

# *autotech*

## *daily*<sup>TM</sup>

TUESDAY  
APRIL 1, 2003  
PAGE 1 OF 3

### **NEW GM V-6 ENGINE REVS UP WITH 2004 CADILLAC CTS...**

The first of General Motors Corp.'s new global V-6 engine family will debut in the 2004 Cadillac CTS sport sedan, which goes on sale in August. The 3.6-liter DOHC V-6 also will be used in the 2005 Cadillac SRX sport wagon and a new version of the Buick Rendezvous called the Ultra.

GM says the new powerplant develops 20% more power and 13% greater torque than its existing DOHC V-6. It also boasts a 24% increase in "integral torque," which the automaker defines as the amount of torque available at most points throughout the rpm range.

In the CTS, the engine generates 255 hp at 6200 rpm and 252 lb-ft of torque at 3200 rpm. As a result, the 2004 model races from 0-60 mph in 6.7 seconds—a full second faster than its 2003 counterpart, which is available only with a 3.2-liter V-6. No change in fuel economy is expected from the current CTS: 18 mpg city/26 mpg highway.

Initially, the 3.2-liter engine will continue to be offered with a five-speed manual transmission for the CTS. The 3.6-liter engine is mated with a five-speed automatic gearbox. In 2005, the smaller engine will be dropped, and a six-speed manual transmission will be added.

### **... FLEXIBLE ARCHITECTURE TO BE USED IN A VARIETY OF VEHICLES**

In addition to the initial 3.6-liter application, GM also plans to make 2.8- and 3.2-liter versions of its new global V-6 engine. The engine also has the flexibility to add a turbocharger and/or a direct injection fuel system.

Dubbed LY7, the powerplant can be configured for front-, rear- and all-wheel-drive vehicles thanks in part to the joint development of three oil pans. For awd applications, for example, GM designed an oil pan cast with a special pass-through to accommodate the front-wheel half shaft.

Controlled by a 32-bit microprocessor, the 24-valve powerplant features variable timing for both intake and exhaust valves, which GM says increases fuel economy while



Driveline and Chassis Technology

[www.zf.com](http://www.zf.com)

### **Safety and reliability**

At first, the interaction of newly developed ZF components is represented in a virtual development environment, in particular to check and design a vehicle's longitudinal and transverse dynamics. Intensive test programs with prototypes and pre-production products follow as a confirmation of this phase.

01/2003

**TUESDAY  
APRIL 1, 2003**

**PAGE 2 OF 3**

lowering tailpipe emissions. The automaker also notes the design enables a broad torque band with 90% of peak output available from 1,600 rpm to 5,800 rpm.

Noise reduction also is a major focus. To this end, GM says specially isolated cam covers are used to decouple them from vibration created by the combustion process, and the engine front cover incorporates internal damping plates to limit engine vibrations. The structural aluminum oil pan is designed to mitigate "drumming" from the structure and bolster bending stiffness.

The camshaft sprocket features molded-rubber "cushion rings" that absorb the noise of the camshaft drive engaging the sprocket teeth. And a new oil pump design prevents noise caused by oil aeration while the fuel rail includes an internal fuel pressure damper, which attenuates the pressure pulsation in the fuel system to reduce radiated noise. GM also says it has eliminated hissing from the PCV valve and minimized half-order noise content. The former is accomplished by using two dissimilar-sized flow-metering holes, and the latter by equal-length intake manifold runners.

Three pressure-actuated piston-cooling oil-jet assemblies also help reduce the noise that typically emanates from the cylinder bores and reciprocating components. Each assembly includes a pair of oil squirters that douse the underside of the piston and the surrounding cylinder wall with cooling oil, thereby boosting power and reducing wear.

### **TOYOTA TO SHOW NEW PRIUS, SOLARA AND LEXUS CROSSOVER CONCEPT IN NEW YORK**

Toyota Motor Corp. plans to take the wraps off its next-generation Prius hybrid car at the New York auto show, which begins in two weeks. Featuring an all-new gasoline-electric hybrid system, the 2004 Prius will be larger and more fuel efficient than the current model.

The New York show also will mark the world debut of the Lexus HPX (for high-performance crossover) concept vehicle and the 2004 Camry Solara. The former is an all-wheel-drive vehicle that has the performance of a sport sedan but with more room, versatility and luxury appointments. The all-new Solara coupe is billed as most American Toyota to date. It was developed by Toyota's technical center in Ann Arbor, Mich., styled by Caltly Design Studio in Newport Beach, Calif., and will be built exclusively in Georgetown, Ky.

### **DETROIT AUTOMAKERS PLAY MINOR ROLE IN IRAQ WAR**

Having divested nearly all their defense-related businesses over the last 20 years, U.S. Big Three automakers are playing a much smaller role in the Iraq war than they have in previous conflicts, observes *Automotive News*. In the past, the Big Three produced everything from tanks and halftracks to bombers and bullets. Today, domestic automakers provide large pickup trucks and SUVs to carry troops and supplies but little else, the newspaper says.

GM, which has sold tanks and trucks to the U.S. military since 1916—including more than 600,000 vehicles during World War II—was the last to retreat. It completed the \$1 billion sale of its London, Ontario-based defense unit to General Dynamics Corp. last month. GM Defense produces a variety of light-armored vehicles and recently won a \$4 billion contract to provide more than 2,000 of its Stryker trucks to the U.S. Army. The

**TUESDAY**  
**APRIL 1, 2003**

**PAGE 3 OF 3**

---

**AUTOTECH DAILY**

is a publication of  
Hampton AutoBeat LLC,  
Box 33068  
Bloomfield Hills, MI  
48303-3068

**SUBSCRIPTIONS:**

Paula Doan  
(888) 771-6430  
paula@autotechdaily.com

**ADVERTISING:**

Wendy Baca  
(248) 455-7336  
wjbaca@cbs.com

**NEWS:**

Steve Plumb  
(610) 917-2276  
steve@autotechdaily.com

eight-wheeled combat vehicle can carry a cannon or antitank missile system.

GM already has sold off the military chunks of Hughes Aircraft Co., which made advanced radar systems and range finders, missiles and infrared night vision equipment. After being roundly criticized for paying \$5.2 billion for Hughes, GM has profited by selling the company's defense electronics and satellite operations and currently is taking bids for the DirecTV business that could net it another \$4 billion.

Meanwhile, GM says military sales of one-ton Chevrolet Silverado, Tahoe and Suburban trucks have increased tenfold this year vs. 2002 levels. In some cases, it adds night vision and other specialized electronics, winches, off-road powertrains and OnStar communication systems to these vehicles. DaimlerChrysler AG and Ford Motor Co. are supplying similar trucks.

AN also notes that technologies previously developed by the three automakers continue to be used in Iraq. This includes the 70-ton M-1 Abrams tank that was designed in the 1970s by the former Chrysler Corp. General Dynamics bought that business in 1982 and continues to make the tanks. Navigation systems developed by Ford Aerospace Corp., which Ford sold to Loral Corp. for \$1.2 billion in 1990, also are being used in Iraq.

**POSCO TO DOUBLE STEEL CAPACITY**

South Korea's Pohang Iron and Steel Co. (POSCO) plans to invest \$8 billion in its operations over the next five years and nearly double its production capacity of automotive steel. The company, which claims to be the second-largest steel producer in the world, also announced that it will hike the prices for coils and steel plate materials it exports to other Asian markets. It says the move reflects a global increase in steel prices.

**BASF TO STUDY NANOMATERIALS AT LOUIS PASTEUR UNIVERSITY IN STRASBOURG**

BASF AG is opening a new research lab in the Institut de Science et d'Ingénierie Supramoléculaires (ISIS) at Louis Pasteur University in Strasbourg, France. Founded by Nobel Laureate Jean-Marie Lehn, the facility promotes interaction between academic and industrial research, especially in the area of supermolecules.

Lehn, who won the Nobel Prize for chemistry in 1987, defines supermolecules as multiple molecules held together in a spatially defined arrangement by intermolecular bonds—or more simply the link between conventional chemistry, biochemistry and physics. The crystals in liquid crystal displays are one example of materials with supermolecular properties.

The BASF team plans to focus on the development of nano-structured polymer materials and surfaces based on synthetic polymers. The project will be led by research chemist Volker Schadler, who joined BASF in 1998 and has since worked in the company's central polymer lab and its Performance Polymers/Paper Chemicals Div. He hopes to add four other scientists with international experience within the next few months.

BASF expects the close proximity of academic and industrial research groups in the institute to boost communication and shorten the time from basic and applied research to real-world applications. The Strasbourg team also will work closely with research units at BASF's headquarters in Ludwigshafen, Germany.