

Key Points

Initial tests to find baseline.

Find primary areas of noise propagation, including the cowling, the clutch and the track.

Cowling and Clutch

- *Determine frequencies at which noise is the harshest.*
- *Test to find materials that will work effectively to reduce specific frequencies.*
- *Select and install materials for each area of the cowling and belly pan based on performance criteria.*

Track and Suspension

- *Analyze stock suspension and track noise output.*
- *Determine best method to reduce sharp noise from suspension.*
- *Install 'bump stop' to eliminate the metal on metal contact.*
- *Establish best solution to remedy track slap and friction noise.*
- *Install additional idler wheels.*

Final testing and competition



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University of Maine

Clean Snowmobile Team
2005-2006

Noise, Vibration and Harshness



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Background

This is the 3rd year that the University of Maine Clean Snowmobile Team has participated in SAE's Clean Snowmobile Challenge. This is a week long competition between Universities from all over the US and Canada. There are multiple events that test teams from noise to emissions to handling.

The noise, vibration and harshness group focused on noise that was emitted from three major areas of the snowmobile. These include the cowling, the clutch and the track/suspension.



A rebound damper was added to reduce the metal-on-metal contact noise between the suspension and the cross-piece.



Two sets of idler wheels were added to reduce friction related noise and track slap.



Insulation was installed and the seams were coated with quiet coat to prevent water absorption.

Results

We placed 5th at competition, 103 points behind 1st place. Due to circumstances beyond our control we were not able to finish the endurance run (our sled overheated). Although we do not feel as though our sled was running up to par, we were able to finish the rest of the events. As far as individual events went, we finished 2nd in noise and 2nd in emissions. We also received most practical design. We feel as though these results were pretty good considering that changes had to be made at competition including some that would have affected the noise in a negative way.

