



Faculty of Civil
Engineering

WARSAW UNIVERSITY OF TECHNOLOGY

9th INTERNATIONAL CONFERENCE ON
COMPUTATIONAL AND EXPERIMENTAL
SCIENCE AND ENGINEERING (ICCESEN-2022)
28-31 October 2022, ANTALYA-TURKEY

Full Scale Impulse Tests on a Track Structure Equipped with Static and Dynamic Rail Dampers

Cezary KRAŚKIEWICZ, Artur ZBICIAK, Przemysław
MOSSAKOWSKI, Kacper WASILEWSKI, Andrzej DŁUGOŁĘCKI

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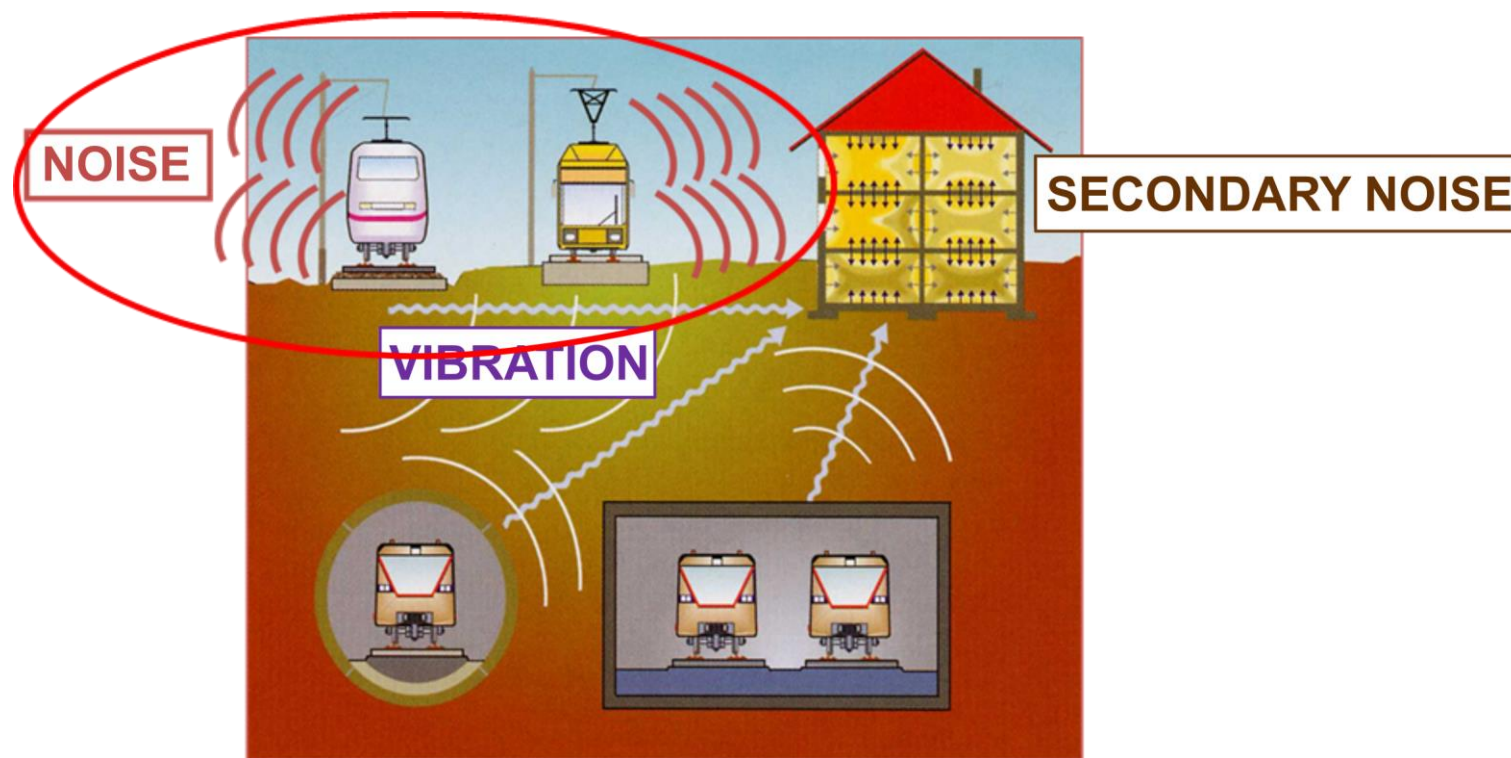
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InRaNoS

Innovative solutions of people and
the environment protection against
rail traffic noise

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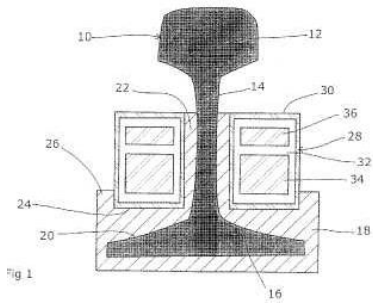
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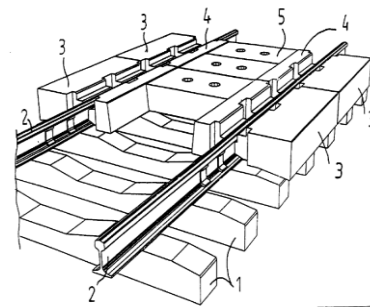
Main project goal



Development of a track-mounted device to reduce noise emission



Rail dampers



Track panels



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Full-scale tests

- obtain dynamic characteristics of track structures:
 - Reference track (without dampers)
 - Track with dampers
- dynamic characteristics of track structures:
 - track decay rate (TDR) or decay rate (DR)
 - insertion loss (IL) factor

Warsaw

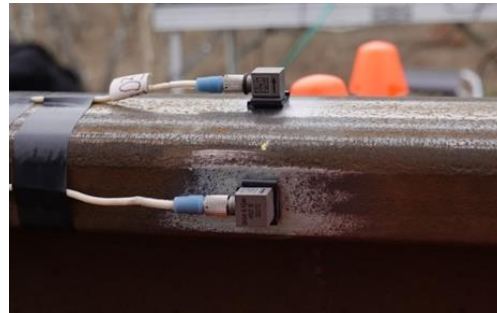


Full-scale tests – equipment:

- Modal hammers



- Accelerometers



- Microphone

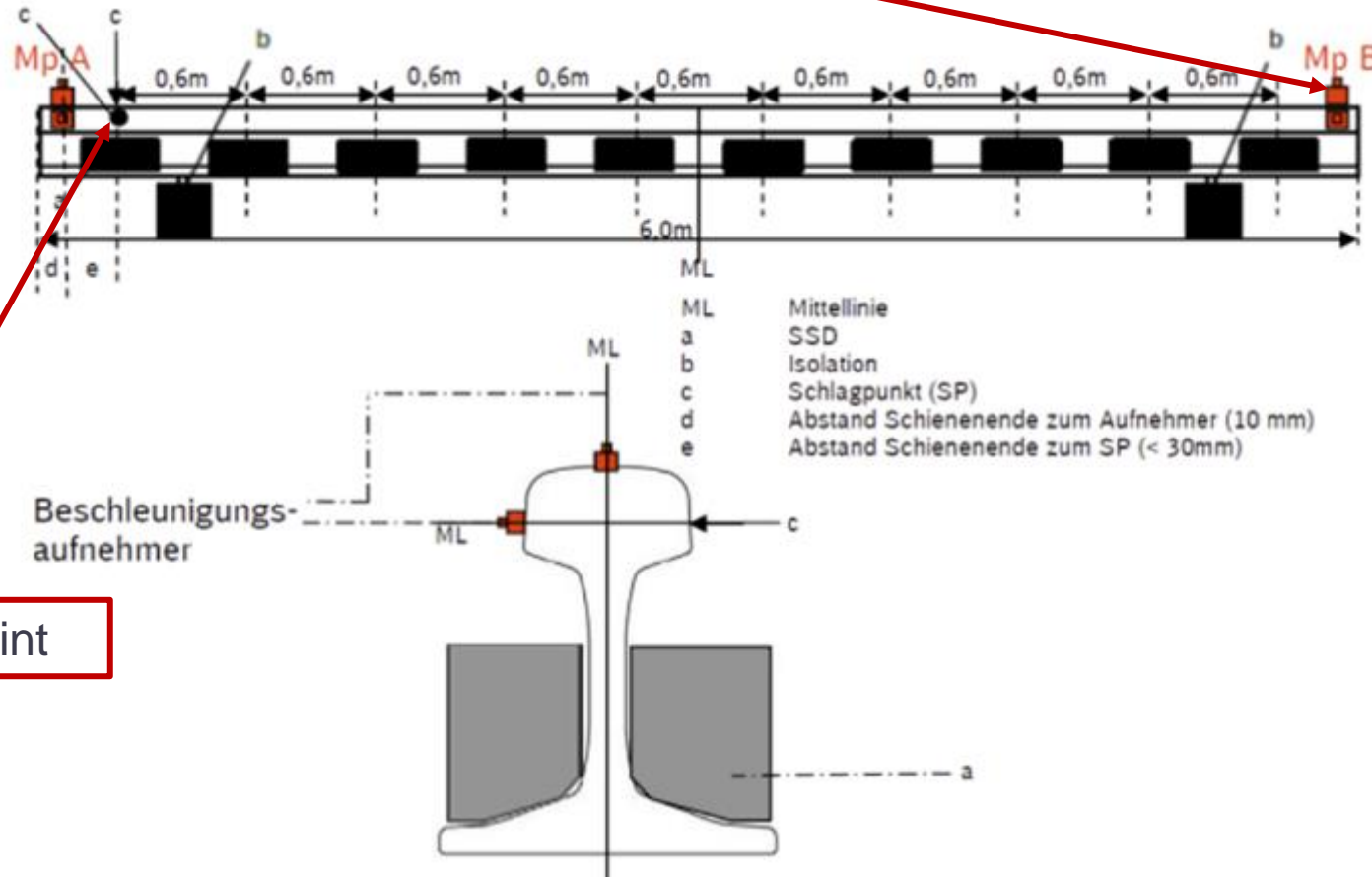


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Decay Rate – STARDAMP DBS 918 290

Excitation point



Measurement point

STARDAMP



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Decay Rate – STARDAMP DBS 918 290



without dampers



with dampers

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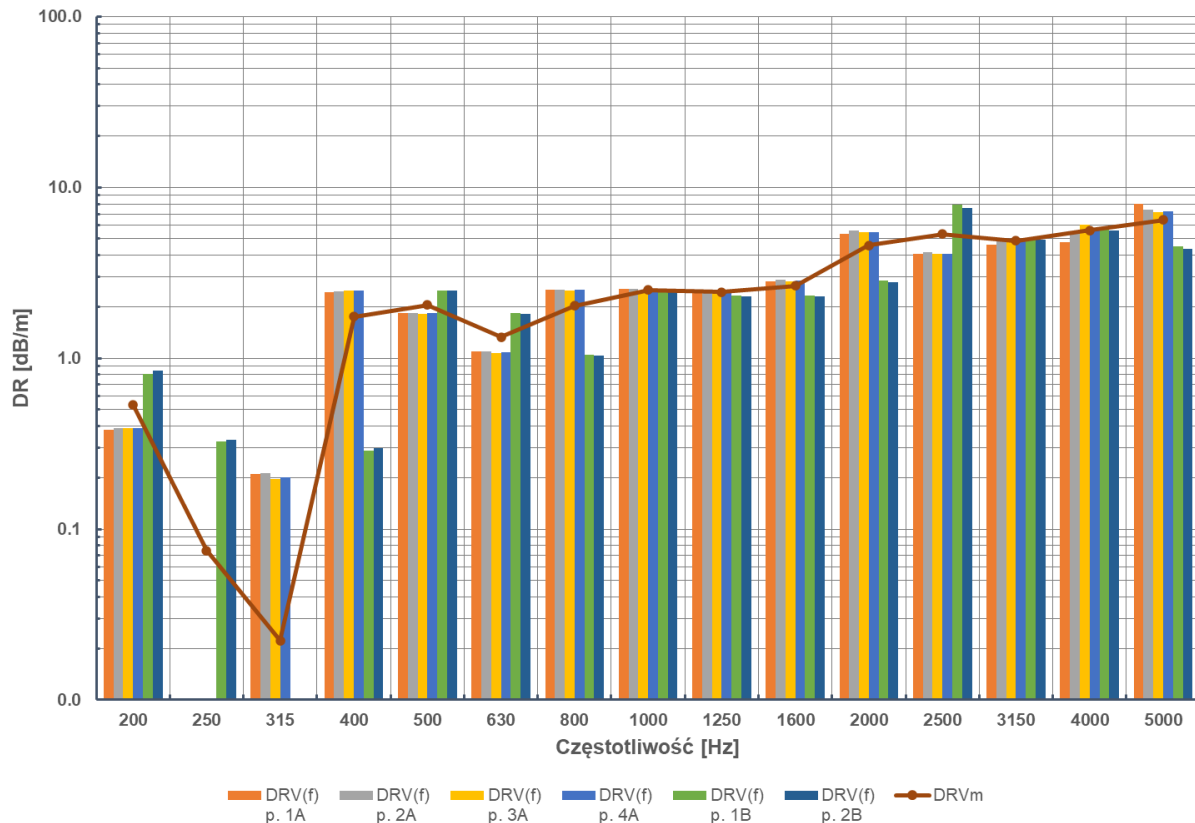
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Decay Rate – STARDAMP DBS 918 290

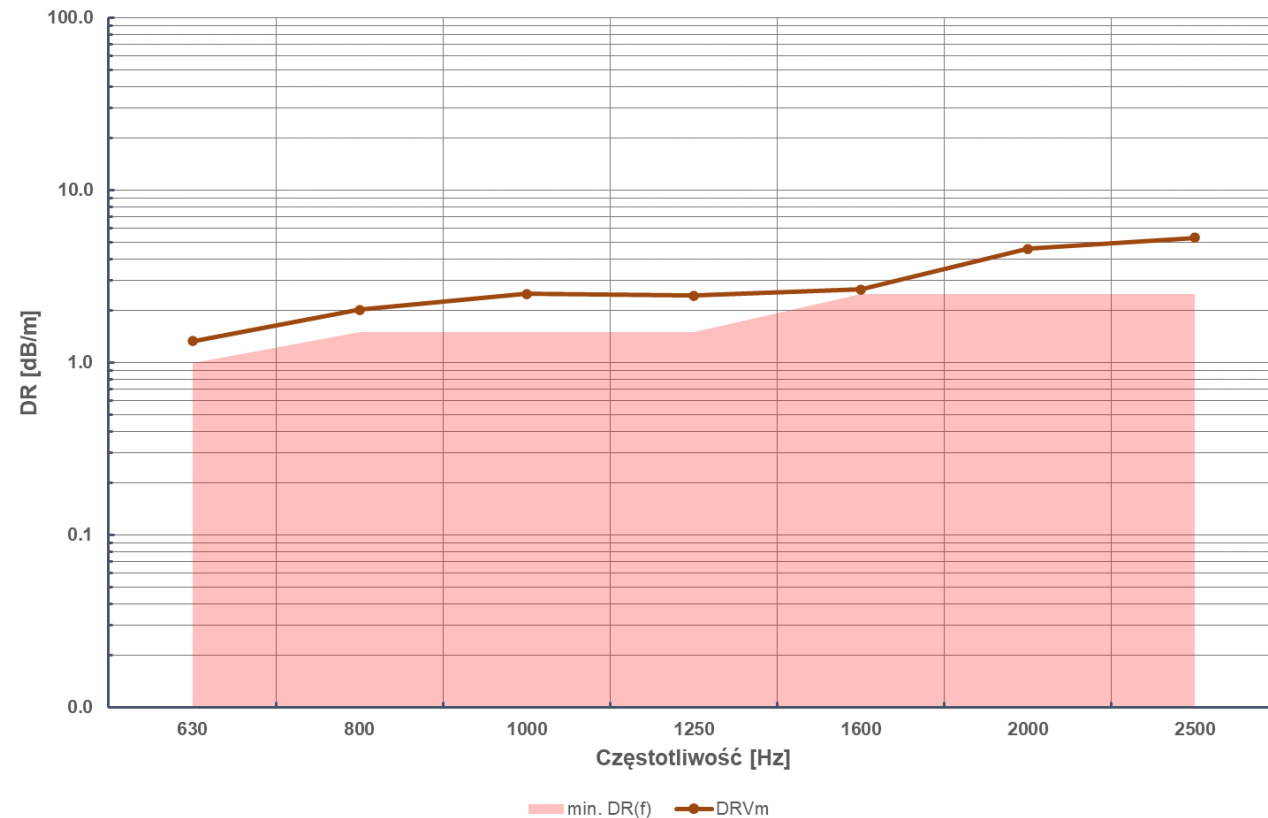
WYMAGANIA AKUSTYCZNE (DR)

szybkość zanikania drgań w kierunku pionowym (DRV), badanie wg DBS 918 290

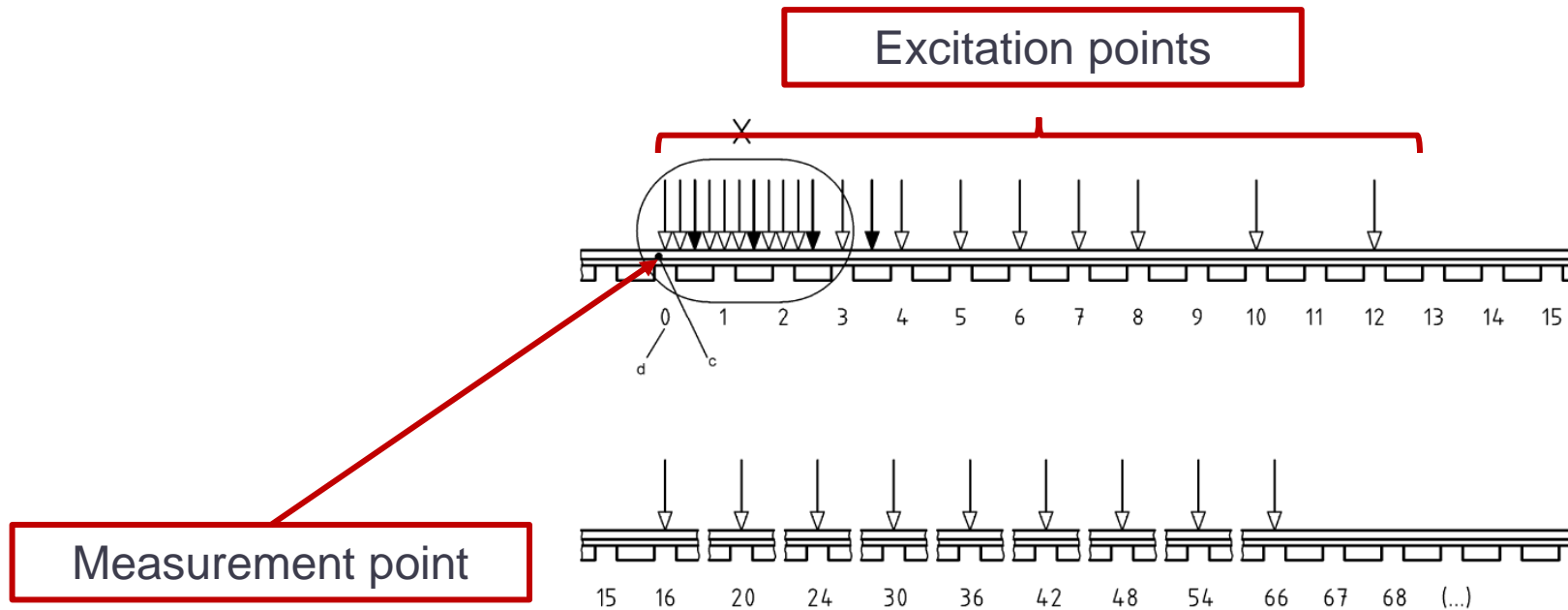


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szybkość zanikania drgań w kierunku pionowym (DRV), badanie wg DBS 918 290

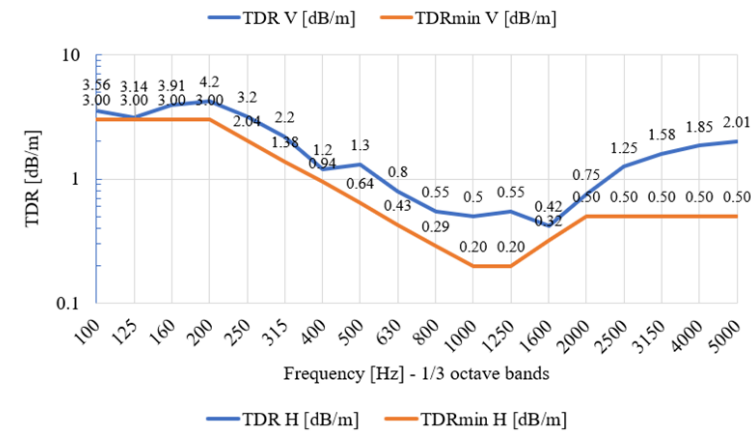
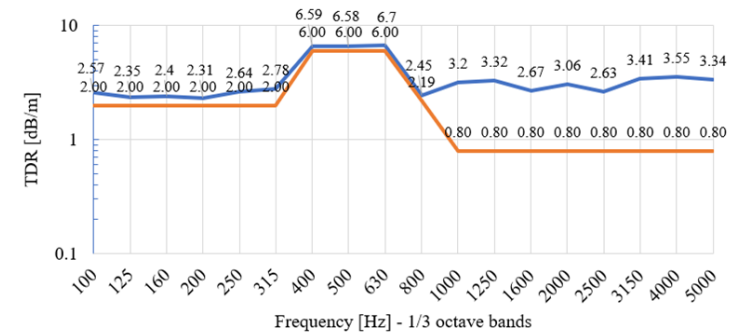
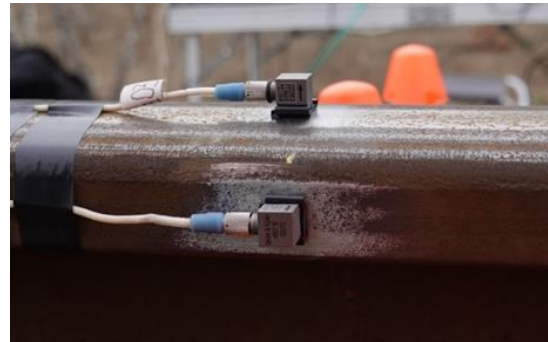


Track Decay Rate EN 15461

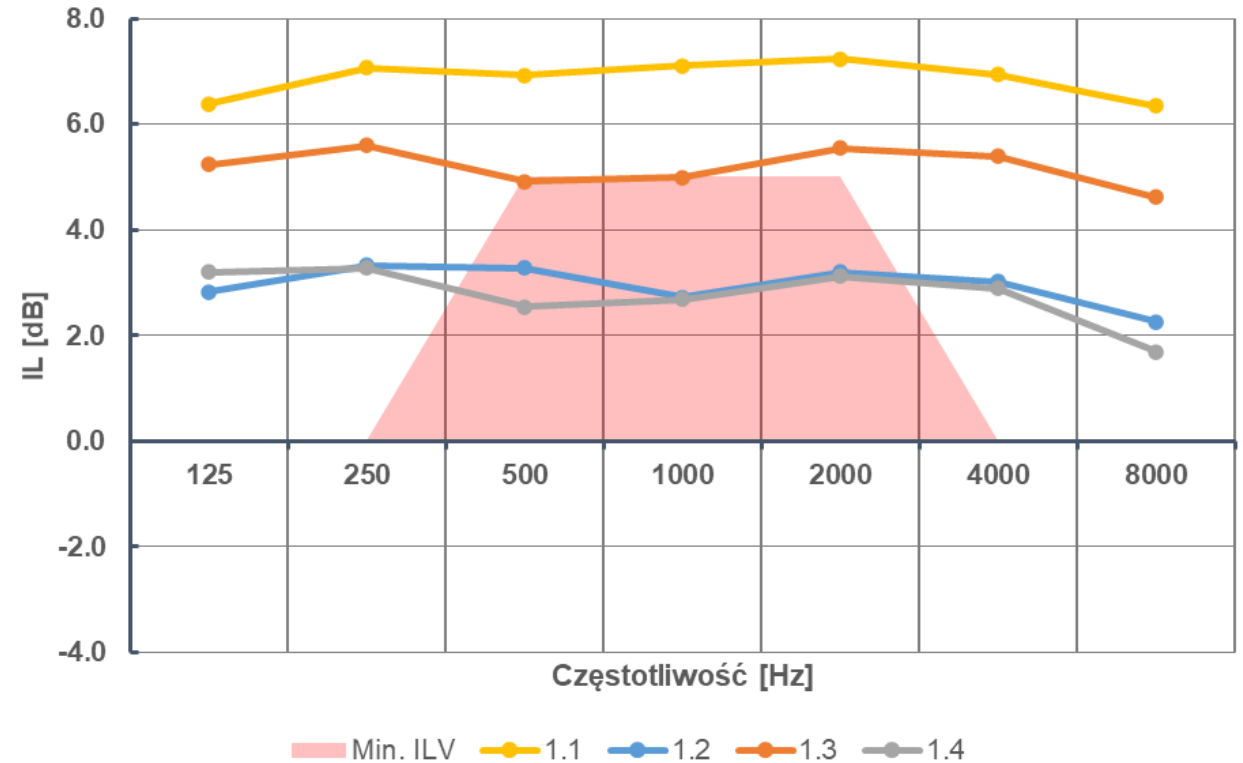
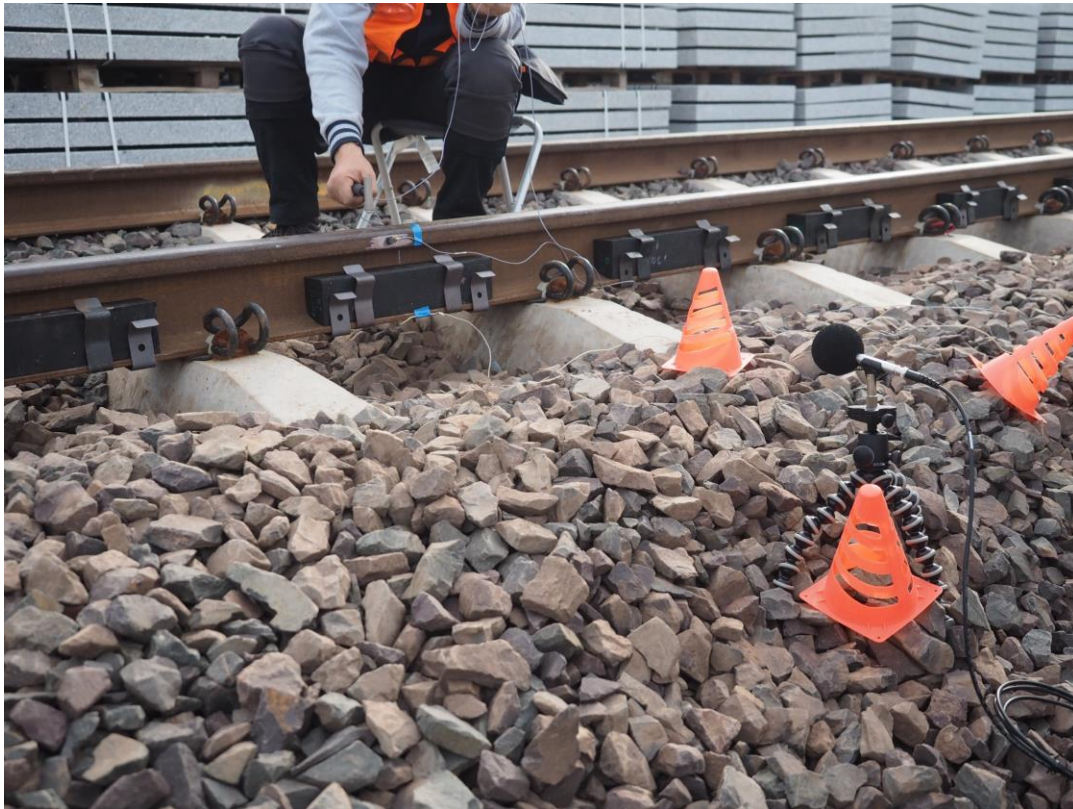


Track Decay Rate EN 15461

- Reference track (without dampers)



Insertion Loss Factor



Conclusion

- assess dynamic characteristics of track structures,
- understand and simulate the phenomena which cause noise emissions





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Thank you for your attention

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