



LOW NOISE PAVEMENTS

Road traffic noise is a major environmental problem in Europe. According to the World Health Organization, it is the second biggest environmental problem negatively affecting human health, after air pollution. It is estimated that at least 20% of the EU population – one in five people – lives in areas where traffic noise levels are harmful to health.

At lower speeds (<30–50 km/h for passenger cars, <80 km/h for heavy vehicles), engine noise is dominant whereas at higher speeds noise generated by interaction between tyre and pavement dominates. The engine noise has been reduced over the years and assuming wider uptake of electric vehicles tyre/pavement noise is becoming dominant even at low speed.

Low noise pavements are proven as an effective solution to reduce tyre/pavement noise. However, experience in low noise pavements differs among countries.

The Netherlands is a pioneer in this field. There, the first trials were constructed back in 1972 and today, 90% of the highway network is covered by low noise pavements. France, Germany and the United Kingdom

were also early leaders in this field. However, the highest interest in low noise pavements in other EU countries was observed in the last 10-20 years as a result of the mandatory application of the Environmental Noise Directive (2002).

During this period, many national and international projects were focused on the development of low noise pavements, their performance and maintenance, and as a result methods/techniques for pavement noise measurement were successfully developed. However, many questions are still unanswered, for example:

- **How to improve resistance to ravelling, which is the most important cause of failure for low noise pavements?**
- **How well do low noise pavements perform in cold climates and how can this be improved?**
- **How do the different technologies used to measure road noise pavements compare?**
- **What new maintenance measures can be developed to extend the service life of existing low noise pavements?**



high annoyance
22 million Europeans



high sleep disturbance
6.5 million Europeans



heart disease
48 thousand Europeans



premature deaths
12 thousand Europeans



Seeking to find answers to these questions, FEHRL members launched an initiative on Low Noise Pavements (LNP) in 2018. Despite a slow start, fourteen institutions have now joined the initiative. Now, the LNP initiative has gained momentum with Dr Judita Gražulytė from Vilnius Gediminas technical university (Lithuania) the leader since July 2021.

In November 2021, a questionnaire on LNP was distributed among FEHRL members. Fifteen institutions from 14 countries shared their experience. The survey showed that asphalt pavements are the most popular type of LNP in Europe generally, with Portugal and Austria the exception, where concrete pavements including exposed aggregate concrete dominate. The survey also revealed that almost in all countries the main problem regarding LNP is low durability and half of the responders lack knowledge how to maintain LNP and reduce high maintenance cost. The ongoing and successfully implemented

national and international projects focused on LNP have been gathered as well. Currently, a draft version of template to collect more specific information regarding composition of the best performing asphalt/concrete mixture for LNP, requirements for the physical and mechanical properties of mixture components, LNP performance, its maintenance and etc. prepared and under discussion with initiative members. It is expected to start data gathering in the first quarter of 2022.

The overall aim is for members of this initiative to collect existing experience and share best practice. The successful implementation of this initiative will encourage wider use of LNP in various countries and significantly contribute to the health of European society. So far, members of this initiative have participated using in-kind contribution of time; to improve information exchange and undertake research, the partners are actively seeking external funding.



► To find out more about this initiative or get involved, please contact initiative leader Dr Judita Gražulytė at judita.grazulyte@vilniustech.lt or FEHRL Programme Manager, Martin Lamb at martin.lamb@fehrl.org

PARTNERS

