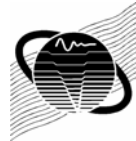


Comprehensive Noise Prediction Example

Engine Cover

Zeguang Tao, Ferdy Martinus,
and David Herrin
University of Kentucky

Vibro-Acoustics Consortium

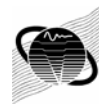


Overview

Noise Prediction Example

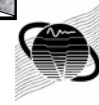
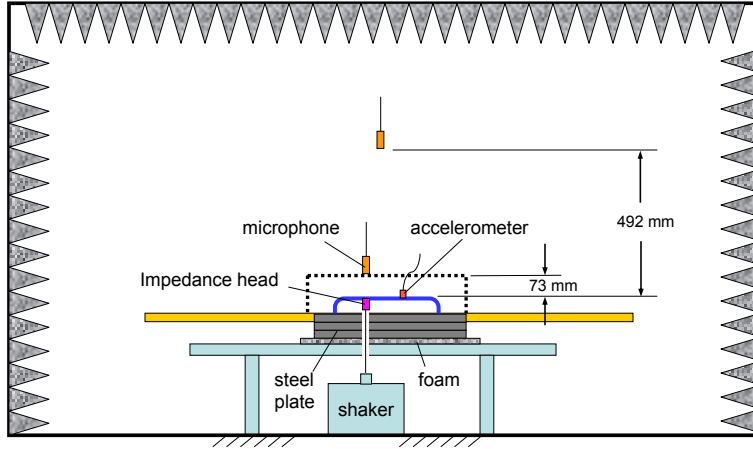
- Experimental setup
- Vibration/sound prediction
- Inverse numerical acoustics
- Future work

Vibro-Acoustics Consortium



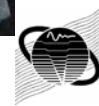
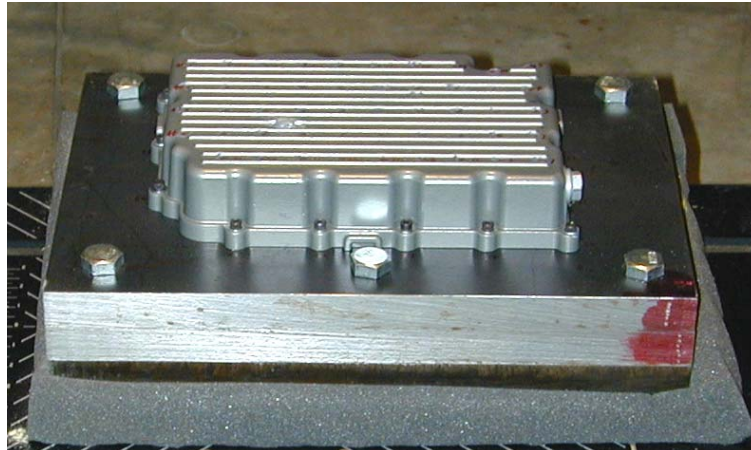
Experimental Setup

Noise Prediction Example



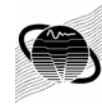
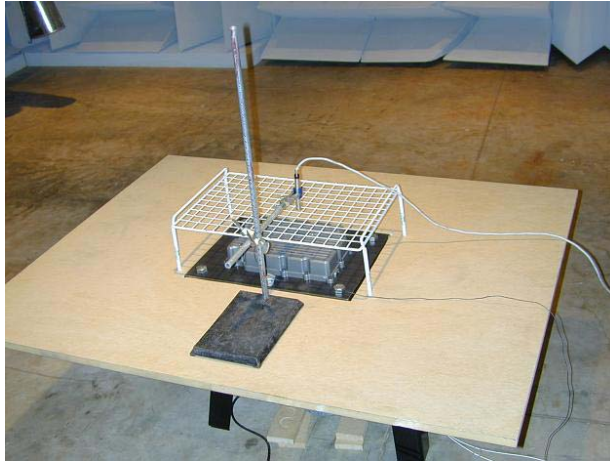
Experimental Setup

Noise Prediction Example



Experimental Setup

Noise Prediction Example



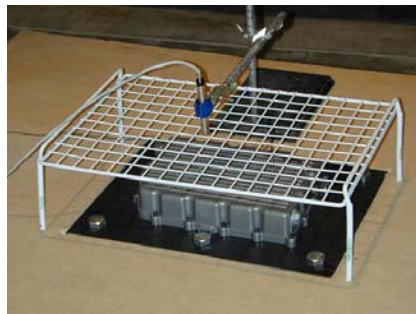
Experimental Setup

Noise Prediction Example



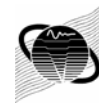
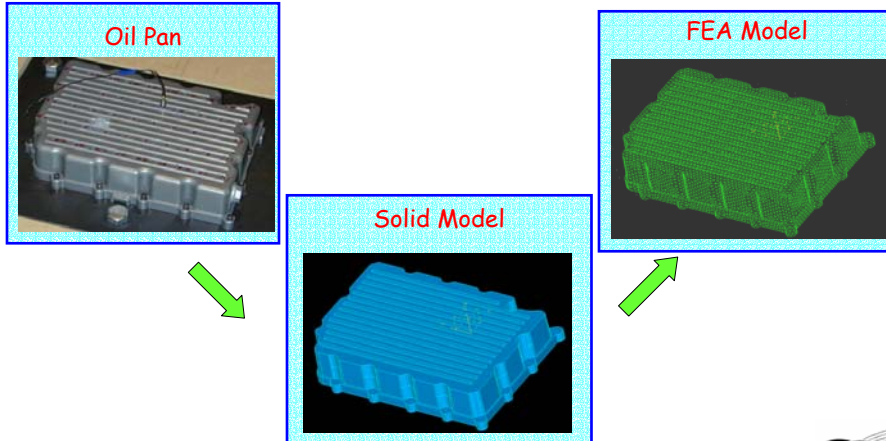
Vibration Measurement

Sound Pressure Measurement



Building the FEA Model

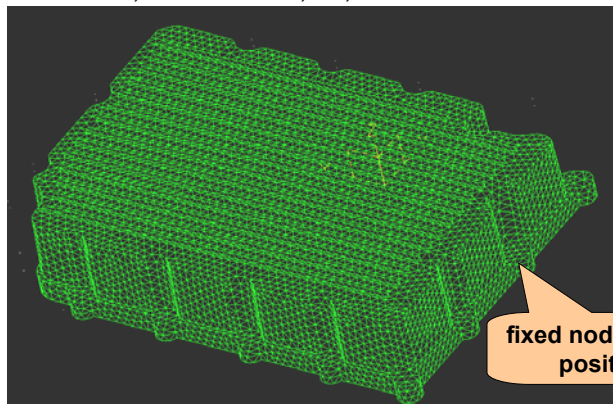
Noise Prediction Example



FEA Model

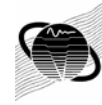
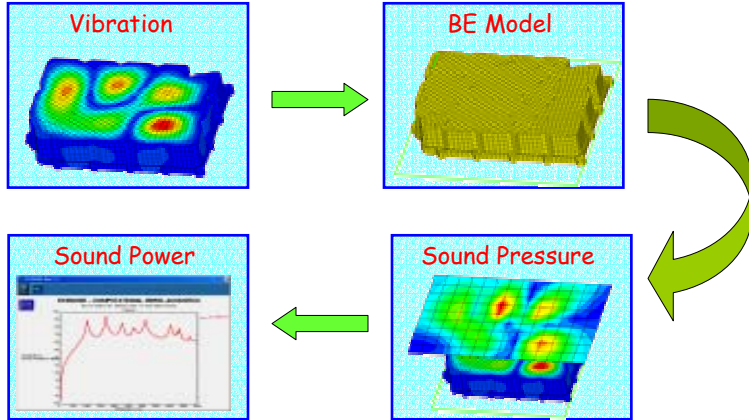
Noise Prediction Example

- Solid Parabolic Tetrahedral Elements:
40,944 elements, 83,013 Nodes



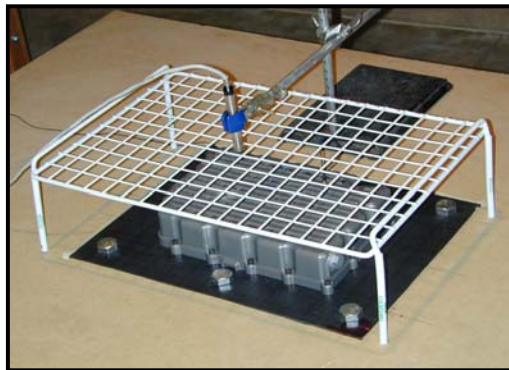
Sound Prediction with SYSNOISE

Noise Prediction Example

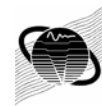
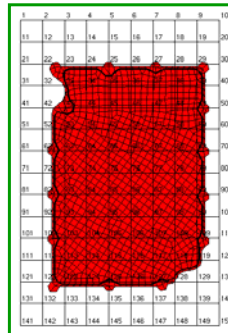
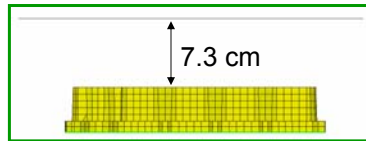


Sound Pressure Measurements

Noise Prediction Example



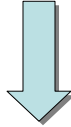
150 field points



Inverse Numerical Acoustics

Noise Prediction Example

**Sound Pressure
Measurement**



**Surface
Vibration**

Radiated sound power

Field point pressure

Far field
directivity pattern

