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VW TO FIX FAULTY IGNITION COILS

Volkswagen AG plans to replace defective ignition coils on a variety of 2001-2003 Audi, Seat, Skoda and Volkswagen vehicles worldwide. The initiative was announced three days after *The New York Times* reported VW has known about the problem since last fall but lacked sufficient replacement parts until now.

The recall covers 850,000 cars worldwide, including 530,000 units sold in the U.S., from model year 2001 through early model year 2003. Affected models include the Audi TT and A4 and VW Golf/GTI, Jetta, New Beetle and Passat cars fitted with turbocharged 1.8-liter, V-5, V-6 or W-8 gasoline engines. All affected engines use individual "pencil" ignition coils for each sparkplug. When one fails, the engine loses power, runs rougher and causes the car's "check engine" light to come on. According to the *Times*, the coils have been failing after as little as a few thousand miles of use.

VW says an unnamed supplier is working triple shifts seven days a week to make replacement parts. A second supplier also has been added. The company expects to have all the necessary coils within two months and intends to replace all coils whether they have failed or not. VW and Audi dealers will offer customers free alternative transportation if needed while their cars are being serviced.

Separately, VW announced its Volkswagen of America unit is setting up a new quality team in Auburn Hills, Mich., to help it respond faster to customer- and dealer-reported problems in North America. Stefan Ketter, previously in charge of VW quality planning in Brazil, will head the team.

CADILLAC RETHINKS REAR-DRIVE DEVILLE

General Motors Corp.'s Cadillac division is considering switching to a rear-wheel-drive platform when it brings out the next DeVille sedan in 2007, the luxury marque announced at this week's National Automobile Dealers Assn. meeting in San Francisco.

Although Cadillac is moving to a rwd layout with other products, the automaker had indicated it would maintain a front-wheel-drive configuration for the DeVille to appease the division's traditionally older customer base. The CTS sedan, new XLR roadster and



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2005 STS all are rwd, and the upcoming SRX crossover model is all-wheel-drive.

Cadillac also continues to talk about adding an ultra-luxury model to its lineup. But the vehicle likely will be somewhat toned down from the massive Sixteen concept car unveiled at this year's Detroit auto show. That car features a 1,000 hp V-16 engine, gull-wing hood and an all-glass roof.

PLATINUM REDUCTION KEY TO FUTURE OF FUEL CELLS

The amount of platinum currently required for automotive fuel cells would add some \$2,300 to the price of a vehicle, *Automotive News* calculates. Although this figure is based on current \$660-plus per ounce prices for the precious metal—which is trading at a 17-year high—*AN* warns that some traders expect prices to escalate to as much as \$800 an ounce in coming months vs. a low of \$450 last year.

Unlike other components that typically come down in price when vehicles using them are mass-produced, the reverse is likely to happen with platinum. This is due to shortages of the material, which currently is produced mainly in Russia and South Africa.

As a result, automakers aim to reduce the amount of platinum used in fuel cell stacks from about 100 grams per vehicle to 10 grams—approximately the same level used in current catalytic converters. Nissan Motor Co., for one, estimates the higher level currently is necessary for a fuel cell vehicle to achieve the performance of a 100-hp internal combustion engine. *AN* says about 0.5 milligrams of platinum is needed per sq cm of the electrocatalyst layer of a proton exchange member fuel cell.

The newspaper adds that costs also have to be taken out of other areas to make fuel cells viable. Automakers, for example, say fuel cell powertrains contain electronics worth \$2,000 and cost 10 times more than a comparable four-cylinder gasoline engine.

Other challenges faced by the fuel cell industry include improving the power and durability of fuel cell stacks. DuPont, which makes fuel cell membranes, says the latter must improve fivefold to ensure operation up to 100,000 miles. Improving power output would help reduce the number and size of individual stacks within a fuel cell. The lack of a hydrogen fuel infrastructure is well documented with estimates that it would cost between \$500,000 and \$1 million to install special tanks and pumps at a traditional gasoline station.

BOSCH INJECTS NEW BMW V-12 ENGINE

Robert Bosch GmbH is supplying the gasoline direct injection system used in BMW AG's new 6.0-liter DOHC V-12 engine that powers this year's 760i sedan. The system is combined with BMW's "Valvetronic" variable valve technology to help boost power and reduce emissions, according to the two companies.

As tuned for the 7 Series, the V-12 generates 438 hp and 442 lb-ft of torque and meets stringent Euro 4 emissions standards due in 2005. Instead of using a lean burn or stratified air-fuel mixture as is the case with most direct injection gasoline engines, BMW opted for a stoichiometric blend. As a result, the automaker is able to use a traditional three-way catalyst, thus avoiding the new "deNOx" system BMW describes as unproven and requiring low-sulfur fuel that is just now being introduced. The company concedes that a leaner mixture provides better fuel economy.

BMW's V-12 also is the first gasoline engine of its size to use a direct injection

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AUTOTECH DAILY
is a publication of
Hampton AutoBeat LLC,
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Bloomfield Hills, MI
48303-3068

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system and is among the first with a "V" configuration to feature direct ignition, the companies say. Due to the V design, two sets of ECUs, rails and pumps are used—one for each row of cylinders. One of the ECUs also controls other engine functions.

The injector nozzles are near the intake valves within the combustion chamber. The mechanical pumps, located above the exhaust camshaft and driven by a dedicated cam, generate between 435 and 1,450 psi of injection pressure for the V-12 application, which is considerably higher than a conventional injector. For other applications, Bosch says, the system can deliver as much as 1,740 psi.

The new V-12 shares many of the advanced technologies that BMW introduced in its V-8 powered 745 models last year. This includes variable valve timing and lift, which the automaker says can be adjusted between 0.2 mm and 9.8 mm for the larger powerplant. Valvetronic improves efficiency in low-load operation by eliminating the pumping losses associated with a throttle. BMW says the system also improves engine response and power output.

REPORT: MACHINE VISION INDUSTRY GROWING BUT NEEDS MORE STANDARDS TO BOOST FLEXIBILITY

Frost & Sullivan forecasts the worldwide machine vision inspection market will rocket from last year's \$1.12 billion to \$2.62 billion by 2009.

The Cleveland-based researchers say increased automation and the trend toward outsourcing complete sub-assemblies will drive an 11.5% compounded annual growth rate for machine vision systems in the auto industry. Automakers and their suppliers currently account for nearly one-third of machine vision revenues, a level that likely will decrease slightly as other markets emerge.

Despite the rapid growth and steady technical enhancements to equipment, Frost & Sullivan suggests more standards are needed to increase component options and boost capabilities. It notes current systems are built to proprietary specifications for established vendors, giving end users less flexibility to mix and match components. Areas that could benefit from commonization are optical character and pattern recognition algorithms, resolution and image mapping, according to the report. These functions require extremely high processor capabilities and extensive programming to operate efficiently.

The study notes there is no concentrated standardization effort currently, but it points to the industry's recent "camera link" initiative as an encouraging development. Based on National Semiconductor's Channel Link chip set used for flat panel displays, the camera link system standardizes interface specifications between the camera and other components. This enables users to switch between compatible cameras and replaces the bulky cabling and large connectors previously used.

The Automated Imaging Assn. in Ann Arbor, Mich., spearheaded the development of camera link in 2001 and quickly helped it to become a de facto standard. The 210-member trade association had been involved in other protocols during the 1980s but more recently has concentrated on promoting the use of vision systems. It now is debating whether to tackle other standard-setting tasks.

Another industry trend is the introduction of user-friendly graphical interfaces, which Frost & Sullivan attributes to a migration toward PC-based vision systems. It says the devices enhance real-time capabilities and reduce processing delays.