

Aston Martin DB9 displays Yazaki technology

The new **Aston Martin** DB9 features the first automotive application of an advanced display technology, called Organic Light Emitting Diode (OLED), supplied by **Yazaki** Corp.



The instrumentation cluster of the new Aston Martin DB9 features the first automotive application of OLED technology.

The OLED technology is incorporated into the DB9's instrumentation cluster via unique WatchDial styling and into its infotainment control module. The benefits of using OLED technology, according to the supplier, include a high contrast ratio, low voltage and power consumption, cold temperature operation, a near 180° viewing angle, and a thin, lightweight construction.

Prior to implementation of OLEDs in the Aston Martin, the technology had only been used in cell phones, video and digital cameras, and automotive aftermarket radios, said Diane Rogers, Product Manager for Instrumentation at Yazaki North America. In other automotive OEM

applications, the new **Chevrolet** Corvette and **Jeep** Grand Cherokee instrument clusters will ship with OLED displays, she noted.

"The requirements for a display in a vehicle are stricter than other applications, and since we were [working on] the first [production] application of OLED technology, there was a great deal of learning while applying it," said Brian Dehmlow, Senior Engineer for Display Technology at Yazaki North America.

The material used for an OLED can be thought of as being similar to paint, said Dehmlow. "The OLED material can be 'painted' as a continuous film onto a piece of glass that has a pattern of 'wires' already in place. The wire pattern is used to selectively light small portions of the OLED film to create display pixels." In this way, OLED construction and operation is somewhat similar to LCDs, he added.

With the DB9, Aston Martin designers wanted to pay particular attention to the appearance of the driver communication products, and turned to Yazaki to help develop a unique instrumentation cluster. The WatchDial cluster face contains components that give the appearance of a brushed metallic look that was created by using in-mold metallic foil on plastic. The Aston Martin logo is embossed on the foil that is then applied to the dial face.

When the watch dial is lit, the tick marks appear as lit jewels. Each tick is part of a prism with vacuum deposition of aluminum onto the surface. The end of the plastic is then cut at an angle and inserted through the openings in the outer ring. Each overall dial is floodlit from above within the cluster.

Another element of the cluster's design is a "one-of-a-kind" tachometer needle that moves counterclockwise, while the speedometer has a traditional clockwise movement.

Ryan Gehm

Acura voice, navigation assistance from IBM, XM

Continuing their innovation on the telematics front, engineers at **Honda**, with help from their supplier partners, have added better speech-recognition and real-time navigation technologies to some Honda and **Acura** luxury cars for 2005.

IBM jointly developed with Honda the "natural-sounding" in-vehicle speech-recognition system that is offered as standard equipment on the Acura RL and as an option on the Acura MDX and Honda Odyssey in the United States and Canada. IBM's voice-recognition technology is integrated into the car's audio system so that driving instructions can be heard over the speakers. Alongside its navigation functions, the system also provides command-and-control capabilities for

recordings previously found in earlier Honda systems. They also produced hundreds of additional recordings to design a natural-sounding text-to-speech voice, digitally segmenting speech and intonations that can allow vehicles to communicate naturally with their drivers. The result is said to be a totally new type of speech synthesis that can capture human voice characteristics.

In addition to the natural-sounding text-to-speech function, the Honda and Acura models now feature more than 700 commands and more than 1.7 million street and city names that are accessible by voice. Another unique feature of the system is nationwide dining information from **Zagat's** Survey, which provides

system provides a constant flow of relevant information reflecting conditions along a driver's chosen route. It really should save people a lot of time and aggravation," said Tom Elliott, Executive Vice President, American Honda Motor Co., Inc.

The real-time traffic feature uses the XM NavTraffic service, which provides freeway information in 20 major metropolitan areas including Los Angeles, New York, Detroit, and Chicago, with coverage slated to expand to other cities as traffic information becomes available. Flow, accident, and construction information is aggregated by digital-map-data provider **NAVTEQ** from multiple sources including local police and transportation depart-



The speech-recognition system for Acura's RL and MDX as well as Honda's Odyssey (shown) uses IBM embedded ViaVoice software.



The 2005 Acura RL navigation system screen shows real-time traffic information courtesy of XM.

audio, DVD entertainment system (Odyssey), and climate-control functions.

Using IBM embedded ViaVoice software, Honda is the first car manufacturer to equip automobiles with in-car navigation systems using advanced speech-recognition and text-to-speech capabilities that can identify spoken street and city names across the continental United States. This allows drivers to speak a street address and receive turn-by-turn voice guidance to their destinations. The voice-recognition system is another step forward in automaker and supplier efforts to eliminate the need for drivers to take their hands off the wheel and eyes off the road.

To create the text-to-speech system, IBM and Honda R&D teams digitally processed hundreds of hours of speech re-

cordings previously found in earlier Honda systems. They also produced hundreds of additional recordings to design a natural-sounding text-to-speech voice, digitally segmenting speech and intonations that can allow vehicles to communicate naturally with their drivers. The result is said to be a totally new type of speech synthesis that can capture human voice characteristics.

Besides its advanced speech-recognition capabilities, the 2005 Acura RL has the first real-time traffic navigation system in the United States; AcuraLink, which communicates information between dealers and drivers; and HandsFreeLink, which uses Bluetooth technology to synchronize personal cell-phone data within the car environment.

The AcuraLink real-time traffic feature offers personalized traffic information, relative to the driver's current location and destination, displayed graphically on the RL's navigation system, allowing drivers to avoid congestion and minimize drive time. "Unlike radio or television traffic reports, the RL's real-time traffic

It is then delivered to XM and transmitted by XM's satellites to the RL's navigation system. Accident and flow information are updated continuously, allowing drivers to avoid congestion and pick the fastest path to their destination.

AcuraLink delivers an assortment of services including maintenance reminders and engine diagnostic information directly to the car. It works with the RL's HandsFreeLink wireless telephone interface to allow drivers to respond to these services and one-touch-dial Acura dealers, as well as Acura Roadside Assistance (TLC) assistance, using a compatible Bluetooth phone.

The XM NavTraffic service will be offered on a subscription basis following a 12-month free-trial period.

Kevin Jost

Discovery offers Bosch driver assistance

For drivers of SUVs, off-road driving can be challenging. They have to be more sensitive in the use of the accelerator and brakes, and know how to get the best out of the gears and the various drive-train options. Drivers of **Land Rover's** new Discovery, known as LR3 in the United States, are getting help from **Bosch's** Electronic Stability Program (ESP), which offers a number of additional driver-assistance functions that improve vehicle operation on difficult off-road terrain and significantly increase safety under normal on-road driving conditions.



The Land Rover Discovery's Bosch-supplied ESP improves stability both on- and off-road.

One of the driver-assistance systems on the Discovery is the patented Terrain Response system, which is fitted as standard equipment on SE and HSE models in Europe. A rotary switch in the central console allows the driver to select from one of five settings based on the type of terrain. In addition to a general driving program and one for slippery conditions, there are settings for Mud and Ruts, Sand, and Rock Crawl. Depending on the chosen setting, the system alters the behavior of the engine, automatic transmission, differential locks, and air suspension. Key to the effectiveness of Terrain Response is the link to the vehicle's braking control systems—the Electronic Stability Program (ESP) and its associated antilock braking system (ABS) and the traction control system (TCS). The basic function of ESP is to stabilize the vehicle when it starts to skid by applying differential braking force to individual wheels and reducing engine torque. It now adapts its intervention to the type of ter-

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rain chosen, with an especially marked variation in the operation of the TCS, which prevents the wheels from losing grip and spinning.

In addition to Terrain Response, engineers at Bosch and Land Rover integrated additional ESP functions for the Discovery. ROM (Roll Over Mitigation) uses the existing ESP sensors to constantly check the moving vehicle's tendency to tilt and counter any potential threat of it rolling over by applying differential braking and reducing engine torque. CBC (Cornering

Brake Control) helps to keep the vehicle stable when cornering by controlling braking pressure on the individual wheels. HBA (Hydraulic Braking Assistance) is designed to produce the shortest possible stopping distance under emergency braking. HDC (Hill Descent Control) maintains a low vehicle speed on steep descents without the driver having to use the brakes, with ORD (Off Road Detection) using sensors to determine whether the vehicle is on- or off-road.

Kevin Jost

Beru makes Audi tires safer

According to the German Federal Office of Statistics, tire defects led to over 1350 serious accidents in 2003 resulting in personal injury. The German automobile association **ADAC** says that 6.9% of all accidents are due to damage to tires and wheels.

Beru says that roughly one-third of vehicles on the road have tire pressure at least 0.2-0.7 bar (3-10 psi) below ideal, which exacerbates the problem as well as affects vehicle efficiency. For example, a 0.6-bar (9-psi) tire-pressure deficiency results in a 4% fuel consumption increase. Experts believe that the correct tire pressure would lead to savings in fuel consumption of approximately 200 million liters per year in Germany alone.

Tire wear and service life can be shortened by 10% if tire pressure is about 0.2 bar (3 psi) too low for long periods, according to Beru. This figure rises to around 25% for 0.4 bar (6 psi) less than ideal pressure, and almost 50% for a 0.6-bar (9-psi) deficiency. In addition, considerably more wear material is released into the air and soil, damaging the environment.

For these and other reasons, **Audi** has decided to fit Beru's Tire Safety System (TSS) to the new A4 and A6 Avant as an option. The Audi A6 sedan has been available with the direct-measurement TSS since May 2004.

Beru says advantages of its system include greater safety due to automatic monitoring of the tire pressure and temperature while parked and during driving. Because roughly 85% of all burst tires are a result of gradual pressure loss that was



Audi's A6 and A4 can be fitted with the Beru Tire Safety System.

not recognized in time, the TSS can alert the driver of a 0.2-bar (3-psi) deviation in pressure.

In the Audi application, signals from the wheel's electronic control unit are transmitted wirelessly to the vehicle's central electronics. The driver receives an optical and acoustic signal of pressure decreases via a display in the instrument cluster that specifies the specific wheel involved. The warning is provided in two stages. A pressure loss of more than 0.3 bar (4 psi) on one of the wheels activates a yellow warning requesting that the driver check tire pressure. If pressure is more than 0.5 bar (7 psi) below the ideal value, or if the tire is losing pressure quickly, the message delivered to the driver is red, urging he/she stop immediately and remedy the problem.

The system is able to take into account minor changes in temperature and pressure caused by, for example, intense sunshine, hot air coming from the engine, or unusual weight distribution of the car, thus avoiding a false alarm.

Kevin Jost

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