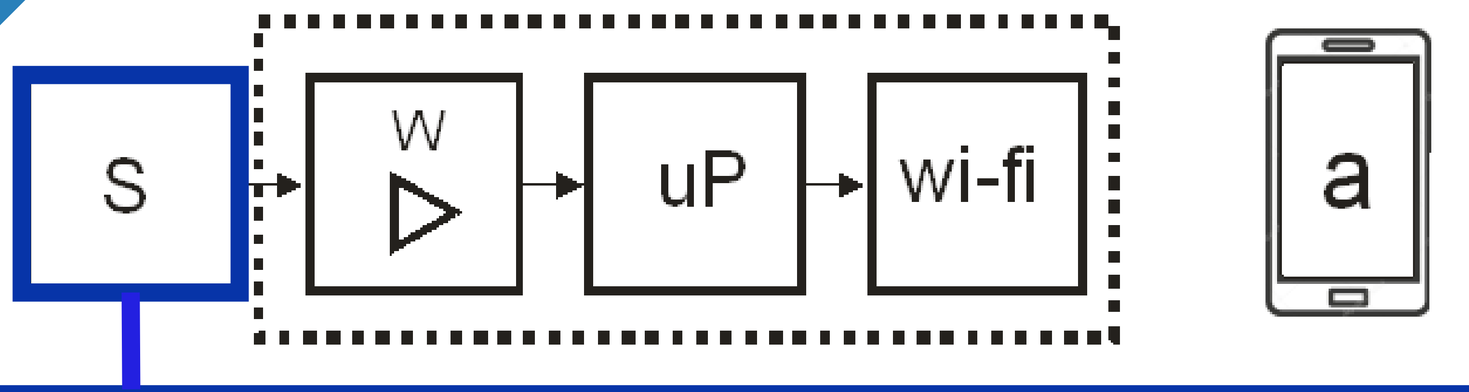
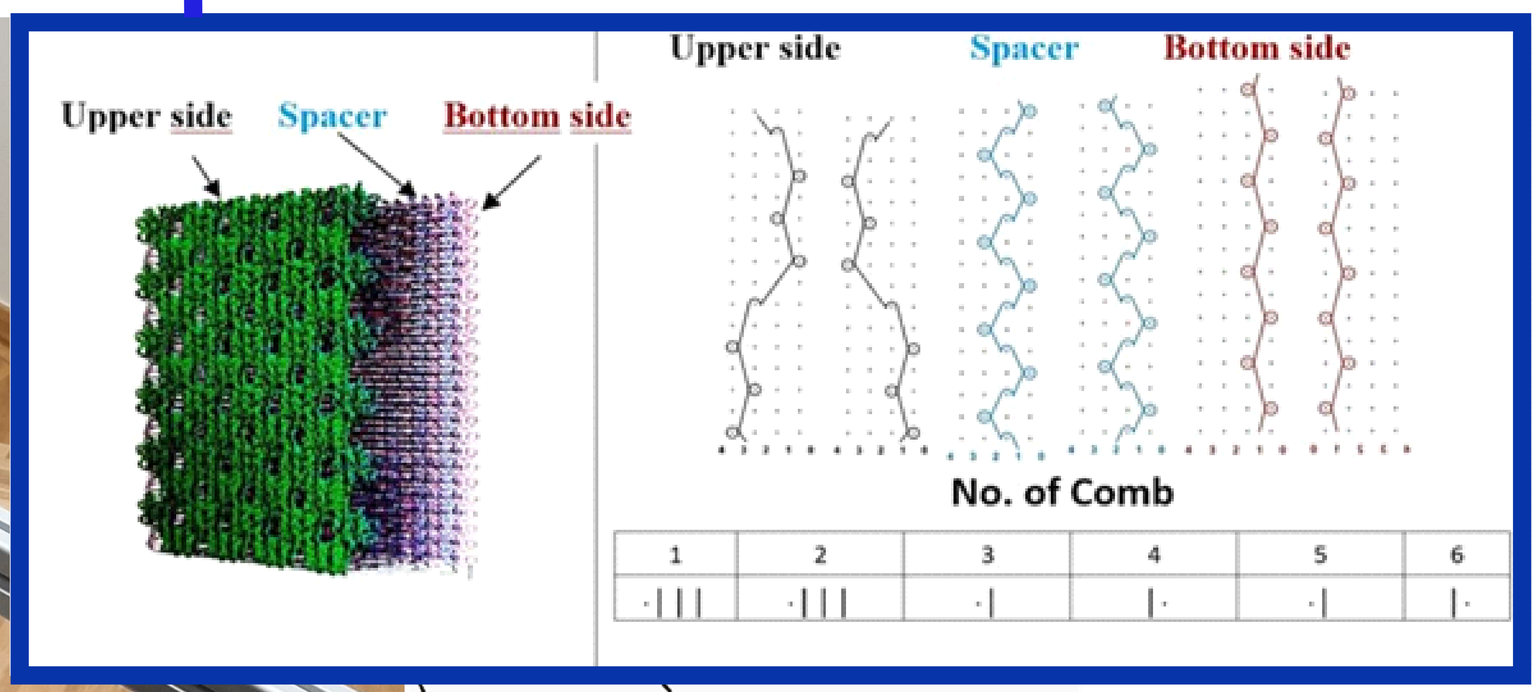
Lodz University of Technology,
Faculty of Material Technologies and Textile Design.
MICHAL FRYDRYSIAK ZBIGNIEW PAWLICZAK

Textronics diagnostic system for monitoring the vibration level in the seat with increased vibration exposure

Vibration diagnostics





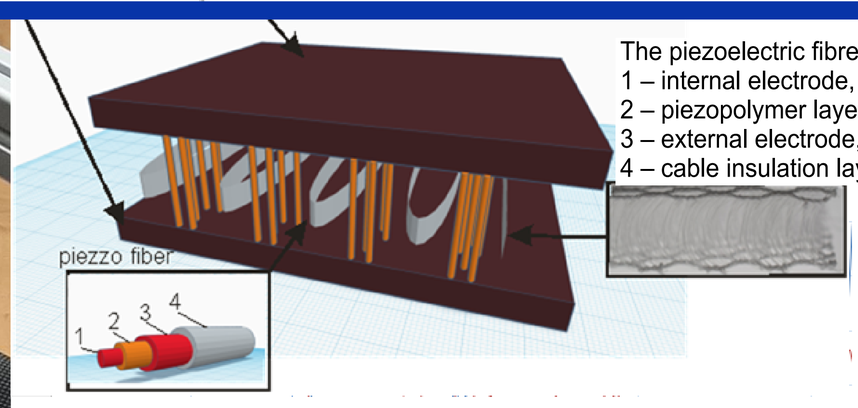
Comfort of use

quick alert

textile knitted sensor

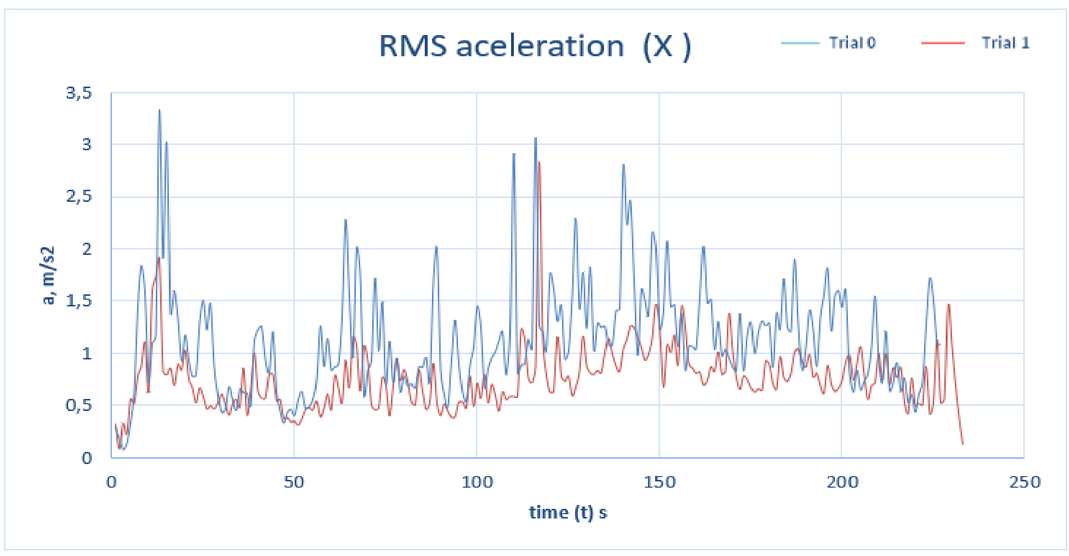
minimizing the transmission of vibrations

mobile app



The piezoelectric fibre consists of four elements:
1 – internal electrode,
2 – piezopolymer layer,
3 – external electrode,
4 – cable insulation layer.

RMS acceleration (a, m/s2) values over time for the X axis



Average RMS values and the calculated SEAT damping coefficient for individual components X, Y, Z

	Average value RMS (X)	Average value RMS (Y)	Average value RMS (Z)
Sample Zero - Mean	1.146 m/s^2	0.625 m/s^2	2.130 m/s^2
Medium sample	0.765 m/s^2	0.626 m/s^2	2.053 m/s^2
SEAT coefficient for the prototype seat	1.499	1.000	1.000

The subject of the invention is a textronics diagnostic system for monitoring the vibration level in the seats with increased exposure to vibrations, especially in the seats of operators of machines and mechanical devices, and in car seats for children. It is important that the seats minimize the energy of vibrations in the frequency ranges from 4 to 25 Hz, which are particularly dangerous for people, where resonance phenomena of human internal organs occur.The textronic diagnostic system consists of a 3D sensory spatial fabric of the spacer type with an implemented piezoelectric thread connected to an electronic device equipped with software with the functionality of recording and processing vibrations values ..

CONTACT: zbigniew.pawliczak.p.lodz.pl

Politechnika Łódzka Lodz University of Technology
Rzeczpospolita Polska
Fundusze Europejskie Inteligentny Rozwój
Unia Europejska Europejski Fundusz Rozwoju Regionalnego