



## KVH Unveils Plans for a Low-cost Inertial Sensor for Self-driving Cars

April 6, 2016

**The company also releases a Developer's Kit to assist design engineers with integrating fiber optic gyro (FOG) technology into driverless car control systems**

MIDDLETOWN, R.I., April 06, 2016 (GLOBE NEWSWIRE) -- KVH Industries, Inc., (Nasdaq:KVHI), announced today that, based on its successes in autonomous vehicle prototype programs and a wide range of unmanned applications, it is developing a fiber optic gyro (FOG)-based, low-cost inertial sensor for self-driving cars. KVH also announced that it has introduced a Developer's Kit to support integration and testing of FOG-based inertial measurement units (IMUs) into driverless cars.

A photo accompanying this announcement is available at <http://www.globenewswire.com/NewsRoom/AttachmentNg/b7728f11-268c-42fb-a6a2-225d7476a438>

"Extremely precise heading based on fiber optic gyro technology is absolutely essential for autonomous vehicle performance. This is something we learned from having been involved with more than a dozen driverless car development programs over the years," says Martin Kits van Heyningen, KVH's chief executive officer. "What we are seeing now is that each driverless vehicle concept in development around the world is being designed in a unique way. With so many different possibilities, developers can accelerate their progress by working with a proven technology such as KVH's FOGs and FOG-based IMUs and leveraging our experience to ensure their success."

The new Developer's Kit includes the user interface software and all components needed to immediately connect a KVH FOG or FOG-based IMU to a computer in order to configure, analyze, and test the unit. "The kit is designed to help engineers get up and running in minutes, making it easier to run diagnostics and accelerate their system development," says Roger Ward, KVH's director of FOG product development.

Driverless cars represent one of the fastest areas of autonomous-systems development. Transportation experts, automotive manufacturers, and engineers alike predict that driverless cars will be commonplace soon. In announcing early this year that an updated policy concerning automated vehicles will soon be published, the National Highway Traffic Safety Administration, which is part of the U.S. Department of Transportation, noted: "The rapid development of emerging automation technologies means that partially and fully automated vehicles are nearing the point at which widespread deployment is feasible."

FOGs and FOG-based IMUs are key parts of the sensor mechanisms that are essential for highly accurate autonomous car performance. For example, FOGs provide precise azimuth measurements that an autonomous car's logic processing unit and control systems need in order to determine motion through a curve. An IMU – which includes FOGs and accelerometers in one compact, lightweight package – does even more, providing highly accurate 6-degrees-of-freedom angular rate and acceleration data to precisely track the position and orientation of the car even when GPS is unavailable, thereby aiding the car in staying on course.

"We have successfully produced more than 90,000 fiber optic gyros for an extensive range of unmanned applications, in part because of our ability to tailor size, performance, and cost to meet different design needs," says Jeff Brunner, KVH's vice president for FOG operations. "Controlling the entire FOG design and manufacturing process gives us that advantage, and makes it possible to produce a low-cost sensor when driverless cars enter full-scale production."

KVH's FOGs and FOG-based IMUs are in use in prototype programs not only for autonomous cars, but also for production programs for underwater unmanned vehicle navigation and rail/track geometry measurement systems, to name just a few. In addition, KVH's inertial products have been widely adopted for commercial applications such as land-based street mapping



KVH's extremely small, high-precision fiber optic gyro (FOG) is key to a driverless car's performance. In this photo, the red illumination represents light moving through the FOG's optical circuit of coiled fiber; this circuit is the FOG's sensing unit—it is mounted with power and processing electronics within a driverless car to provide precise data for the car's navigation systems. The quarter indicates the sensor's relative size.

platforms, unmanned aerial systems, camera stabilization systems, and remotely operated subsea systems.

As more and more programs and platforms use KVH's inertial products, they are becoming the reference standards of the unmanned world. For example, KVH's 1750 IMU was an integral part of 11 of the 23 humanoid robot finalists in last year's DARPA Robotics finals, a competition designed to showcase robots capable of intervening for and even replacing humans in high-risk situations such as fires, earthquakes, and other natural disasters.

"Our IMUs and inertial sensors have already been used in a wide range of products and applications, and we know that it's just the beginning," says Mr. Kits van Heyningen. "We are thrilled to play a role in these exciting developments and emerging applications that are literally changing everyday life."

*Note to Editors:* For more information about KVH's inertial products, please see the [FOG Developer's Kit](http://landing.kvh.com/developerskit), <http://landing.kvh.com/developerskit>, and visit KVH's "[Guiding Intelligent Systems](http://www.kvh.com/unmanned)" website, [www.kvh.com/unmanned](http://www.kvh.com/unmanned). For a company overview of KVH, please view "[KVH – Innovation that Enables a Mobile World](https://youtu.be/m9Aq8sakzes)," <https://youtu.be/m9Aq8sakzes>. High-resolution images of KVH products are available at the KVH Press Room Image Library, [www.kvh.com/press-room/image-library](http://www.kvh.com/press-room/image-library).

#### **About KVH Industries, Inc.**

KVH Industries is a premier manufacturer of high-performance sensors and integrated inertial systems for defense and commercial guidance and stabilization applications, having sold more than 19,000 TACNAV® systems and more than 90,000 fiber optic gyros. KVH is also a leading manufacturer of solutions that provide global high-speed Internet, television, voice services, and content via satellite to mobile users at sea, on land, and in the air. KVH is based in Middletown, RI, with research, development, and manufacturing operations in Middletown, RI, and Tinley Park, IL. The company's global presence includes offices in Belgium, Brazil, Cyprus, Denmark, Hong Kong, Japan, the Netherlands, Norway, Singapore, and the United Kingdom.

This press release contains forward-looking statements that involve risks and uncertainties. For example, forward-looking statements include statements regarding our product development goals, market trends, competitive positioning, and the functionality, characteristics, quality, cost and performance of KVH products and technology. The actual results could differ materially from the statements made in this press release. Factors that might cause these differences include, but are not limited to: potential unanticipated technical impediments and poor or delayed research and development results; continued fluctuations in commercial sales of our guidance and stabilization products, particularly with respect to our FOG-based products and systems; the need for, or delays in, qualification of products to customer or regulatory standards; unanticipated declines or changes in customer demand, due to economic, seasonal, and other factors; unforeseen changes in competing technologies and products; lack of reliable vendors; potential changes in market trends and other developments affecting the buying patterns of end-users of fiber optic products, including management's assessment of the probability and effect of future events. These and other factors are discussed in more detail in KVH's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 14, 2016. Copies are available through its Investor Relations department and website, <http://investors.kvh.com>. KVH does not assume any obligation to update its forward-looking statements to reflect new information and developments.

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