface, both optimized for the special requirements of EVs. Within the project a final version of the pavement will later be used for repaving a section of a road in Florence, Italy. This pilot area will be the centre of further accompanying activities like guideline development, local dissemination and information campaigns, a soundscape analysis, and life cycle (cost) analysis. Finally, the measurement data collected during the runtime of the project is intended to be used to update the CNOSS06 model (Directive 996/2015/EC [5]) for new traffic spectra and new electric- or hybrid-powered vehicles.

Project objectives

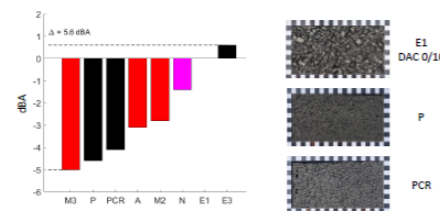
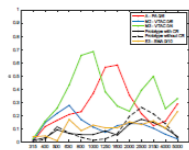
The project objectives are:

- To reduce noise for roads inside very populated urban areas by implementing mitigation measures based on noise optimized road surfaces and tyres for EV applications. The tyres will be developed with a holistic view which assures that relevant, non-acoustic related performance requirements like safety, rolling resistance, or grip are met.
- To estimate the mitigation efficiency and potential of tyres, pavements, and traffic conditions (i.e. noise spectra, speeds, traffic flow) at a higher, comprehensive level. For this, Life Cycle Analysis

Technical solutions – road surface

Road surface:

- Very thin asphalt concrete (VTAC) with max. aggregate size 6mm.
- With/without crumb rubber (PCR/P).
- MPD: ~0.3mm (PCR) / ~0.4 mm (P)
- Effective absorption 1.5 kHz to 5 kHz.

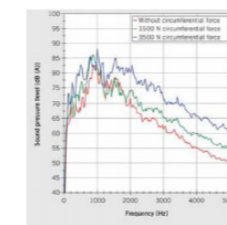


→ Based on prototype noise measurements: 3.5 dBA to 4.5 dBA with respect to reference DAC 0/10.

Why special requirements for tyres and roads for EV applications?

Compared to classical ICE vehicles...

- ...are EVs heavier.
 - Higher tyre load → higher tyre/road noise.
- ...exhibit EVs high torque values in a wide range of RPMs.
 - Additional tyre/road noise generation mechanisms.
- ...is there an even increased focus on low rolling resistance for EVs.
 - Reduced rolling resistance → increased mileage → increased customer acceptance.



Source: F. Stiller et al., Influence of driving torque on tyre noise, Acustica Tech Review 30(2013), 94-98.

LIFE E-VIA project: noise, electric vehicles and tyres

LIFE E-VIA project: noise, electric vehicles and tyres



LIFE E-VIA: the pilot case (IT)

Issued on: September 2021

By: Vie en.ro.se. Ingegneria

Deadline: 31/12/2022

NOTICEBOARD IN
ITALIAN LANGUAGE

Code: 23_2



LIFE E-VIA

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



Il caso pilota

Dopo una fase progettuale seguita da una serie di accurati esperimenti di laboratorio, sono state selezionate due miscele di asfalto che sono state testate, durante il passaggio di veicoli elettrici, presso l'area di sperimentazione a Nantes. Al termine delle misure svolte in Francia, è stata scelta la miscela più efficace, contenente polverino di gomma da pneumatici riciclati. Quest'ultima è stata utilizzata presso il caso pilota individuato nella Città di Firenze, al fine di analizzare il beneficio apportato in termini di abbattimento del rumore da traffico veicolare. L'area pilota è stata identificata in Via Paisiello, caratterizzata da una significativa densità di abitazione. Il tratto di strada interessato dall'intervento è rettilineo e a senso unico di marcia. Inoltre, l'area pilota è caratterizzata da un elevato flusso di traffico dovuto alla vicinanza con il centro e alla presenza di uffici pubblici. Nelle vicinanze si trovano, inoltre, un importante parco pubblico (Cascine), interventi di riqualificazione urbana (Ex. Manifattura Tabacchi) e vari servizi pubblici, quali scuole, esercizi commerciali, impianti sportivi.

Inquadramento Stato ante operam



Lavori di asfaltatura



Stato post operam



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LIFE E-VIA

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





LIFE E-VIA: the pilot case (EN)

Issued on: September 2021

By: Vie en.ro.se. Ingegneria

Deadline: 31/12/2022

**NOTICEBOARD IN
ENGLISH LANGUAGE**

Code: 18_3



LIFE E-VIA

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



The Pilot case

After an initial designing stage followed by careful laboratory experiments, two different asphalt mixtures have been selected and tested in the experimental area in Nantes, during the electric vehicles passages. The measurements carried out in France allowed to choose the most efficient mixture. This asphalt mixture contains crumb rubber from recycled tyres and it has been used in the pilot case in Firenze in order to analyse the benefits it provides to reduce traffic noise. Via Paisiello has been selected as a pilot area. It is characterized by a significant housing density. The section of the street where the asphalt works have been carried out, is straight and one-way. Moreover, the pilot area is characterized by a high level of traffic caused by its proximity to the city center and the presence of public offices. In the neighbourhood there are also an important public park (Cascine), urban regeneration interventions (Ex. Manifattura Tabacchi) and several public services, such as schools, commercial activities and sport installations.

Ante operam status



Asphalting works



Post operam status



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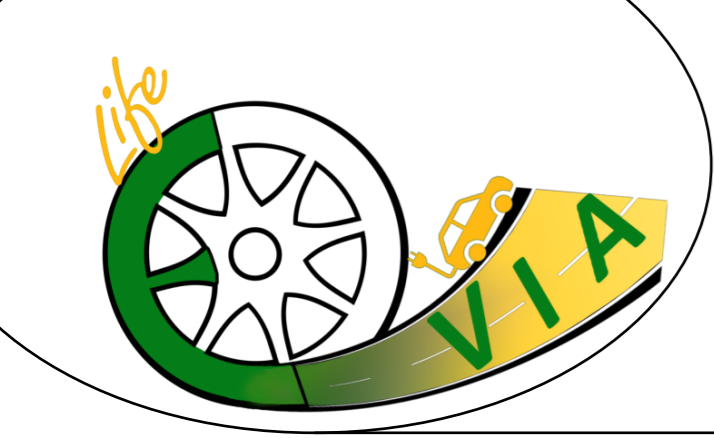


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LIFE E-VIA

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



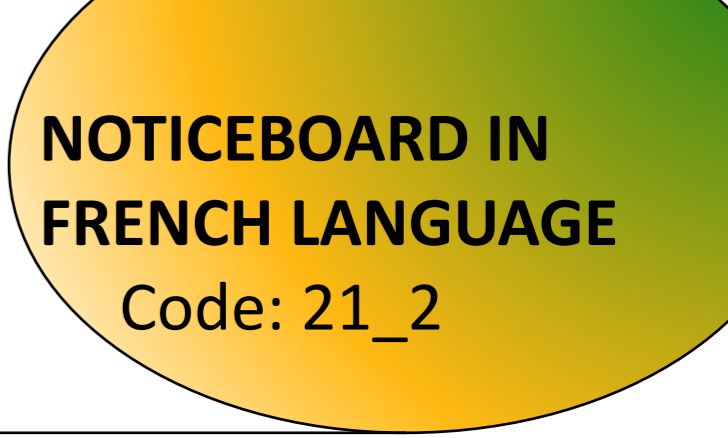


LIFE E-VIA: the pilot case (FR)

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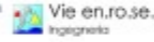
By: Université Gustave Eiffel

Deadline: 31/12/2022



LIFE E-VIA

Contrôle du bruit des Véhicules Électriques par l'évaluation et l'optimisation de l'interaction pneumatique/chaussée



Le projet pilote

Après une première phase de conception suivie d'expériences en laboratoire détaillées, deux enrobés ont été sélectionnés et testés sur la zone expérimentale de Nantes, au passage de véhicules électriques. Les mesures effectuées en France ont permis d'identifier le mélange le plus performant. Cette formule de béton bitumineux contient de la gomme provenant de pneus recyclés et a été utilisée dans le projet pilote à Florence afin d'analyser les avantages en matière de réduction du bruit de trafic. La rue Paisiello a été sélectionnée comme zone pilote. Elle se caractérise par une forte densité de logements. La section où les travaux de pose du béton bitumineux ont été réalisés est rectiligne et à sens unique. De plus, elle présente un niveau élevé de trafic dû à la proximité du centre ville et à la présence d'établissements publics. Dans le quartier, on trouve également un important parc public (Castine), des opérations de réhabilitation urbaine (Ex. Manifattura Tabacchi) et divers établissements publics, tels que des écoles, des activités commerciales et des installations sportives.

État initial



Mise en œuvre du nouvel enrobé bitumineux



Élimination de l'ancien revêtement routier

Pose du nouveau béton bitumineux

Contrôle de la texture

État final



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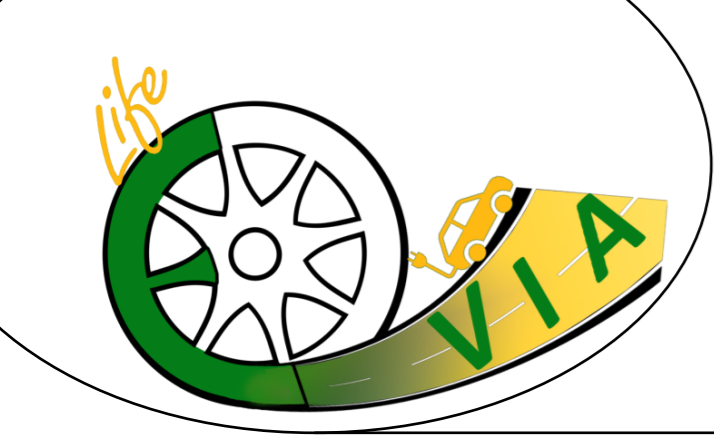


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LIFE E-VIA

Electric Vehicle noise control by Assessment and optimisation of tyre/road Interaction





LIFE E-VIA: the pilot case (DE)

Issued on: September 2021

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Deadline: 31/12/2022

**NOTICEBOARD IN
GERMAN LANGUAGE**

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LIFE E-VIA

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



Die Pilot-anwendung

Als Ergebnis einer initialen Designphase gefolgt von umfassenden Laborexperimenten wurden zwei Asphaltmischungen ausgewählt und auf einer Teststrecke in Nantes mittels Geräuschmessungen für Vorbeifahrten von Elektrofahrzeugen getestet. Auf Basis dieser Ergebnisse konnte die bessere der beiden Mischungen identifiziert werden. Diese enthält als Besonderheit Gummi Granulat von Altreifen. Im Rahmen einer Pilotanwendung wurde in Florenz ein Abschnitt einer Straße mit der ausgewählten Mischung asphaltiert, um das Potential zur Verringerung des Straßenverkehrslärms zu untersuchen. Bei der ausgewählten Via Paisiello handelt es sich um eine Einbahnstraße, die im Bereich der Neuasphaltierung gerade verläuft. Die Umgebung ist aufgrund ihrer Nähe zum Stadtzentrum durch eine hohe Wohnichte und ein hohes Verkehrsaufkommen gekennzeichnet. In der Nachbarschaft gibt es weiterhin einen bedeutenden öffentlichen Park (Casche), Stadterneuerungsprojekte (z.B. Manifattura Tabacchi), Geschäfte und öffentliche Einrichtungen wie Schulen und Sportanlagen.

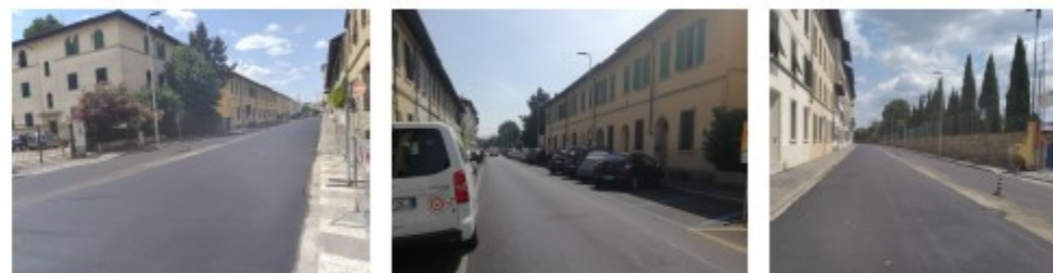
Ausgangssituation



Asphaltarbeiten



Ergebnis



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LIFE E-VIA: Laboratory experiments(EN)

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By: UNIRC

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NOTICEBOARD IN
ENGLISH LANGUAGE

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LIFE E-VIA

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



Mix design

The University 'MEDITERRANEA' of Reggio Calabria (UNIRC) analysed more than 150 solutions in the literature (friction courses), based on acoustic and non-acoustic performance, in order to select appropriate solutions. Their characteristics and impacts were considered and preliminary tests were carried out. From 150 asphalt concretes, nine mixtures were selected, based on many characteristics, including: 1) Acoustic response, 2) Expected life by referring to mechanistic properties, 3) Permeability, 4) Friction, 5) ENDT value. Based on these latter, open asphalt concretes with Nominal Maximum Aggregate of 6 mm (AC6) were selected. An accurate plan of experiments was set up and followed in order to design and validate the final mixtures. Two types of mixtures were finally designed and tested (AC6 with and without crumb rubber).

Superpave compaction



Laboratory experiments



Airflow Resistance

Acoustic Absorption

Mechanical Impedance

Corelok



Permeability

Skid Test

Sand Patch Test

Marshall Stability

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LIFE E-VIA

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

