

Internship Proposal

Nearfield Acoustic Holography in confined spaces adopting an Equivalent Source Method in presence of a mean flow: identification of aero-acoustic sources.

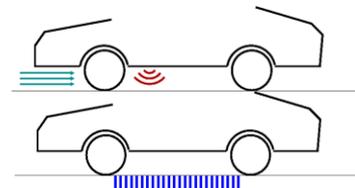
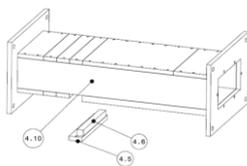
Internship location: Siemens Industry Software NV, Leuven, Belgium

Local coach: Ir. Claudio Colangeli (claudio.colangeli@siemens.com);
Dr. Jacques Cuenca (jacques.cuenca@siemens.com);
Dr. Karl Janssens (karl.janssens@siemens.com);

Internship duration: 4 to 6 months

Project summary:

The proposed work is included in a broader contest in which the acoustic sources generated by the wind in the underbody of a car are studied by means of acoustic imaging techniques. A dedicated Nearfield Acoustic Holography method for confined spaces in presence of a mean flow is therefore required. The proposed thesis work aims at studying the mechanism of propagation of aero-acoustic sources and their analysis through acoustic imaging. A measurement campaign on a test rig (see figures) representative of such complex acoustic scenarios has been performed for providing representative test cases of aero-acoustic and hydro-dynamic excitations. The effectiveness of the developed acoustic imaging method in identifying propagating aero-acoustic sources and the vibro-acoustic response of a structure excited by a re-attached flow will be assessed.



Project main objectives:

- Gain skills on signal acquisition, signal processing, experimental acoustics techniques.
- Gain insight in acoustic phenomena in ducts and reverberant environments.
- Sensitivity analysis of the effectiveness of the proposed acoustic imaging technique in presence of aero-acoustic and hydro-dynamic excitation.

Candidate profile:

- Master student in Mechanical Engineering, applied physics, with knowledge in acoustics.
- Skills in experimental acquisition and related signal processing.
- Fluent in English.
- Hardware/ software: Matlab, LMS Test.Lab is an asset.

Practical remarks:

- Siemens Industry Software NV is hosting the student and affords for accommodation.