

Hubco's Whispbar Windtunnel

Demonstrating the sound of silence



Loads of life

Background

Christchurch based roof rack manufacturers Hubco have spent more than 10 years investigating ways to make their roof racks quieter and more aerodynamic, working in conjunction with researchers at the University of Canterbury to develop a wing shaped roof rack bar that draws on aviation engineering to reduce on-road noise.

The result of many years of research, refinement and innovation is Hubco's Whispbar roofrack. The new bar has been proven to be significantly quieter than any competing products and after establishing the product in Australia and New Zealand, the company was ready to launch the new bar on the European market.

The Challenge

To demonstrate at the massive Automechanika auto show in Germany exactly how much quieter the Whispbar is over and above a range of competing products that are currently widely used worldwide.

The design of the Whispbar largely evolved in conjunction with research in the wind tunnel housed in the Engineering School at the University of Canterbury, and this inspired the decision to build and ship a portable windtunnel to the Automechanika show and demonstrate the attributes of the Whispbar in front of potential buyers and auto manufacturers.



Figure 1: The Windtunnel on display at Hubco

In order to visually demonstrate the variation in noise that can be heard from the different bars as each is rotated in front of the wind tunnel, a computer based graphic interface was required, that would also function as a control system to drive the electronics and mechanics of the wind tunnel.

The Technical Solution

Nightside was commissioned to provide a control and measurement system that would provide a visual display of the air speed (up to 160kmh) going through the tunnel, and show the frequency of the acoustics created by each of the different products in such a way that they could be easily compared and a print out of the graphic provided for potential customers to take away.

Nightside's team used a combination of National Instruments hardware with LabView software, a Compact Daq unit, printer and laptop to build the system and integrate it with the windtunnel.

The computer screen displays a speedometer that reflects the airspeed through the tunnel, while beside the speedo, a line graph powerfully demonstrates the noise spikes of the competitor's products, by comparison with the Whispbar, which follows a line very similar to the result of having no roof rack on a vehicle.

The system also controls the operation of the fan in the windtunnel, which can be run at speeds between 10 and 160km per hour.

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Operation is very simple, selecting options on the screen that allow the operator to choose the speed of the wind tunnel, along with the bar they wish to test. No technical expertise is required to run the system, which means that clients can drive it themselves if they wish.

Results

According to Hubco project manager Bruce Robertson, the tunnel was very successful at the Automechanika show, drawing large crowds and very positive responses from all those who viewed the demonstrations, including 13 of the world's biggest car manufacturers.

"We were located in the accessories area of the trade show, and most of the other displays were simply static booths with product information and samples. Visitors were drawn to the innovative nature of our booth with the windtunnel in operation, and we even had a couple of Asian accessory manufacturers ask if they could buy a similar tunnel to test their own products.

"Executives from Mazda Japan were so impressed they gave us a round of applause after the demonstration!"

More than 200 sales enquiries were received from potential distributors and manufacturers, ensuring that the European launch was a great success for Hubco.

The Whispbar product was also selected as the only car accessory in Automechanika's prestigious Green Directory of 25 products that met very high standards of environmental performance. The Whispbar was chosen because of its ability to save up to 3% in fuel consumption due to a 70% reduction in drag, and the way that it combines with Hubco's patented Smartfoot to reduce the number of components and options required to fit a roof rack to any make or model of vehicle.



Figure 2: Chris Angove and Peter Brown operating the Windtunnel

Since Automechanika, the Whispbar roof rack has been selected as a winner of a 2009 iF Award – an extremely prestigious international design award that will be a major boost to Hubco's sales efforts across Europe and North America.

The windtunnel is now set up in Hubco's premises in Christchurch, being used as a sales and demonstration tool for customers and distributors, and will be pressed into action again for upcoming trade shows.

"Nightside assisted us in creating a powerful control and interactive display system for our wind tunnel that was very successful in demonstrating the effectiveness and innovation of our product to a key target audience. Their attention to detail and commitment to providing a solution that met our requirements was impressive, particularly within the very tight timeframe and other parameters of our trade show deadline," Robertson said.

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