2009 Roundup: Bosch and Denso

Bosch Automotive Technology
2009 Sales: €21.7 billion, 56.8% of total Bosch Group sales
Change from 2008: down 18%
2009 EBIT (Loss): (€498 million) compared with €321 million in earnings in 2008
Outlook for 2010: Bosch forecasts sales growth of at least 10%, aided by increased vehicle production in North America and continued growth in automotive markets in China and India. Bosch expects it will take until 2012 for automotive production to return to 2007 levels, when its automotive sales peaked at €28.5 billion. The company expects to return to profitability in 2010.

Bosch calls 2009 "the most difficult year in recent economic history," with sales falling dramatically in the Automotive Technology sector, and worse in Industrial Technology. While all parts of the automotive business were affected, commercial vehicle business suffered even more than passenger-car related activities. Diesel business was also down; fewer new diesel cars were sold in Europe as a result of government incentives that favored small, entry level models. The percentage of newly registered vehicles in Western Europe equipped with diesel engines fell from 53% in 2007 and 2008 to 46% in 2009.

Automotive sales in North America were depressed by lower volumes generally and especially lower volumes of SUVs and light trucks. Sales in Asia accounted for 25% of Automotive Technology revenue.

A Utomotive Technology sales began to recover in mid-2009 and the company expects that trend to continue in 2010.

Despite its financial losses, Bosch Group maintained R&D spending close to the level of the prior year and increased R&D spending close to the level of the prior year and increased Group maintained R&D spending close to the level of the prior year and increased.

Smartphone Connectivity Roils Telematics and Infotainment Markets

Distracted Driving Concerns Mount

Smartphones are the rage. According to Canalys, in the first quarter of 2010 alone, consumers worldwide bought 55 million of them, a 67% jump over a year ago. Smartphone applications are also booming. In 2010 consumers worldwide are expected to download 6 billion smartphone applications, 2.5 times the 2009 figure.

Besides providing cellular voice service, smartphones are essentially very portable computing platforms that connect to the Internet for services and content. Smartphones can do much of what an infotainment system does, even one that is connected to a telematics service provider. Some smartphones now come with GPS, Bluetooth and WiFi connectivity and can run free navigation applications from Nokia or Google. Some even come with FM radio. Smartphones can monitor traffic conditions for free and play Internet radio, which is also free.

Smartphones are changing the way carmakers compete, the way telematics service providers operate, and the way infotainment system suppliers package— and price—features and functions.

"Smartphones are certainly a game changer. You can go to these app stores today and find some pretty interesting automotive-centric applications," said Brian Droessler, vice president of strategy and portfolio for Continental's Infotainment and Connectivity business unit.

Most applications come from the Apple App Store, but there are also stores for Android, BlackBerry and Nokia phones, among many others. Microsoft will also soon have an applications store. A according to Mr. Droessler, carmakers worldwide are racing to bring more apps to the car.

Ready for launch on the 2011 Fiesta, Ford will offer Sync AppLink, a downloadable software program that will let owners access and control Android and BlackBerry smartphone apps with voice commands and vehicle controls.

Pandora Internet radio, Stitcher "smart radio" and Orangatame's OpenBeak, used for posting updates to Twitter on BlackBerry devices, will be the first Sync-enabled apps.

Mini says it will be the world's first carmaker to introduce in-car Web radio as a manufacturer-installed feature when it launches Mini Connected in the new Countryman model, due this fall in Europe and March 2011 in the United States. Mini Connected integrates an iPhone and its apps with the vehicle's display and joystick controls by means of a USB connection.

North American Smartphone Market

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Data: Canalys Forecast, February 2010

Turn to Roundup, page 6

Turn to Telematics, page 3
“Change Is Coming,” Says OnStar’s New President

Chris Preuss came to OnStar on March 1, 2010, after spending his entire career in communications, most recently as General Motors’ head of communications. He is perfectly suited to his first task as the new president of OnStar: promoting OnStar in the face of stiff competition from the Ford Sync connectivity platform. “In the near term we are going to be really aggressive on the marketing, advertising and PR side, even more than we have been,” Mr. Preuss said.

According to Ford, Sync helps sell Ford vehicles. Indeed, 70% of potential customers say they are more likely to consider purchasing a Ford once they’ve received a Sync demonstration.

Mr. Preuss noted that OnStar also stimulates sales for GM. Of the roughly two million people who buy GM vehicles in a year, 5% to 6% say they came to GM solely because of OnStar.

In the next couple of months, as GM’s 2011 model year introductions are made, OnStar will make a succession of announcements, the biggest of which will be the ninth generation embedded hardware and some low-cost improvements in the back end operations. These improvements, according to Mr. Preuss, “will significantly increase the value of services to the customer without making them pay any more.”

OnStar is in the process of retooling the back end portal it uses for Virtual Advisor to make it a more user-friendly search engine. The voice-activated Virtual Advisor feature uses text to speech technology to read email, news, sports, stock and weather information. “One of the limitations in our system right now is most of the OnStar voice interactions are pretty tough,” admitted Mr. Preuss. “The upgraded back end will use technology from Nuance Communications to provide better language recognition.

As president of OnStar, Mr. Preuss is also responsible for GM’s worldwide infotainment and connectivity initiatives, a dual responsibility that not only acknowledges the convergence of the telematics and infotainment industries, but also the impact that infotainment and connectivity features have on automotive revenues. OnStar alone takes in nearly $1 billion in annual revenues.

OnStar Facts

Annual Revenues: Roughly $1 billion
Subscribers: 5.5 million, of whom 3.8 million are paying customers*
List Price: $199 or $299 per year
Founded: 1995
Impact: Between 5% and 6% of GM’s customers say they purchased a GM vehicle because of OnStar.
*General Motors provides a free year of OnStar service with the purchase of almost any new GM vehicle; roughly half of the free subscribers become paying subscribers.

Smartphone sales have taken off. According to the market data provider, Canalys, 47.2 million smartphones were sold in North America in 2009; 65.1 million of them will be sold in 2010. And since smartphones can do many of the things a car’s infotainment system can do, many consumers who rely on their smartphones will not be in the market for expensive infotainment or telematics options when they purchase their new vehicles, unless those features add significant value to the use of the smartphone in the vehicle.

Carmakers are finding ways to safely accommodate and profit from the popularity of smartphones. When GM’s Volt plug-in extended range electric vehicle goes on sale this coming October, OnStar will offer an application that allows Volt owners to communicate with their vehicles using Droid by Motorola, Apple iPhone or BlackBerry Storm. Users can monitor the Volt’s battery charge level, the vehicle’s electric-only and total range, whether it’s plugged in or not, set the best time to charge the vehicle, and lock or unlock the doors.

Many more smartphone applications from OnStar are in the works. “Smartphone apps are a huge opportunity; the Volt application is but the tip of the iceberg,” asserted Mr. Preuss, who explained that OnStar is well positioned to offer many more applications. “Not only do I have the ability to develop apps as fast and as diverse as anybody’s, but I can develop apps that are secure, because OnStar controls the connection between the back end and the vehicle’s embedded modem. The fact that I can write APIs at the back end and connect to the car through a highly encrypted, secure link is a huge advantage. I don’t have to hand the vehicle’s access code over to app developers and open the vehicle’s bus to an unmitigated cloud.”

With carmakers worldwide finding all manner of ways to accommodate consumers’ desire to stay connected to their devices, to information and to the Internet while in their vehicles, Mr. Preuss worries about what all of this means in terms of driver distraction and safety. “At some point the U.S. Department of Transportation is going to take a look at some of these connectivity features and say, we’ve seen enough. The issue of distracted driving and information management in the car is going to be a game changer in how the industry looks at this.

“Will we offer best-in-class connectivity? You bet. Are we going to bring more information and entertainment resources to the driver? You bet. But we will do so in ways that keep things very simple, and we’ll manage the information workload and level of engagement needed by the driver. That’s how OnStar intends to differentiate its offerings.”

THE HANSEN REPORT ON AUTOMOTIVE ELECTRONICS

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OnStar and Hughes. However, OnStar's national telematics companies such as the automated services supplied by traditional Internet-based computing can provide—at much lower costs—many of what is available from the Internet. Internet competitors? Mr. Warren left Hughes about a year ago. One potential role for telematics service providers is to be an application store for the auto industry. Raw smartphone applications and services need to be shaped for automotive consumption. They need to be well integrated with each vehicle model's HMI, and they need to be safe to use. Data aggregation is another potentially valuable role for telematics service providers to play, a role that will become even more valuable starting in three years or so, as LTE (Long Term Evolution) ultra-high bandwidth cellular networks become common around the world. "Since it's a pure data network, LTE will be like having broadband in the car. Connectivity becomes much faster and latency drops to virtually nothing," said Dan Dodge, CEO of QNX. "Telematics is not going away; it can become richer by aggregating more data. The car is not just a sponge pulling in information from the Internet. Cars with traction control and GPS are sensors that can provide data back to an aggregator who can inform oncoming cars of slippery road conditions ahead, for example."

Forming business models based on LTE connectivity will be difficult until people know for sure how much an LTE data plan will cost. Today a basic iPhone data plan costs $30 a month in the U.S. Regardless of what communications pipeline will next be used, telematics right now is a must in the U.S., says Egil Juliussen, principal analyst and fellow at the market research firm iSuppli. "Within the next two years, every major OEM selling in the U.S. will have some kind of telematics system, whether it uses an embedded telematics platform like OnStar's or Mercedes' Mbrace, or a portable platform such as Ford Sync, you must have it. And further, every carmaker will have a kind of apps store where its customers can access content and applications."

**Distraction Concerns Must be Faced**

Outrage over driver distraction resulting from the use of electronics in cars is growing in the United States. The Insurance Institute for Highway Safety found that drivers using cell phones—hand held or hands free—are four times as likely to get into crashes serious enough to cause injury. Sending text messages while driving increases the risk of crashing by 23 times, according to research by the Virginia Tech Transportation Institute. According to the U.S. government, driver distraction plays a role in 80% of all accidents, and contributed to the deaths of almost 6,000 people in 2008. A smartphone displays proliferate, and as they get connected to even larger displays in the vehicle, the distraction problem is bound to be amplified.

Powerful people in the U.S. government are keenly aware of the problem and aim to fix it. In remarks delivered on April 9, 2010, at the World Traffic Safety Symposium in New York, David Strickland, the new administrator at the National Highway Traffic Safety Administration warned, "We will not take a back seat while new telematics and infotainment systems are introduced. These have too great a potential to create more and more distraction for the driver. We will be taking a hard look at guidelines or requirements for these systems. NHTSA will challenge the auto industry and the cell phone industry to work collaboratively with us to keep drivers focused on their required task: driving."

With the government watching so closely, carmakers operating in the United States need to be especially mindful in deploying new telematics and infotainment systems.
Background

Texas Instruments spun off its sensors and controls business to Bain Capital Partners in April 2006 for $3 billion. Texas Instruments had held the business, which it acquired as M eatals and Controls Corporation, since 1959. When Bain acquired the company it was renamed Sensata Technologies Holdings, today a Netherlands public limited liability company. An initial public offering was completed on March 16, 2010, and Sensata is now traded on the New York Stock Exchange under the symbol ST. Bain Capital still owns more than 79% of Sensata shares. Sensata has never shown an annual profit.

The company manufactures approximately 800 million sensor and control devices per year. Eighty-five percent of production is done in low-cost countries including China, Mexico, Malaysia and the Dominican Republic. Pressure sensors accounted for 77% of Sensata's sensor sales in 2009. Sensata sensors cover a full range of pressures from 15 psi, for differential pressure sensors used to monitor diesel particulate filters, up to as high as 30,000 psi, used to monitor common rail fuel pressure in diesel and gasoline engines.

Automotive customers accounted for 52% of total sales in 2009. Sensata's main competition for automotive sensors comes from much larger companies including Robert Bosch GmbH, Denso Corporation and Continental, as well as Nagano Keiki Co., Ltd. and Schneider Electric (Kavlico).

Honda is the only major Asian carmaker listed among Sensata's ten largest sensor customers. Two of the world's most important customers, Toyota and Hyundai, are missing from that list.

Major Applications of Sensata's Sensors

Fuel Pressure Sensing for Gasoline Direct Injection Engines

One of Sensata's fastest growing applications is in gasoline direct injection (GDI) engines, which require one high-pressure sensor each to measure common rail fuel pressure. In GDI engines a precise quantity of fuel is pumped directly into each combustion chamber at high pressure.

Distinctions Claimed by the Company
◆ Worldwide market leader in HVAC pressure sensors
◆ Worldwide market leader in transmission oil pressure sensors
◆ Worldwide market leader in common rail pressure sensors
◆ Produced more than 500 million pressure sensors in all markets for all applications

GDI engines are cleaner and more fuel efficient than the port-injected engines they replace. According to Bosch, the penetration of gasoline direct injection engines in North America will grow from 6% in 2009 to 33% in 2016.

Sensata also makes pressure sensors for diesel common rail systems, but that market is not seeing much growth.

◆ Diesel Particulate Filters
Sensata makes differential pressure sensors that monitor the differential pressure across a diesel engine's particulate filter. When the sensor indicates the filter is full, its output initiates filter regeneration where the accumulated particulates are burned off. A growing application, Sensata claims to have a number of customers around the world for these sensors.

◆ Brake Pressure for Electronic Stability Control Systems
Sensata sensors monitor brake pressure. The sensor output is used to indicate the driver's intention to stop or slow the vehicle, and it informs the stability control system, which keeps the vehicle from skidding sideways.

Electronic stability control is mandated in the United States and must be installed on 60% of all 2010 model year light vehicles; 90% of 2011 model year and 100% of 2012 vehicles. The demand for brake pressure sensors used in this application is expected to continue growing for a couple more years, though the penetration of ESC in North American passenger vehicles was already at 69% in 2009.

Continental, one of Sensata's ten largest sensor customers, is a leading supplier of electronic stability control systems. Continental also produces pressure sensors, which could potentially be used in place of Sensata's.

◆ Air Conditioner Pressure
Sensata pressure sensors track refrigerant pressure so the engine can anticipate the start of each compression cycle in order to smoothly increase engine idle. Without the sensor, the engine would have to maintain a faster idle to keep from stalling when the compressor comes on.

◆ Engine Oil Pressure
A ccording to Sensata, demand for its engine oil pressure sensors has grown recently because the part is critical to engines with cylinder deactivation capability. In light load situations such as highway cruising, variable displacement engines shut down some of the cylinders to save fuel and reduce emissions. Cylinder deactivation is appropriate for large capacity engines and ultimately will be used in no more than 15% of engines, says the company.

◆ Transmission Oil Pressure
A longstanding application of Sensata's capacitive-ceramic technology, transmission pressure sensor outputs are typically used for clutch control, line pressure control and belt pressure control.

◆ Position Sensors
Sensata makes two types of position sensors, an optical steering-wheel angle sensor and a contact sensor used inside transmissions to indicate gear position. Like a switch, contact sensors rely on metal to metal contacts to indicate position.

Value Added
There are three components to the value that Sensata adds to the products it sells: the sensor element itself, usually purchased from outside suppliers; the electronics that amplify the signal coming from the sensor element; and the packaging that enables the part to survive in a harsh environment.

The micro-fused strain gauge (MSG) sensor elements used in Sensata's brake and other pressure sensors and in its occupant weight sensors are purchased from Measurement Specialties, or they are built in house under license from Measurement Specialties. That license must be renewed each year. Sensors built from MSG elements accounted for $201 million in sales in 2009, or 29% of sensor sales.

Private Equity's Impact
A private equity firm, Bain Capital Partners purchased Sensata from Texas Instruments with funds borrowed in Sensata's name, leaving the company, which had almost no debt before the acquisition, substantially in debt. Further acquisitions—First Technology in 2006 and A irpax and SM al Camera in 2007—added to that indebtedness, which required hefty interest payments of $191 million in 2007, $198 million in 2008 and $151 million in 2009.

As a result of its indebtedness and continuing losses, the company's investments in R&D have suffered. In 1997 the Sensors and Controls division of TI spent 6% of sales on R&D, but in 2009, only 1.5% of Sensata's sales was invested R&D. The basic technology from which Sensata derives most of its sensor revenues remains largely unchanged. Its electromechanical pressure switches are applications of snap-action discs, technology that was invented continued on page 6
Sensata Technologies

in the 1930s. The company has been making micro-fused strain gauge sensors since 1999. It started making differential pressure sensors from purchased MEMS (micro electromechanical systems) elements in 2005.

Since Bain acquired the Sensors and Controls division from TI, and later Airpax and First Technology, hundreds of U.S. jobs have been terminated or exported. Today, just 10% of Sensata’s employees work in the United States.

A third of Sensata’s top six employees were richly rewarded. For example, CEO Thomas Wroe received $6.2 million for the three-year period ending in 2009; CFO Jeffrey Cote received $7.9 million; and COO Martha Sullivan received $5.5 million.

Sensata’s initial public offering netted proceeds of $435.9 million; $350 million will be used to pay down debt, after which the company will still owe $1.75 billion. The company does not plan to declare dividends.

Standard & Poor’s has given Sensata a B+ credit rating, meaning it is vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet its financial commitments.

Through 2009, Bain Capital has extracted $14.7 million from Sensata for management fees. As of December 31, 2009, Sensata hadn’t funded $46.5 million owed to various post-retirement benefit plans for employees.

SMaL Camera

In March 2007, before the auto industry meltdown began, Sensata purchased SMaL Camera, maker of CMOS video imagers and cameras, from Cypress Semiconductor for approximately $11.4 million. Sensata must have thought it was getting a terrific deal, since just two years earlier Cypress had paid $42.5 million to acquire SMaL Camera.

In April 2009 Sensata sold SMaL to Mlexis, a semiconductor manufacturer based in Ieper, Belgium, for what will amount to roughly $2 million in royalties. Sensata, which purchases numerous SiC’s from Mlexis, wanted to find an acquirer who could maintain shipments to existing customers including Bosch and Delphi.

According to Sensata it sold SMaL Camera because of the poor economic climate and because demand for cameras was slower than expected. Digital cameras are probably the fastest growing automotive sensor application today. Cameras will increasingly be applied to numerous driver assistance systems for automatic high-beam control, lane keeping, night vision, pedestrian detection, sign reading, blind-spot detection, backup monitors and drowsy-driver monitors.

Undeterred, the company plans to continue making acquisitions, which it expects will add $100 million in revenues per year over the next five years. It is most interested in companies that make familiar products and serve familiar customers through familiar sales channels.

Biggest Ford Recall Ever

A pressure switch made by Sensata when it was part of Texas Instruments was the subject of Ford’s largest vehicle recall ever. Ford used the switch until model year 2002 to deactivate the cruise control system when the brake pedal was depressed. Including the latest round in October 2009, Ford recalled 14.3 million vehicles over the past ten years to repair the faulty switch, which can leak brake fluid that can overheat, smoke and burn. The faulty switch risks causing a fire even when the ignition is turned off and the vehicle is parked and unattended, according to the National Highway Traffic Safety Administration. The October 2009 recall was Ford’s eighth, involving a total of 16 million pressure switches made by Sensata.

As of December 31, 2009, Sensata was a defendant in 26 lawsuits in which plaintiffs allege property damage and personal injury as a result of the recalled switch. ◆

Roundup...

Continued from page 1

by 1,000 the number of people working in research, largely in Asia. A utomotive R & D was 13.2% of A utomotive Technology sales compared with 12.3% in 2008.

During the year, Bosch sold its North American foundation brake business to A kebono and finalized the spinoff of the global aftermarket and component business of its Car M ultimedia division, including the long-held Blaupunkt brand.

In March 2010, Bosch opened a 200-mm wafer fab in Reutlingen, Germany. Scheduled to be running at full capacity by 2016, the facility will be able to turn out a million chips per day. One-third of production will be power electronics chips.

According to the company, electrical and electronics parts will account for 75% of an O EM’s costs for future electric vehicles, compared with 40% of conventional vehicles’ costs today. Bosch expects the market for hybrids and EV’s will remain modest through the next decade, reaching nine million vehicles, or 8.7% of vehicle production, by 2020. Bosch’s joint venture with Samsung will start production of lithium-ion car batteries for hybrids in 2011, and for EV’s in 2012. The JV has booked business with BMW for its electric vehicle due in 2013.

Part of Bosch’s long-term strategy is what it calls focused diversification. The impact of severe automotive production cuts in 2009 underscored for Bosch the value of spreading risks more evenly throughout its businesses. The company aims to achieve “a rough balance between our automotive business on the one hand and our remaining operations on the other.” That suggests that Bosch will favor non-automotive investments at the expense of some automotive investments. A utomotive Technology sales accounted for 57% of the company’s total in 2009.

Denso


FY 2010 Consolidated N et Sales: $2,976.7 billion ($31.7 billion)

continued on page 8
Aisin Seiki

**The Company Profile**

**Aisin Seiki**

**Headquarters:** 2-1 Asahi-machi, Kariya, 448-8650, Japan; Telephone: 81-566-24-8441; www.aisin.com

**FY 2010 Sales:** ¥2,054.4 billion ($21.8 billion)

**FY 2010 Net Margin:** 0.8%

**FY 2010 R&D:** 4.9% of sales

**Major Products:** Automotive parts and systems, primarily transmissions

**Top Selling Electrical/Electronics Products:** Car navigation, transmission ECUs, ABS

**Top Customer:** Toyota accounts for 68% of consolidated sales

**Key Competitors:** Bosch, Denso, Continental, Magna, Delphi, JCI,ZF, Getrag

**Consolidated Employees:** 73,200 as of March 31, 2009

**Sales per Employee:** $298,000

**Ownership:** Toyota owns 23.3% of the company's stock.

**FY 2009 Sales by Product Group**

- Information-Related, 5.9%
- Engine, 10%
- Body, 18%
- Drivetrain, 41%
- Brake & Chassis, 20.5%

**FY 2010 Sales by Region**

- Europe, 6.5%
- Asia and Other, 9.5%
- North America, 10.7%
- Japan, 73.3%

**Net Income (Loss) by Fiscal Year**

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**FY 2005 to FY 2010 CAGR:** 2.35%

**Return on Equity by Fiscal Year**

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<td>12.0</td>
</tr>
<tr>
<td>FY 2009</td>
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</table>

**Major Products**

- **Engine Related Products:** Disc brakes, Drum brakes, Antilock brake systems, Electronic stability controls, Air suspension systems
- **Body Related Products:** Door latches, Power sliding door systems, Power back door systems, Sunroofs, Power seats, Occupant weight sensors, Door frames, Door handles
- **Drivetrain Related Products:** Driver monitoring systems, Car navigation systems, Transmission ECUs, Power sliding door mechanisms, Power back door mechanisms, Sunroofs, Power seats, Occupant weight sensors, Door frames, Door handles
- **Engine Related Products:** Water pumps, Oil pumps, Pistons, Intake manifolds, Variable valve timing
- **Information Related Products:** Car navigation systems, Parking assist systems, Lane departure warning systems, Intelligent parking assist, Front and side monitors, Driver monitoring systems

Toyota recently had to recall 223,000 third-generation Priuses to reprogram the ABS module because drivers were experiencing braking problems at low speeds as the vehicle switched from regenerative braking to hydraulic braking when the ABS was activated. Aisin Seiki, which produces antilock braking systems for Toyota but won't confirm if its Aisin Aisin Seiki supplies an electric water pump in the Prius' engine cooling system and an electric vacuum pump.

Electronic stability control problems in the Lexus GX 460, discovered in tests conducted by the magazine Consumer Reports led to a recall of the SUV for a software fix. Toyota recently recalled a second SUV, the 2003 Sequoia, for software problems in the stability control system.

Despite the recall woes, Toyota vehicle sales in the U.S. remain strong: March 2011 sales were 35% higher than they were in March 2009, boosted by generous incentives from Toyota, and the Prius remains the top selling car in Japan. According to Aisin Seiki, Toyota production in FY 2011 will remain roughly at the FY 2010 level, and Aisin Seiki is forecasting a modest 2.2% sales growth for the 2011 fiscal year.

**Background**

Established in 1943 to produce aircraft engines, Aisin Seiki first started producing transmissions for cars through a 1969 joint venture with Borg Warner. That part of the business, now called Aisin AW, is continued on page 8.
the world’s largest maker of automatic transmissions, turning out 4.4 million AT units in FY 2010. Aisin AW also makes manual transmissions; manual transmission production declined by more than 20% in each of the last two fiscal years. Transmission-related products account for 41% of Aisin Seiki’s total sales.

While transmissions are Aisin Seiki’s largest core business, its product portfolio is among the broadest in the industry encompassing brake and chassis, body components such as power doors and sunroofs, occupant detection sensors and rear seat backs that return to upright position when a possible crash is detected by radar sensors. The information-related products sector applies Aisin Seiki’s image sensing technology to navigation, park assist, lane keeping, front and side monitoring and driver monitoring systems. Aisin’s drowsy driver monitor, first launched in the Toyota Crown Majesta, uses a camera to track the driver’s eye and head movements.

**Telematics...**

Infotainment features so that they don’t add to the distraction problem. The Alliance of Automobile Manufacturers, a U.S. industry group representing 11 carmakers, developed voluntary interface guidelines for its members to minimize the potential for distraction in any new telematics systems they implement. NHTSA is currently evaluating the extent to which those guidelines are being followed in the industry as part of its current Distraction Plan. (For more on NHTSA’s plans and current projects, see www.distraction.gov.)

According to Ford, the Alliance guidelines were instrumental in the development of Sync as was its own extensive research and testing. A result some cell phone functions are locked out of Sync and can only be used when the vehicle is parked.

Under increasing scrutiny, carmakers are encouraged to support ongoing research and testing to refine telematics and infotainment system interfaces to minimize the time a driver’s eyes and attention are off the road.

### Sales by region

<table>
<thead>
<tr>
<th>Region</th>
<th>% of Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>51.0%</td>
</tr>
<tr>
<td>Asia</td>
<td>36.0%</td>
</tr>
<tr>
<td>Europe</td>
<td>13.0%</td>
</tr>
</tbody>
</table>

**A isin Seiki**

**Top Selling E/E Products**

According to Aisin Seiki spokesperson Masayuki Toyama, the company’s top selling products that include electrical or electronics components are car navigation systems, transmission ECUs and ABS. He noted that sales of occupant weight sensing systems have recently increased. Aisin uses four sensors in the seat to accurately detect the weight on seat, regardless of load position, so that the airbags will deploy with the force appropriate to the passenger.

**Roundup...**

**Change from FY 2009**: down 5.3%

**FY 2010 Net Income**: ¥73.4 billion ($781 million), or 2.5% of sales. In FY 2009, Denso lost ¥84.1 billion ($894.8 million).

**Outlook for FY 2011**: Net sales are forecast at ¥3,060 billion ($32.6 billion), an increase of 2.8%. Denso expects continued cost cutting will help increase profits 33.5%, to ¥98 billion ($1 billion).

Sales by region remained nearly identical to the way they broke out in FY 2009:

- Asia: 35.0%
- Europe: 12.0%
- North America: 43.0%
- Others: 1.0%

*Sales to customers in Japan accounted for 51% of total sales; the Americas accounted for 17.9%; Europe, 13.4%; Asia and Oceania, 17.4%. Toyota owns 24.5% of Denso and accounts for nearly half of Denso’s sales.

Denso’s U.S. operation was one of seven companies raided in early 2010 as part of an international investigation into possible anticompetitive practices.

In the coming year, Denso says its focus will be on products for electrification, reduced fuel consumption and lower CO2 emissions. Denso is a major supplier of parts on the Toyota Prius. The 2010 Prius uses Denso’s newest air conditioning unit, which Denso claims is the world’s first to employ a small refrigerant injector to reduce power consumption. The new system reduces the compressor’s power consumption by up to 25%. Denso stands to benefit from Mazda’s recent announcement that it will use Toyota’s hybrid system on Mazda hybrids due in Japan in 2013.