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# Sensors

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Industry Study with Forecasts for **2016 & 2021**

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Study #2957 | October 2012 | \$5100 | 335 pages

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*Demand will be fueled in part by government mandates requiring that all new light vehicles be equipped with electronic stability control and tire pressure monitoring systems.*

## US sales to climb 6.1% annually through 2016

US sales of sensors are forecast to climb at a 6.1 percent annual rate through 2016 to \$14.9 billion, showing significant improvement over market performance from 2006 to 2011. Demand will primarily be fueled by a rebound in motor vehicle production and government mandates requiring that all new light vehicles be equipped with electronic stability control and tire pressure monitoring systems. Growth in machinery and process manufacturers' output will also support market gains. Further development of, and new applications for, technologies such as microelectromechanical systems (MEMS), optoelectronics, and photoelectronics will also help bolster sensor sales. However, the maturity of many sensor markets and improved fabrication techniques that have led to increased sensing abilities at lower costs will temper value gains. In addition, the manufacture of many sensor-laden products, such as consumer electronic devices, has moved overseas, which will further limit market advances.

## Process variable sensors to remain largest category

Process variable sensors will remain the largest product category in 2016, approaching \$4 billion, while chemical property sensors and proximity and positioning sensors will post the fastest growth, averaging 9.7 percent and 7.9 percent per year, respectively. Chemical sensor sales will be boosted by techno-

## US Sensor Demand, 2016 (\$14.9 billion)

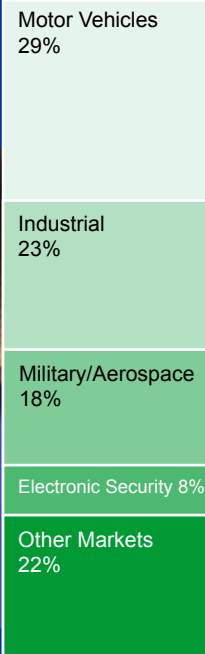
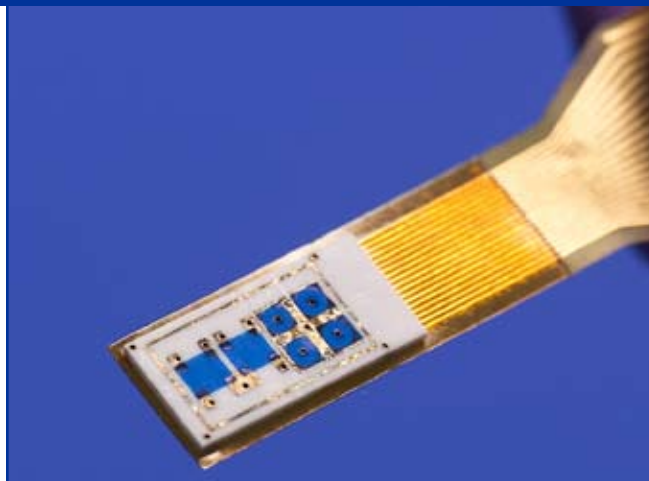


photo: NASA

logical advances that have resulted in smaller, more precise sensors at lower costs, allowing them to be used for additional applications in existing markets, as well as in a number of new markets. The rebound in motor vehicle production, and an expected increase in aftermarket demand for engine oxygen sensors, will provide growth opportunities for chemical sensors used in vehicle emission systems. Proximity and positioning sensor demand will be spurred by output increases for motor vehicles, where these devices are important components in active safety systems like electronic stability control. The renewed strength in output of machinery, another important market for proximity and positioning sensors, will also support sales gains.

## Motor vehicles to reclaim top sensor market position

By 2011, industrial applications had overtaken motor vehicles to become the largest major sensor market. However, motor vehicles will once again become the leading sensor market, expanding at a 13 percent annual rate to \$4.4 billion in 2016 and accounting for over half of all dollar gains between 2011 and 2016. This growth will be due to a continuing rebound in motor vehicle production and new, sensor-heavy systems including cylinder deactivation, direct fuel injection, electronic stability control, roll-over protection, tire pressure monitoring, and variable-valve timing systems.

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## Sample Text, Table & Chart

### PRODUCTS

#### Proximity & Positioning Sensors

Sales of proximity and positioning sensors are expected to grow faster than sensor demand, with shipments increasing at a 12 percent annual rate to \$1.1 billion in 2016, up from \$950 million in 2011. Performance. Production of sensors is expected to rebound in 2012, driven by vehicle production, industrial machinery, and consumer electronics. Crankshaft positioning sensors, such as camshaft position sensors, are used in newer products such as engine control, and avoidance systems. In addition, sensors in machine tools also help bolster market growth. Ongoing technological advances and the associated reduction in production costs, resulting in smaller, more precise and more cost efficient sensors, will also provide additional opportunities. However, this decrease in cost and product price will restrain value gains through 2016 to a certain extent.

In their most basic form, proximity and positioning sensors are solid-state devices used to identify the presence of an object. Examples of conventional designs include capacitive, inductive, photoelectric, and potentiometric devices. More advanced proximity and positioning sensors -- such as fiber optic, infrared, laser, radar, and ultrasonic devices -- are able to determine both the presence and the exact location of an object, without coming into physical contact with it. This set of characteristics allows these devices to be used for determining alignment or rotation, measuring the distance from a baseline, and tracking motion. For example, advanced proximity and positioning sensors are commonly used for detecting product defects in industrial automation systems.

Advanced proximity and positioning sensors are forecasted to experience significantly faster market growth than conventional products, albeit from a smaller base, averaging almost 12 percent per year through 2016. The technological advantages that these advanced devices offer, coupled with their decreasing cost and heavy

91

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SAMPLE  
TEXT

TABLE IV-1

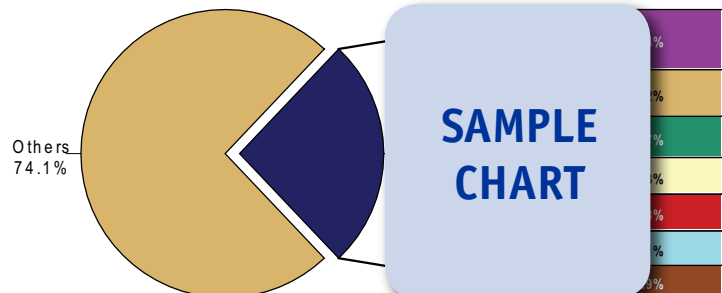
SENSOR SUPPLY & DEMAND  
(million dollars)

Item	2001	2006	2011	2016	2021
Manufacturers' Shipments (bil \$)	35	55	95	110	135
\$ sensors/000\$ manufacturing	38	58	98	113	138
Sensor Demand					
Process Variable					
Physical Property					
Proximity & Positioning					
Chemical Property					
Electrical Property					
Imaging					
Other					
- net imports					
Sensor Shipments					
price deflator (2005=100)	100	100	100	100	100
Sensor Shipments (mil 2005\$)	81	100	100	100	100

SAMPLE  
TABLE

CHART VI-1

US SENSOR MARKET SHARE  
(\$11.1 billion, 2011)



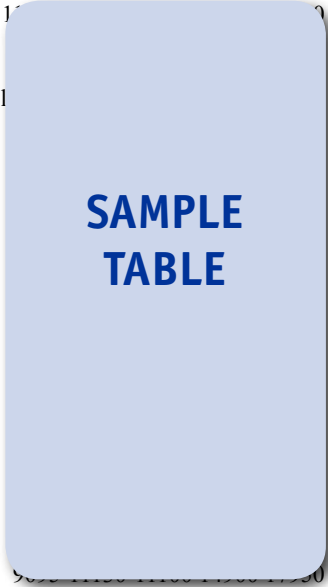
SAMPLE  
CHART

## Sample Profile, Table & Forecast

**TABLE V-9**

**MOTOR VEHICLE SENSOR MARKET BY TYPE & SYSTEM**  
(million dollars)

Item	2001	2006	2011	2016	2021
Motor Vehicle Production (000 units) 1					
\$ sensors/vehicle					
Motor Vehicles & Parts Shipments (bil					
\$ sensors/000\$ vehicles & parts					
Motor Vehicle Sensor Market					
By Type:					
Physical Property					
Process Variable					
Proximity & Positioning					
Chemical Property					
Other					
By System:					
Engine & Drivetrain					
Safety & Security					
Emissions Control					
Other					
% motor vehicle					
Total Sensor Market					



**COMPANY PROFILES**

---

**Analog Devices Incorporated**  
 1 Technology Way  
 Norwood, MA 02062  
 781-329-4700  
 http://www.analog.com

Revenues: \$  
 US Sales: \$  
 Employment:

Key Products:  
 temperature

**SAMPLE PROFILE**

Analog Devices (ADI) operates in a single segment for the design, manufacture and sale of high-performance analog, mixed-signal and digital signal processing integrated circuits (ICs) used in signal processing applications. Primary markets served by the Company are the industrial, communications, consumer, and communications sectors.

ADI is involved in the US sensors industry via the manufacture of microelectromechanical systems (MEMS), analog and digital temperature, and Hall-effect magnetic field sensors, among other IC components. These units are used in a wide range of industrial, defense and aerospace, instrumentation, automotive, communications, and other applications. In FY 2011, the industrial market comprised \$1.4 billion of ADI's total sales, while the automotive sector accounted for \$415 million and the communications industry made up \$593 million.

ADI's MEMS sensors are micromachined units that feature small mechanical sensor components, electronic chips, and supporting analog security. These products are sold under the IMEMS brand name and include accelerometers that sense speed; gyroscopes, which direct

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"Motor vehicle safety and security sensor demand is projected to rise 16 percent per year to \$1.5 billion, recovering from the declines experienced from 2006 to 2011 and hitting a new sales record. Safety and security sensors will be the fastest growing motor vehicle market, and category sales are expected to surpass engine and drivetrain sensor demand to become the largest motor vehicle product market segment by 2016. Sales growth will be spurred by ..."  
 --Section V, pg. 137

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**OTHER STUDIES**

**World Lighting: Lamps & LEDs**

World demand for lighting is projected to climb more than 12 percent annually through 2016 to \$78.3 billion. Market gains in developing countries will outpace sales in the US, Western Europe, and Japan. LED (or solid state) lighting devices will record by far the fastest global market gains. This study analyzes the \$43.9 billion global industry for lamps and LEDs used in lighting applications, with forecasts for 2016 and 2021 by product, market, world region and for 18 countries. The study also evaluates company market share and profiles industry participants.

#2979..... January 2013.....\$6200

**World Robots**

Global robot demand will rise 10.5 percent annually through 2016 to \$20.2 billion. Five countries -- the US, Japan, Germany, China, and South Korea -- will continue to dominate demand, with the US remaining the largest national market. Smaller, less expensive service robots will outpace more sophisticated, high-value industrial and medical robots. This study analyzes the \$12.3 billion world robot industry, with forecasts for 2016 and 2021 by type, market, world region and for 14 countries. The study also evaluates company market share and profiles industry players.

#2950.....December 2012..... \$6100

**Automotive Aftermarket in North America**

The North American light vehicle aftermarket is projected to rise 3.2 percent annually to \$85.5 billion in 2016. The US will record the slowest gains but will represent four-fifths of the region's total sales growth. Electronics will be the fastest growing product segment. The dominant professional market will outpace the DIY segment. This study analyzes the \$73 billion automotive aftermarket in North America, with forecasts for 2016 and 2021 by country, product and service performer. The study also evaluates company market shares and profiles industry participants.

#2927..... August 2012..... \$5100

**Advanced Ceramics**

Demand for advanced ceramics in the US is forecast to increase 6.0 percent annually through 2015. Transportation and electrical equipment will be the fastest growing markets, while electronic components remain the largest market. Monolithic ceramics will remain the dominant product while ceramic matrix composites grow the fastest. This study analyzes the \$10.5 billion US advanced ceramics industry, with forecasts for 2015 and 2020 by type, product, process and market. The study also evaluates company market share and profiles industry players.

#2794..... September 2011..... \$4900

**World OEM Automotive Electronics**

Global OEM automotive electronics demand will rise 12.4 percent yearly through 2014. Gains will be driven by economic recovery, regulatory pressures and automobile differentiation efforts. Safety and security, powertrain and emissions, and communication and navigation electronics will lead gains. This study analyzes the \$9.9 billion world OEM automotive electronics industry. It presents historical demand data and forecasts for 2014 and 2019 by product, world region and for 23 countries. It also evaluates company market share and profiles industry players.

#2728..... February 2011..... \$6100

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