

MECHANICAL ENGINEERING

MUR DM 117/Denso - Virtual evaluation of acoustic comfort in off-road vehicles

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Context of the research activity	<p>Analysis and optimization of noise sources induced by the vibration of thin solid bodies that can disturb the user on off-road vehicles (tractors, construction site machines, buses, trucks) and definition of solutions to reduce their impact.</p> <p>Progetto finanziato nell'ambito del PNRR - DM 117/2023 - CUP E14D23002030004</p>
Objectives	<p>The research aims to reduce noise disturbance in public transport and off-road vehicles. In particular, it focuses on the generation of noise perceived by the operator who, spending many hours in this environment, undergoes environmental stress conditions. Noise from the HVAC system is currently the most disturbing. The research falls within Mission 2 and Mission 3 of the PNRR, i.e. in interventions for mobility and public transport.</p> <p>The following stages of work are foreseen:</p> <ol style="list-style-type: none">1. Experimental measurement of the radiation efficiency of components of an HVAC system of an off-road vehicle;2. Realization of a virtual model using a numerical simulator and calibration of the model on the basis of experimental data;3. Optimization of radiation efficiency through numerical simulation;4. Prototyping of the optimized HVAC system;5. Verification tests.
Skills and competencies for the development of the activity	<p>It is required that the applicants have good knowledge of:</p> <ol style="list-style-type: none">1. machine design2. numerical methods applied to engineering (Finite Element Method, Boundary Element Method,)3. structural dynamics4. signal and data processing

