



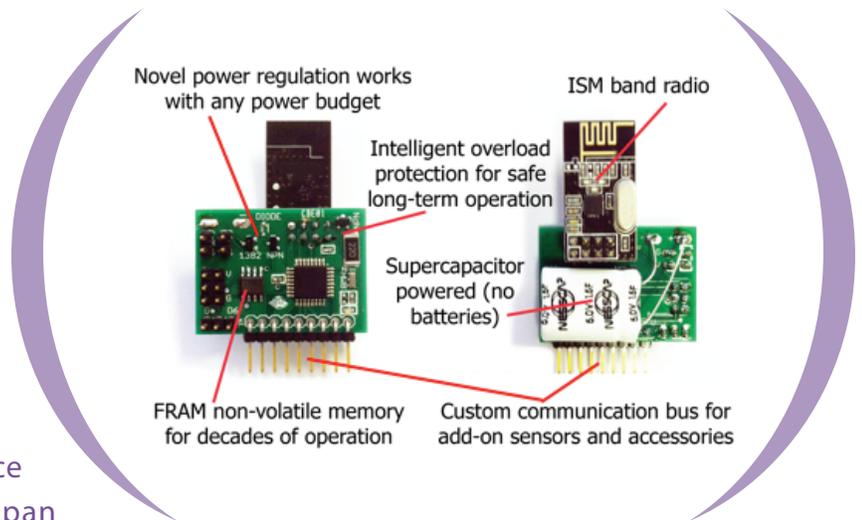
## Product Description

Zensor™, LLC created a new generation of wireless sensors yielding an order of magnitude improvement for use in remote monitoring, asset management, surveillance and security. The Zensor™ ultra long lifespan wireless sensor and its distributed network require no external source of power with performance options that are nearly unlimited.

Advantages of the Zensor™ sensor over other sensors presently on the market include: no batteries, in contrast to short life batteries of other sensors; collection of wide ranging data on a distributed network at a very low cost - as much as one-thirtieth the price of other sensors; and multiple capabilities, in contrast to limited capabilities of others sensors.

## Capabilities

- No batteries required—solar energy coupled with a new ultra-capacitor.
- Effective with a small power source.
- Long lasting: 50+year lifespan.
- Distributed Wireless Networked system for data receipt, transmission and storage.
- Requires just one sensor to interrogate information about every device in the network. Each sensor collects data from all other sensors.
- Maintenance free.
- Low Cost—Less than \$40 per sensor – sold in kits of 25 for under \$1,000.
- Current sensors collect and transmit data on: humidity, light intensity, temperature, color, sound, thermal images, vibrations, and the tilt of a stationary object. Additional capabilities can be added, including GPS and gas sensing - ( $\text{CO}_2$ ,  $\text{CO}$ ,  $\text{O}_2$ ,  $\text{CH}_4$ ,  $\text{C}_3\text{H}_8$ ).
- Currently testing in arctic to ensure reliability even under extreme environmental conditions.



## Technology

US Patent # US 9,257,036 B2, Issued February 2016

The sensors have a 50- to 100-meter range and collect 200,000 data packets a day. The invention consists of a sensor network node which incorporates non-volatile memory (FRAM) capable of a large number of rewrites and long data retention times, a wireless transceiver, a solar panel, a capacitive energy harvesting circuit, a controller, and an analog to digital converter.

## About Zensor™

Zensor™, LLC , a Seawolf Holdings company, was formed in February 2013 by the Vice Provost for Research and Graduate Studies at UAA, Dr. Helena Wisniewski, with the faculty inventor, Dr. John Lund, Professor of Engineering. The Zensor™ mission is to provide long-lasting, low cost, maintenance-free sensors in a wireless distributed network with multiple performance options for remote monitoring, asset management, security and surveillance. The idea came from Dr. Lund's observation of remote monitoring needs for the maintenance and management of assets in the harsh arctic environment. The business model is to manufacture the sensors and sell them direct to customers and through distributors. Services will also be provided for customized applications.

Its sensors will be used by the Arctic Domain Awareness Center, a DHS Center of Excellence at UAA, and funding will be provided to develop uplinks to UAVs and vessels of opportunity

Featured in Alaska Business Monthly - 2013.

## Markets and Applications

The global wireless sensor devices market is expected to increase at a 43.1% annual growth rate (CAGR) to reach an estimated \$4.7 billion by 2016, according to market research firms such as BCC Research. The markets include: industrial installations, residential automation and energy management, ecology and agriculture, defense and surveillance. For example, usage in industrial control systems such as supervisory control and data acquisition (SCADA) shows these devices can effectively meet the needs of industrial applications — the largest growing market.

### Zensor™ meets market needs.

- **Industrial installations:** early warnings and preventive data collection for roadway infrastructures and culverts (flooding, changes in surface levels); SCADA for pipelines, pumps transformers, remote monitoring of bridges, oil rigs and other structures; temperature monitoring in shipping and storage containers.
- **Surveillance and security:** border activity sensors placed along the border detect vibrations that indicate movement of persons, or digging of tunnels, or on the water, early warning of submarine and surface vessels.
- **Climate Change and Ecology:** ideal for remote sites over large expanses of difficult-to-reach geographic areas. For example, the sensors can be dropped from UAVs to cover the landscape and provide reports on environmental changes such as ice flow or melt, and climate monitoring, or used creatively to provide data collection from animal herds.

## Management Team

To achieve its mission, Zensor™ is assembling a team of experienced senior executives, leaders in technology industries and entrepreneurs.

Dr. John Lund is the founder of Zensor™, LLC, and the technology inventor. He is a professor of Electrical Engineering at the University of Alaska Anchorage and received his PhD in Electrical Engineering from the University of Washington. Dr. Lund's research and development experience includes the development of a microfluidic malaria detection tool, a fully automated molecular traversal and analysis instrument for characterizing DNA molecules, and a method for measuring metallized molecules. Professor Lund specializes in nanoscale fabrication and characterization, including the development of nanoscale biosensors and break junctions. His current research efforts focus on developing novel sensors and sensor platforms to allow measurement and data collection where such systems were previously inaccessible. Professor Lund recently developed a patent pending instrumented mouthguard for high-speed data collection to characterize head impact events. He is also actively researching low-power sensor designs to provide additional utility for a long lifespan battery-free wireless sensor platform he developed.

Dr. Helena S. Wisniewski is the Vice Provost for University Research and Graduate Studies at the University of Alaska Anchorage. She is also President of Seawolf Holdings, LLC a wholly owned subsidiary of UAA that is part of the commercialization infrastructure she created, and Founding Director of the Arctic Domain Awareness Center (ADAC), a Department of Homeland Security Center of Excellence at UAA. She serves on the Board of Directors of Cogniceutic Solutions. Dr. Wisniewski is an accomplished senior executive with a breadth of experience in public and private companies, academia, and the federal government, and a technological entrepreneur who has successfully launched and sold start-up companies, and raised their investment. She served as Vice President for University Research at Stevens Institute of Technology prior to UAA. Prior to Stevens, she was CEO/ Chairman of Aurora Biometrics, a company that she founded, built the business, and sold. She served as Vice President of the Titan Corporation; a senior executive at the Lockheed Corporation; founded the first mathematics program at Defense Advanced Research Projects Agency (DARPA), and previously served at the CIA. She served on public and private boards of directors, including Greatbatch Inc., (GB:NYSE) and its Audit and Technology Committees, and in 2007, the Secretary of the Navy appointed her to the Naval Research Advisory Committee. Dr. Wisniewski currently serves on the Life Sciences Advisory Board of Landmark Ventures. She earned a PhD in mathematics from the Graduate Center of CUNY and has received awards for outstanding leadership, entrepreneurship, and significant scientific contributions including the 2002 Women in Technology Leadership Award.

Investment strategy: Initial investment Seawolf Venture Fund; Seeking additional \$1M.

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