**Noise Control Methods & Results**

- **Subjective noise index** → sound quality
- **Objective noise level** → actual reading from the microphone
- Noise measurements taken at 20° from compressor surface
- Viscoelastic materials used to reduce structure-borne noise
- Torque on rubber mounts changed using torque wrench
- Fiberglass is a sound insulation material
- Preliminary experiments with standard off-the-shelf muffler bought from Home Depot

**Muffler Design & Fabrication**

- Muffler design based on transmission loss analysis
- Design frequency (776 Hz) based on
  - "Noisy" component in frequency spectrum
  - Space constraints in APU
- Reactive muffler → empty expansion chamber
- Dissipative muffler → sound insulation material in the expansion chamber for broad-band noise reduction

**Recommendations**

- Fiberglass insulation on motor : 3 dB
- Muffler (reactive or dissipative) : 5-6 dB
- Rubber mount bolt torque of 60 in-lb
- Damping treatment on air-filter cap and endcap

**Relevant reference**