



**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 Ballasted Track Structure Equipped with Under Sleeper Pads and Under Ballast Mats

Artur Zbiciak, Cezary Kraśkiewicz, Przemysław
Mossakowski, Kacper Wasilewski and Andrzej Długołęcki

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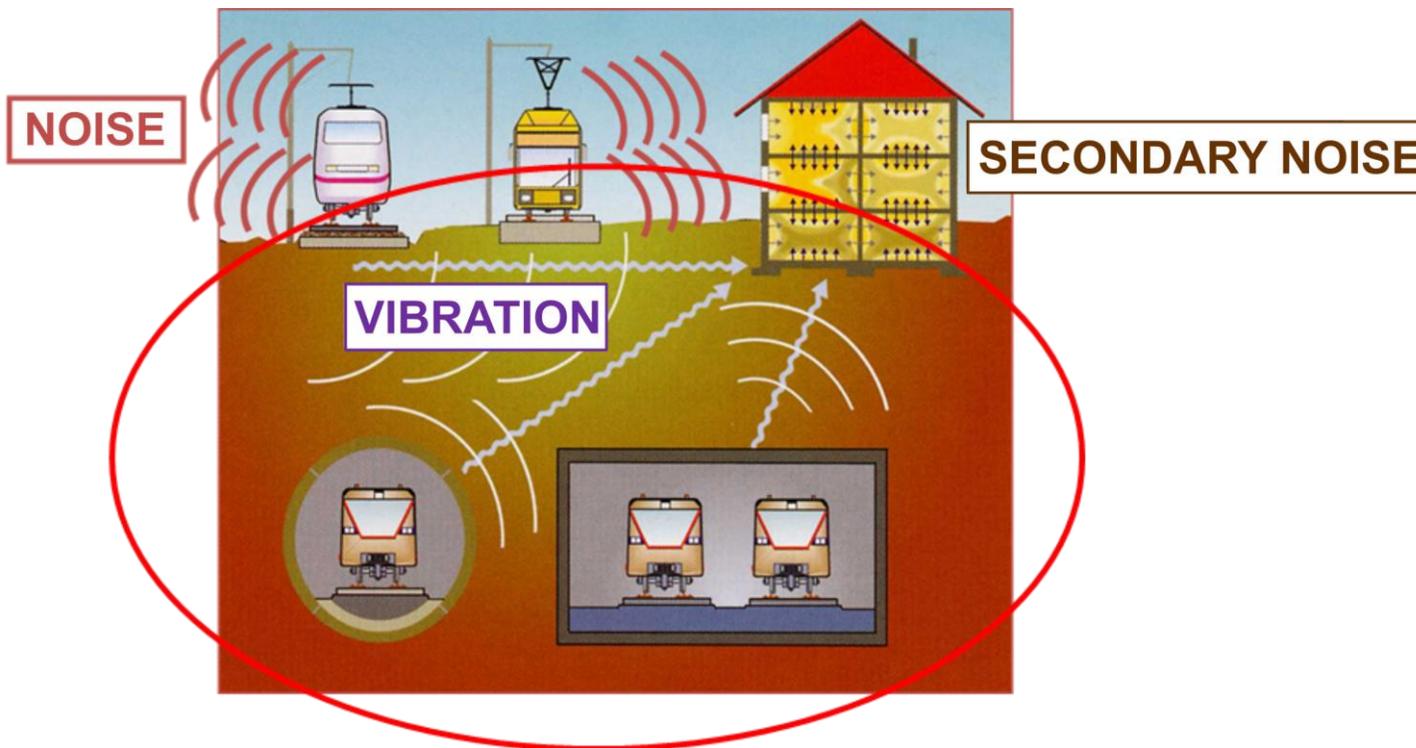
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InRaViS 

Innovative solutions for the
protection of people and buildings
against vibrations from rail traffic

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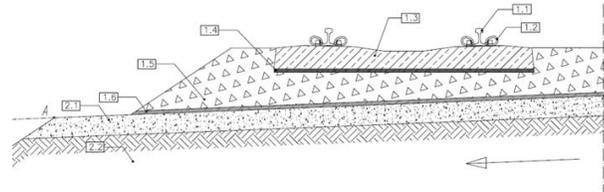
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Main project goal



Development of devices in the railway track structure in order to reduce the emission of vibrations from railway traffic



Under Sleeper Pads (USP)



Under Ballast Mats (UBM)



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Full-scale tests



ICCESEN



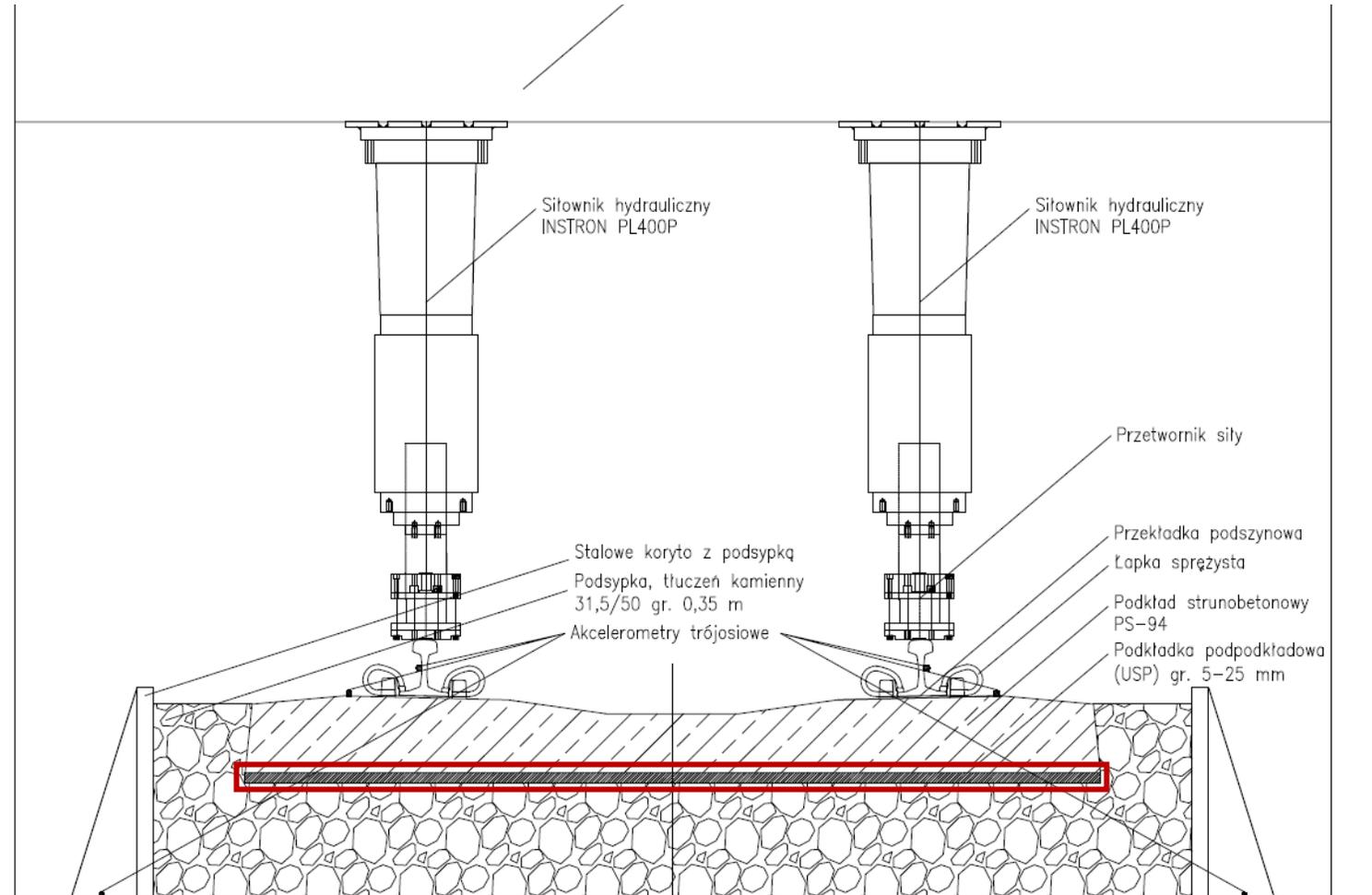
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Full-scale tests - USP



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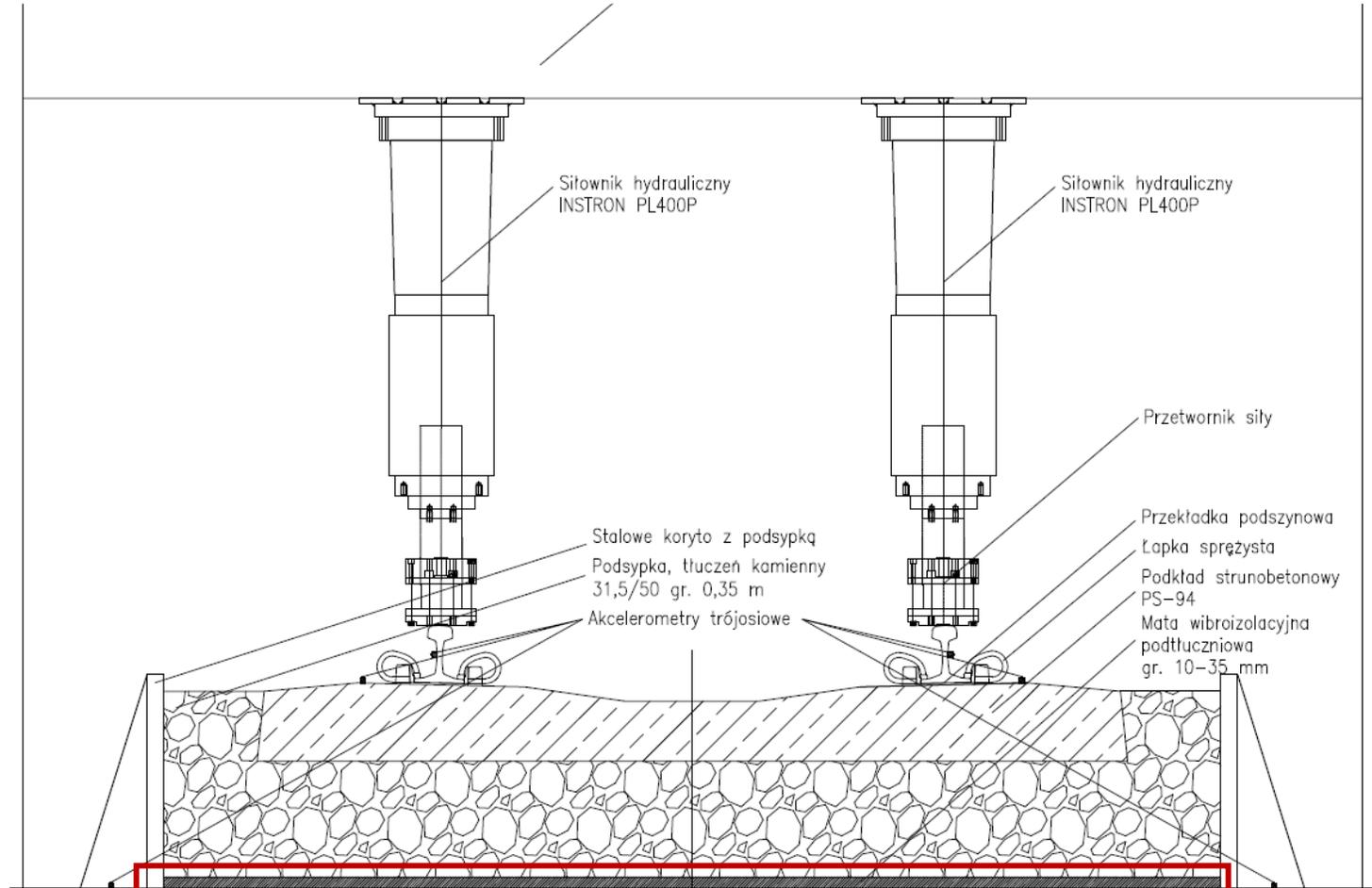
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Full-scale tests - UBM



U
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Full-scale tests

- Modal hammer
- Accelerometers



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Full-scale tests

Procedure:

1. Static loading representing train load
2. Dynamic excitation with a modal hammer
3. Result analysis



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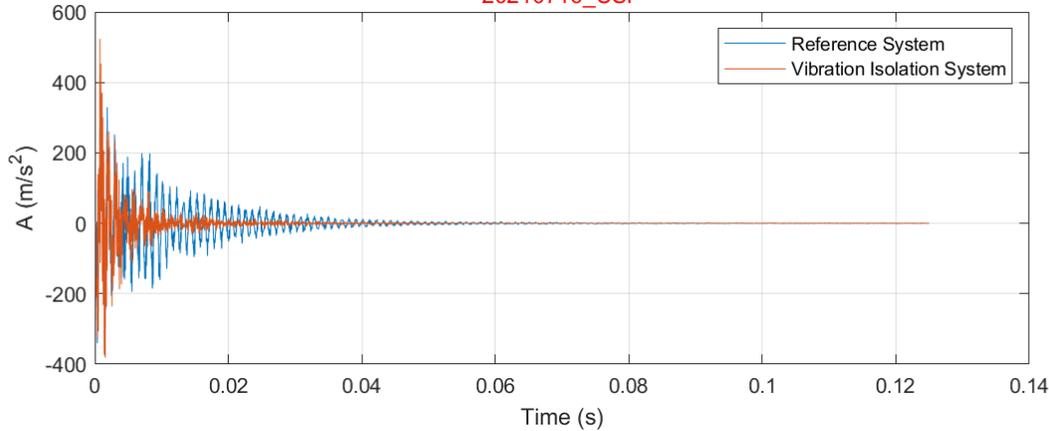
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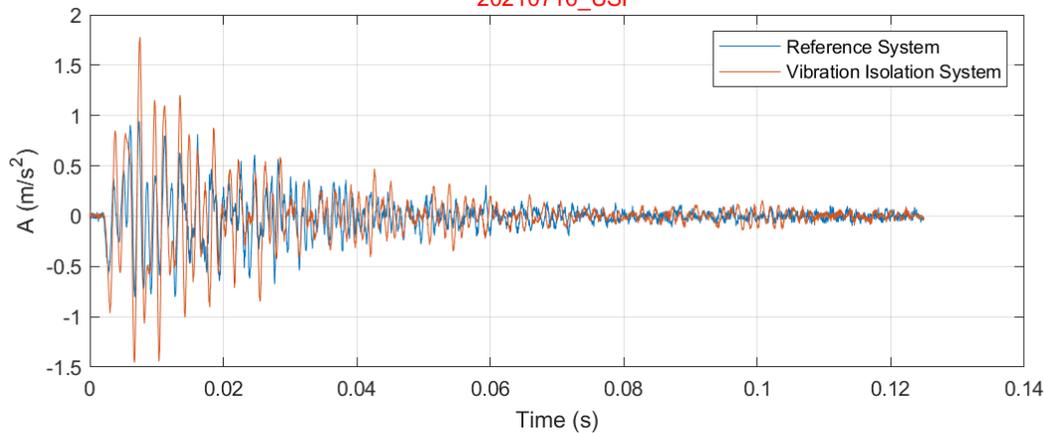
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Selected results

Acceleration-Rail
20210716_USP



Acceleration-Base
20210716_USP



L.p.	Typ wibroizolatora	Pomiar	Obciążenie [kN]	Częstotliwość [Hz]				
				8	16	32	63	125
5	USP	20210716_USP	5,0	-0,1	-2,0	-4,8	-0,6	3,1
			40,0	1,8	0,1	4,7	2,3	1,3
			75,0	2,5	3,3	4,2	-0,4	0,7
			110,5	4,0	4,8	4,1	2,3	1,7

L.p.	Typ wibroizolatora	Pomiar	Obciążenie [kN]	Częstotliwość [Hz]				
				8	16	32	63	125
5	USP	20210716_USP	5,0	-2%	-27%	-74%	-7%	30%
			40,0	18%	2%	42%	23%	14%
			75,0	25%	32%	38%	-5%	8%
			110,5	37%	42%	38%	23%	18%





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Thank you for your attention

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