

## Master of Science (MSc) in Mechanical Engineering (Acoustics) at the École de technologie supérieure

**Title :** Development of configurable impulse noise sources

Impulse noises and high-amplitude impact noises are particularly harmful to workers' hearing. Unfortunately, there are no commercially available impulse noise sources suitable for laboratory use that can generate a wide variety of industrial impulse noises. Access to such sources is necessary to conduct research on this type of noise. With this goal in mind, this project aims to develop reproducible impulse noise sources that can be parameterized to generate a wide variety of noises representative of those found in industrial workplaces. The student will work on the development of two types of sources: the compression loudspeaker and solid body impact. Special attention will be paid to the system's ability to modify the characteristics (parameterization) of the generated signal (waveform, amplitude, duration, spectrum, rise time) as the ultimate goal is to simulate a wide variety of impulse noises. The student is expected to collect sound signals measured in different work environments (impulse noises and continuous noises). This collection will allow her/him to build a database of impulse noises that can be used by the research team with the developed sources.

As part of the completion of their master's project, the student will contribute to the writing of deliverables (e.g., articles, presentations, reports) and will be encouraged to present their work at international scientific conferences.

### Profile :

- A bachelor's degree in an engineering program;
- Basic knowledge of acoustics and acoustic measurements;
- Knowledge in signal processing;
- Motivation and interest in workplace noise;
- Strong interest in laboratory work;
- Excellent interpersonal skills and communication abilities;
- Proficiency in English (and, if possible, French) language, both orally and in writing;
- Being autonomous, resourceful, and enjoying working in a team to carry out a research project.

### Contacts

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