

Advance Nanotech, Inc.

OTCBB: AVNA

Advance Nanotech Overview

Business Overview

Advance Nanotech, Inc. owns a minority position in Owlstone Nanotech, Inc. ("Owlstone"). Owlstone is a pioneer in the commercialization of chemical detection products. The Owlstone detector is a revolutionary dime-sized sensor that can be programmed to detect a wide range of chemical agents that may be present in extremely small quantities. Using leading-edge micro- and nano-fabrication techniques, Owlstone has created a complete chemical detection sensor that is significantly smaller and can be produced more cost effectively than products using existing technology. There are numerous applications -- across industries from security and defense to industrial process, air quality control and healthcare -- that depend on the rapid, accurate detection and measurement of chemical compounds. Owlstone works with market leaders within these industries to integrate the detector into next generation chemical sensing products and solutions. Owlstone's technology offers a unique combination of benefits, including small size, low manufacturing costs, minimal power consumption, reduced false-positives, and a customizable platform.

Owlstone Overview



Owlstone Nanotech, Inc. ("Owlstone") is seeking to expand commercialization of novel chemical sensor products based on its proprietary and innovative gas sensing technology, which offers an attractive combination of small size, high sensitivity, low power consumption, reprogrammability, high chemical selectivity and low cost. Owlstone is pursuing a \$5.0 billion market in the United States alone, and has initially targeted the industrial and homeland defense markets. In later stages, Owlstone will also commercialize sensing products for the consumer, environmental monitoring and medical diagnostics markets. Owlstone is poised to benefit from powerful trends driving the demand for improved technologies within the chemical sensing arena, including substantial government and private sector investment in homeland security, regulatory emphasis on safety, and ever stringent environmental regulations.

Corporate Information

- Public, Delaware C-Corporation
- OTCBB: AVNA.OB
- Contact Information:
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Key Market Statistics *(As of 3/4/10)*

Share Price	\$0.05
52 week range:	\$0.03 - \$0.25
Market Cap:	\$2.97M
Enterprise Value:	\$13.68M
Shares Outstanding:	59.47M
Ownership of Owlstone:	34.99%

Management and Directors

Jon Buttles	Principal Executive Officer Principal Financial Officer Director
Peter Rugg	Director Director of Owlstone
Joseph Peters	Director
Thomas Finn	Secretary

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The chemical sensing industry faces unique challenges in detecting hazardous substances in various forms and in a myriad of operating environments. In homeland defense, chemical sensors are used to detect chemical warfare agents and explosives to protect military personnel, government buildings and civilians. In industrial applications, chemical sensors monitor air quality for health and safety purposes, and also provide vital information in process control during manufacturing processes. The existing technologies for chemical sensors in these industries are dated, and are typically limited by size, selectivity and/or reliability. These factors have led to unacceptable sample collection, uninspired deployment scenarios, high false positive rates and, subsequently, a call to action by the U.S. Department of Defense for better solutions.

The Owlstone Solution

Owlstone's sensing technology was specifically designed to meet the specifications set forth by the U.S. Department of Defense. The key element of the Owlstone sensor is a silicon chip that provides a chemical-sensing mechanism using Field Asymmetric Ion Mobility Spectrometry ("FAIMS"), a variant of conventional Ion Mobility Spectrometry ("IMS"). Owlstone's technology enables unprecedented miniaturization of sensors with superior analytical capability at a compelling cost advantage, the ability to be programmed and reprogrammed to detect a wide range of substances, and high selectivity and sensitivity.

- **Miniaturization and standardization of manufacturing.** The sheer size of current chemical sensing units limits their deployment and provides a specific challenge in sample collection. Owlstone's small size enables flexible deployment and allows for the sensor to be brought to the sample, a novel approach in many chemical sensing applications. In homeland defense, this means more comprehensive sensing through the use of distributed networks of sensors. In industrial applications, this means a sensor or a sensor network can be integrated directly into process control providing real time monitoring of chemical composition, saving companies both time and money. The Owlstone technology enables miniaturized and cost effective detectors with low power consumption through its proprietary chip (see above). Despite the innovative and proprietary design of the chip, it is manufactured via standard silicon-based microchip fabrication reducing its manufacturing cost. This enables innovative applications such as weaving the chip into the lapel of every military uniform, providing local chemical sensing at the individual troop level.
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- **Software reprogrammable sensor.** Most competing sensors are designed to detect a narrow set of substances and cannot be reprogrammed once deployed, limiting their scope of use. To update a deployed sensor, additional costs are incurred from the need to physically replace sensor modules to detect substances different than the ones they were originally intended to detect. The Owlstone sensor solves this problem through the modularity of the components that comprise its sensing system. The separation of the detector hardware from the software application containing the "intelligence" to distinguish chemical signatures allows the Owlstone sensor system to be reprogrammed without having to replace hardware. Whether the sensor is programmed to detect benzene or sarin, the underlying hardware remains the same; and, when coupled with a wireless device, can be updated remotely at the direction of the end user. This enables an installed base of Owlstone sensors to be remotely reprogrammed to detect additional substances or even new substances not yet developed. Given today's dynamic terrorist threats, the ability to quickly and cost-effectively adapt to new hazards will be invaluable for applications in airports and subway systems. In comparison to competing technologies, the Owlstone sensor allows for the specialization and mass production of a single set of hardware devices for use across the spectrum of application. Owlstone's approach creates a significant time-to-market advantage for new product creation – as new products or applications are desired, the fundamental hardware remains the same, eliminating the need for customization of manufacturing.
 - **Vast Reduction in False Positives.** A major problem with most detection systems is their cross sensitivity to background interferants, leading to false positives. False positives resulting from seemingly normal background interferants, such as perfumes, result in unnecessary and costly responses. The Owlstone chip offers significant selectivity advantages over other micro sensors on the market today by providing a more detailed chemical fingerprint, resulting in a higher degree of confidence in the chemical identification and a lower false positive rate. In addition, a distributed network provides more

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points of analysis and further reduces spurious responses. Current Owlstone development partnerships are focused on bringing to market chemical sensing devices for gases like benzene and formaldehyde, known as Volatile Organic Compounds (VOCs), at detection levels many times more sensitive than other technologies with much lower corresponding false positive rates. These features of the Owlstone sensor enable applications where false positive rates must be minimized. For example, it allows the deployment of sensors to mass transit systems or government buildings where common interferants are difficult to predict and control and currently result in disruptions in operations.

Industry

There are several powerful trends driving the demand for improved technologies within the chemical sensing arena, including substantial government and private sector investment in homeland defense, regulatory emphasis on safety, and ever stringent environmental regulations. The U.S. Department of Defense commissioned a report through the Defense Advanced Research Projects Agency (DARPA) on chemical sensing in mid-2004. This publication set forth a list of desired sensor metrics and attributes, including sensitivity, detection confidence, false positive rates, response time, cost, power consumption, reliability, maintenance and size. A current U.S. military program called JCAD (Joint Chemical Agent Detector) is seeking these attributes, and calling for a battlefield deployment scenario utilizing approximately 200,000 sensors with an estimated \$350 million contract value. To date, existing technologies have struggled to fulfill all of the requirements set forth by JCAD. In addition to government projects, there is a strong regulatory emphasis towards improving air-quality within commercial buildings driving demand for chemical sensing products that can be deployed in large quantities forming a “distributed network” of sensors. Finally, increased public pressure to limit pollution into the environment creates demand for cost effective novel sensing devices that need to be more sensitive and that can be installed in large quantities. These industry drivers have led to a substantial increase in demand for innovative sensing products. According to the Freedonia Group, the market for chemical sensors in the U.S. is expected to reach \$5.0 billion in 2012. While Owlstone intends to address existing markets, the Company believes that the unique benefits of its sensors will also create new markets for high volume applications.

Products

Owlstone’s commercialization roadmap includes a strategic mixture of product and ingredient based strategies. The Company partners with market leaders to integrate its technology into existing commercial applications as well as contract manufacturers to bring product direct to market. Owlstone is initially focused on achieving rapid commercial acceptance in the industrial segment while simultaneously demonstrating the innovative nature of its technology for homeland defense.

Owlstone’s product roadmap included its Tourist product, an evaluation platform previously sold by Owlstone to select partners and customers. In 2008, Owlstone introduced in the U.S. its Lonestar product, a fully functional unit for certain applications in industrial markets, as well as a fully functioning test platform for commercial partners. Owlstone intends to continue to keep its sales organization consistent with its growth strategy and is pursuing product based strategies within markets that are characterized by high volume centralized procurements. In applications where procurement is fragmented, Owlstone intends to partner with existing market leaders that already possess distribution networks and infrastructure using either “ingredient” supply or contract sales strategies.

Customers

Owlstone currently has numerous customers and partnerships split between military, industrial and scientific applications. Example clients and partners include U.S. DOD, Defence Science Technology Laboratory (DSTL), US Army Edgewood Chemical Biological Center (ECBC), SELEX Galileo, BAE Systems, Agilent, Genzyme, US Air Force, Shell Global Solutions, Kidde (United Technologies), Crowcon Ltd, Alphasense, and the National Science Foundation (NSF).

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Intellectual Property

Owlstone's ability to successfully commercialize its products or technologies is significantly enhanced by its ability to secure strong intellectual property rights – generally patents and trade secrets – covering these products and technologies. Owlstone currently has four issued U.S. patents and ten patent applications filed with the United States Patent and Trademark Office and six patent applications filed with European patent offices. Owlstone intends to continue to seek patent protection in the United States and selected foreign countries and to vigorously prosecute patent infringements, as it deems commercially appropriate. Owlstone is currently not aware of any intellectual property issues related to its proprietary technology.

Management

Bret Bader, Chief Executive Officer

Mr. Bader's primary responsibilities include the development and execution of the strategic direction of Owlstone, along with business development within the defense sector in the U.S. Prior to Owlstone, Mr. Bader held several leadership positions with Smiths Detection, the leading manufacturer of security screening sensors for the detection of explosives, narcotics, weapons and chemical and biological warfare agents, and a subsidiary of Smiths Group Plc (LSE:SMIN.L). Most recently he served as general manager and vice president of the Americas division. He directed all sales and support activities in the U.S., developed and implemented all business-marketing plans and oversaw accounting and controller functions.

Andrew Koehl, Co-Founder, President – Products

Mr. Koehl is responsible for Owlstone's day-to-day operations. Mr. Koehl is the inventor of the microchip spectrometer technology on which Owlstone has based its business, which he developed while a postgraduate at the University of Cambridge. Mr. Koehl holds a Bachelor of Science in Electrical Engineering from the California Institute of Technology.

David Ruiz-Alonso, Co-Founder, President – Technology

Mr. Ruiz-Alonso is responsible for all technology aspects of the Company, including wafer fabrication, back-end packaging assembly and test. Mr. Ruiz-Alonso has a Bachelor of Science and M.S.C. in Electrical Engineering from the Technical University of Valencia. He also spent a year as a graduate student on a special exchange program at the University of California, Berkeley doing research on computer aided design and Microsystems.

Paul Boyle, Co-Founder, President – Operations

Since co-founding Owlstone, Mr. Boyle has been working on development and implementation of the detection technology with foundry partners. He is also active in business development, demonstrating to partners how the Owlstone technology can be used to realize a paradigm shift in detection applications and deployment scenarios. Mr. Boyle is also heavily involved in the creation and development of new technologies and intellectual property. Mr. Boyle holds a Bachelor of Science and Masters of Science in engineering from the University of Cambridge.

Mark Brennan, Executive Vice President – Homeland Defense

Mr. Brennan joined Owlstone Nanotech in April 2006. Previously, Mr. Brennan held several leadership positions with Smiths Detection, the leading manufacturer of security screening sensors for the detection of explosives, narcotics, weapons and chemical and biological warfare agents, and a subsidiary of Smiths Group Plc (LSE:SMIN.L). Most recently he served as Director of Sales of the Americas division. He led all sales activities in the US critical infrastructure business unit including federal, local and state governments, and private sectors.

Thomas P. Finn, Chief Financial Officer

Mr. Finn is responsible for designing, implementing and monitoring financial reporting and accounting controls, policies and procedures. Mr. Finn has over 15 years of financial management experience in accounting, auditing and systems design. He has worked for IBM Corporation, Purdue Pharma and various start-up companies in such management capacities as accountant, auditor, controller and CFO.