

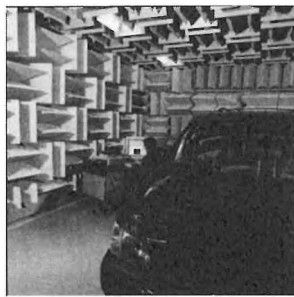
CRAFTSMANSHIP AT INTIER AUTOMOTIVE: INCREASING PRODUCT QUALITY THROUGH IMPROVED ACOUSTICAL ENGINEERING

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Craftsmanship, the hand crafted excellence of a quality product, is currently changing the focus of automotive manufacturers. As consumers attempt to differentiate brands, automotive manufacturers are spending more time perfecting the overall sensory perception of their products. Manufacturers have come to realize the need to focus on not only product performance but also on other sensory stimuli. Visual, tactile, olfactory, and the focus of this document, auditory observations, must be exploited by product engineers to ensure that their products are recognized as having craftsmanship.

The Atoma Technical Centre, a division of Intier Automotive, has responded to the need for superior auditory quality by testing automobile parts in its anechoic chamber.



The chamber and its supporting instrumentation have enabled ATC to offer both internal and external customers the ability to evaluate the acoustical performance of the products they are developing. With the new focus on craftsmanship, the information the test centre provides allows designers to assess the sound quality of interfacing products. This attention to overall acoustic quality gives ATC's customers a competitive advantage because they no longer discover that certain products in combination produce unpleasant sounds at the production stage. Instead, customers of ATC are able to engineer their products to exhibit favourable sound qualities.

For example, during the development of door lock/unlock actuators, sound quality was defined as a product requirement. In order to achieve this, measurements were taken at the component and vehicle level. The data taken from the component level tests allowed the design engineers to isolate when peak sound levels and/or objectionable noises occurred during the door locking event and understand how this event was correlated to the sound performance in the final vehicle. With this information, it led to the develop-

ment of new materials in the actuator stops and a reduction in the peak loudness experienced in the final product.

ATC offers its customers use of the anechoic chamber and its associated acoustic instrumentation. The anechoic chamber at ATC has an 80 Hz cutoff frequency that is large enough to test a 95-percentile sport utility vehicle.

This technical capability, in combination with ATC's laboratory accreditation allows customers an independent facility to test or evaluate products that require objective acoustical test reporting. Furthermore, for analysis beyond testing, ATC has professional acoustic engineers within the organization that can analyze the sound quality data and provide engineering recommendations to improve the sound quality of the particular product or system.

While the range of testing capabilities are expanding, the existing capabilities at the technical center are:

- 80 Hz cutoff, full vehicle hemi-anechoic chamber.
- Measurement capability in a laboratory or field environment using microphone and/or binaural recording.
- Measurement of sound quality, sound pressure, vibration analysis or concurrent analysis of microphones, accelerometers and other inputs such as current or voltage.
- Determination of sound power from sound pressure measurements following standard ISO protocol.
- Analysis capabilities such as sound quality, octave filtering, FFT, and spectral processing.

Given today's focus on value added manufacturing, the Atoma Technical Center has responded to the essential need for exceptional products that provide an overall pleasing sensory experience for the consumer. While ATC has developed an expertise in sound quality measurement and analysis in the automotive sector, the facilities and accreditation allow them to offer non-auto sector companies the professionalism and objectivity their current customers demand. If you are interested in discussing your company's requirements with the Testing Manager at Atoma Technical Centre, or touring the facility in Newmarket please call (416) 292 8662 ext. 2766.