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Portfolio of Recent Research Projects

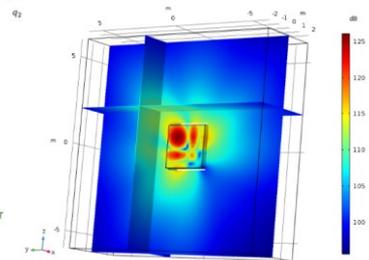
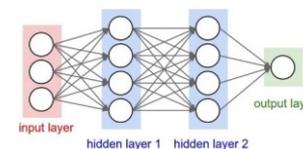
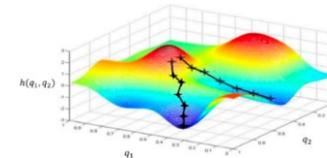
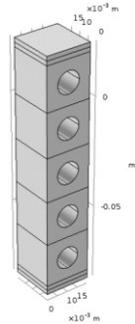
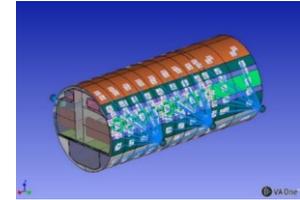
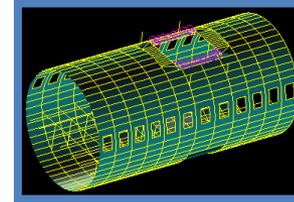
The team has been involved in several research projects supported by the European Commission and Italian government in cooperation with many European industrial and academic partners.

- **LIVE-I** (Lightening and Innovating transmission for improving Vehicle Environmental Impacts), a H2020 MSCA-ITN European Industrial Doctorate, 2020;
- **DEVISU** (DEvelopment and applications of a VIRTUAL hybrid platform for multiscale analysis of advanced Structures of aircraft) project, a national research project (PRIN 2017) funded by MIUR, 2019;
- **T-WING** (Next Generation of Civil Tilt-Rotor (NGCTR) project, a CLEAN SKY 2 European project, 2019;
- **TECA** (Technological solutions of Engine enCapsulation for Automotive), a national project, 2017;
- **CASTLE** (CAbin Systems design Toward passenger wellbEing), a CLEAN SKY 2 European project, 2016;
- **VIPER** (Vibro acoustic of PERiodic media), a H2020-MSCA-ITN-2015 project, 2015.

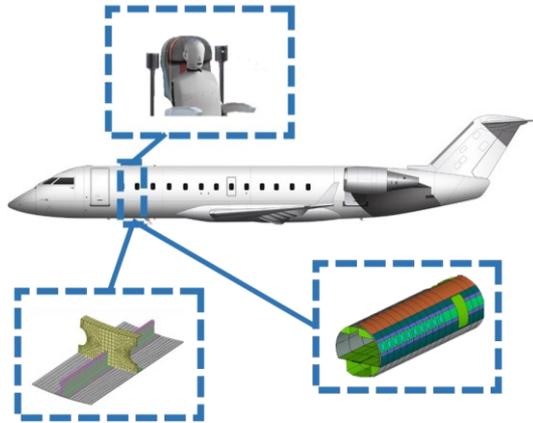


Portfolio of expertise

- **Vibrations and Acoustics**
- **Numerical/Experimental Materials Characterization**
 - Composite Materials
 - Porous/Structural Metamaterials
- **Predictive Models**
 - FEM/BEM/SEA
 - WFEM (Wave Finite Element Method)
 - Optimization via Machine Learning
- **Flow-Induced Vibrations**
- **Testing**
 - Experimental Modal Analysis
 - Acoustic Characterization
 - Forced Structural and Acoustic Response
 - Tools: Shaker, Modal hammer, Microphones, Loudspeakers, Accelerometers, Acoustic Antennas
- **Software Development**
 - WFEM/TMM Toolbox
- **R&D Project Management**
 - EU-funded Research projects (H2020 MSCA, CLEAN SKY 2)

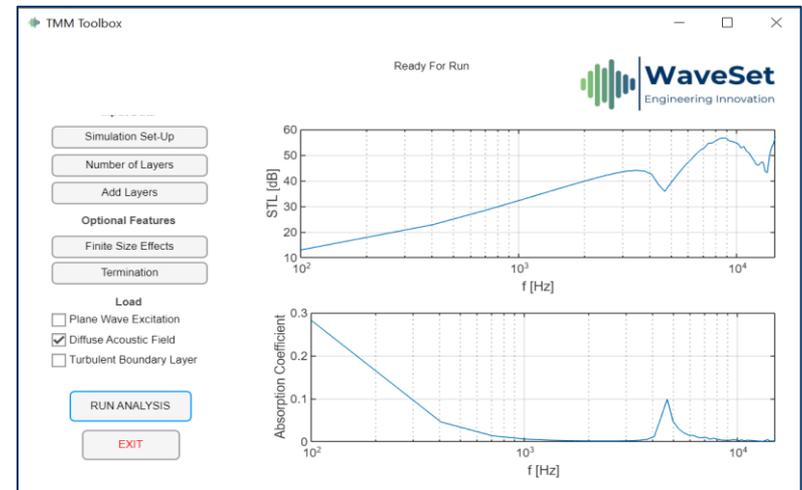


Project Idea



- **HORIZON-CL4-2022-RESILIENCE-01-11:** Advanced lightweight materials for energy efficient structures (RIA)
- **HORIZON-CL4-2022-RESILIENCE-01-12:** Functional multi-material components and structures (RIA)
- **HORIZON-CL4-2022-RESILIENCE-01-19:** Advanced materials modelling and characterisation (RIA)

- Innovative software solutions for the characterization of advanced materials
- Acoustic optimization for more lightweight and energy-efficient multi-material packages



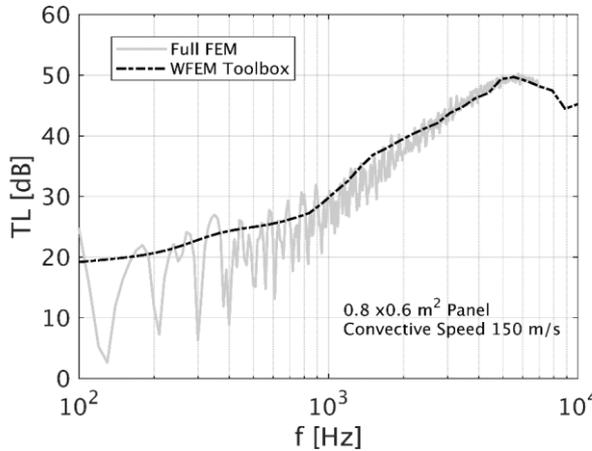
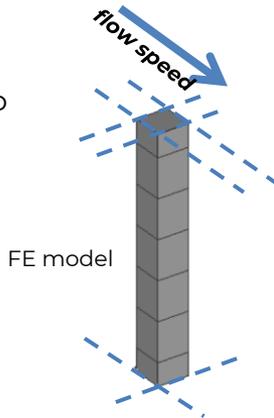
The concreteness of an intangible product

Structure:

Flat honeycomb panel

Load:

Turbulent Boundary Layer

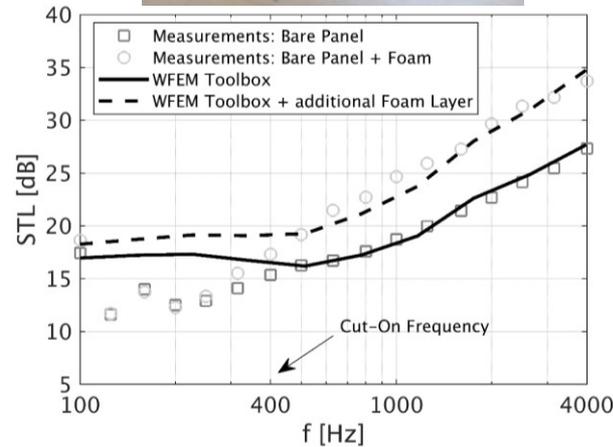
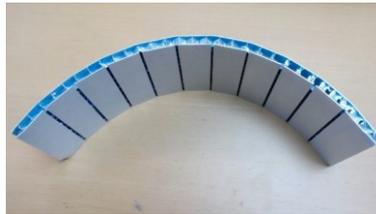


Structure:

Curved honeycomb panel

Load:

Diffuse Acoustic Field

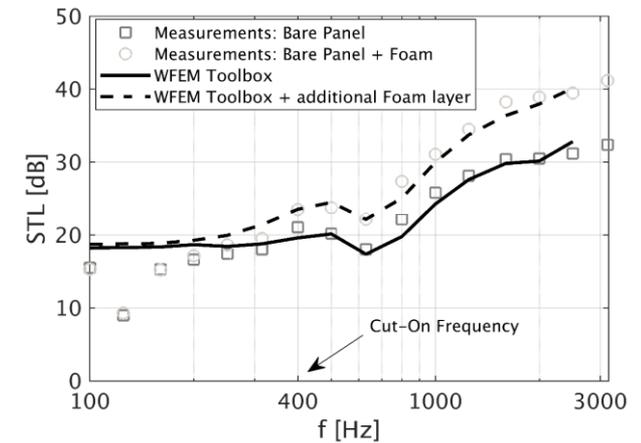
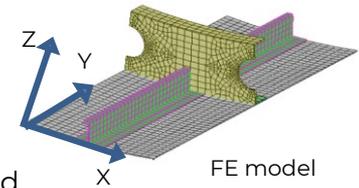


Structure:

Curved aircraft fuselage panel with frames and stringers

Load:

Diffuse Acoustic Field



Solutions for every need

	WaveH	AcuH WFEM	AcuH TMM	AcuH SEA
Development stage	MVP	MVP	MVP	Design
Numerical approach	Wave Finite Element Method	Wave Finite Element Method	Transfer Matrix Method	Statistical Energy Analysis
Type of result	Dispersion curves	Transmission Loss	Transmission Loss Absorption coefficient	Transmission Loss Absorption coefficient
Advantages	Detail of the model Computational costs	Detail of the model Computational costs	Ease of modeling Accuracy of results	Ease of modeling Computational costs
Disadvantages	Ease of modeling	Ease of modeling	Detail of the model	Accuracy of results
Fields of application	Energy, civil and transport engineering (aerospace, automotive, naval, railway)			
Potential customers	Research centers, public and private companies			

- **No geographical restrictions.**
- WaveSet seeks **industrial partners and financing.**



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