



# BH Sensors

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## TECHNICAL VISION:

BH Sensors is responding to a growing need for advanced, accurate, cost effective, highly reliable and robust physical parameter sensors and sensor systems. We deploy our patented sensor technology as the primary means of monitoring relevant physical parameters such as temperature, force, load, pressure, displacement, and torque. BH Sensors is developing a variety of disruptive technology sensors and sensor systems across a wide range of industries for government, industrial, and commercial clients and applications. Our sensors and sensor systems allow our customers to achieve highly accurate and cost effective solutions for both current product lines and applications, as well as for new and emerging sensor needs and markets that are just not possible with existing state of the art sensor solutions.



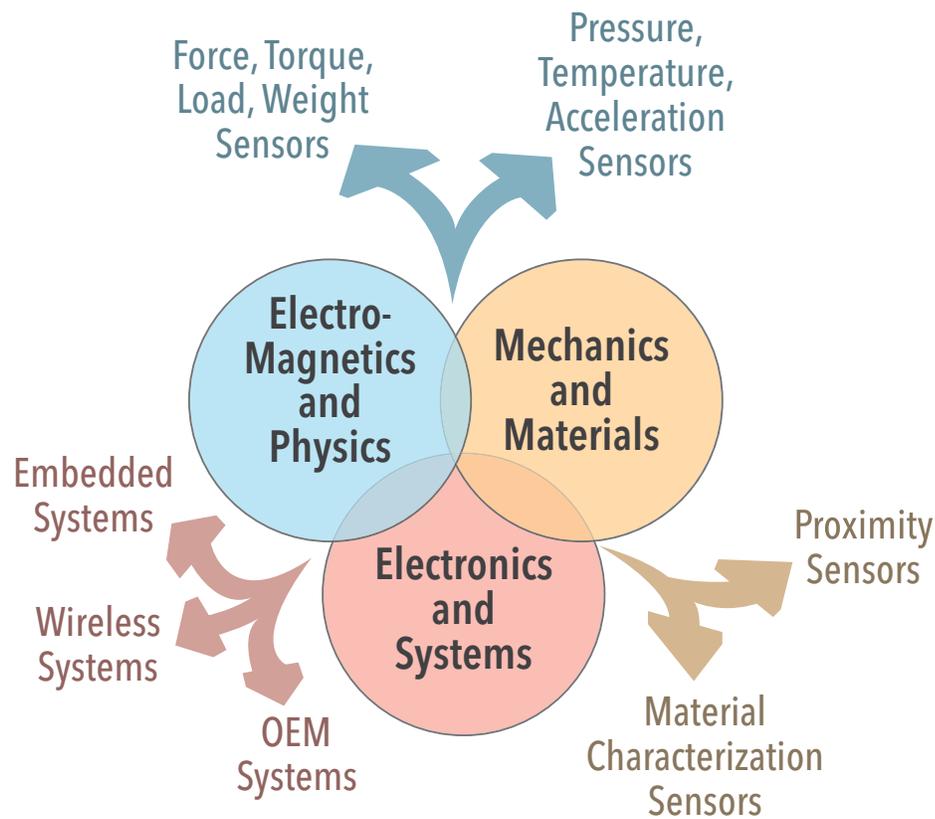
# ENABLING TECHNOLOGY:

Our customers achieve significant market advantage using our patented non-contact displacement electromagnetic sensing technology to realize physical parameter sensors and sensor systems. These market advantages can take the form of cost savings in manufacturing while maintaining the current solution's accuracy and functionality, or can increase robustness and reliability using a more advantageous mechanical configuration, or can simply providing a sensing solution where none has existed before due to lack of a suitable technology. A key feature of BH Sensors' technology allows the independent optimization of the mechanical and electrical structures that make up the sensor construction. This allows the resulting sensor to be specifically tailored to address the application's needs rather than using an existing sensor configuration that needs to be shoehorned in, in order to conform to the application's requirements. This tailoring, essentially starting with a clean slate of sensing capability not bound by pre-determined configurations, structures or topologies, allows the application to dictate the sensor's structure to meet the requirements, ultimately saving development time, manufacturing cost, and time to market/deployment. Another key feature of the technology is the inherent digital output of the sensor's simple electronics. No longer are complex signal conditioning electronics, amplifiers, and analog to digital converters required in order to properly utilize the sensor's measured output. This value added multiplier of drastically reducing the downstream electronics in order to obtain data output that is useful to the user, only adds to the advantages and benefits of integrating our technology into the sensor solution pipeline.



# CORE COMPETENCIES:

BH Sensors has a highly interdisciplinary staff with advanced degrees in electrical engineering, physics, quantum electronics, microwaves and RF engineering, mechanical engineering, and embedded computer science. We continuously engage in cross-disciplinary collaboration between our scientists and engineers to manufacture solutions to our customers' performance and cost efficient challenges. We have unique in-depth, hands on experience in designing, fabricating, testing, prototyping and commercializing these cross-discipline solutions that require innovative, creative, and "outside the box" thinking to achieve our customers challenging goals.



# REPRESENTATIVE PROJECTS:

## LOW COST, HIGH RELIABILITY PROXIMITY SWITCHES (US NAVY SBIR PHASE I AND II)

This ongoing R&D project successfully developed and demonstrated a class of low cost high reliability, high performance proximity switches that out perform the current deployed devices. Our switches can be used above deck on aircraft carriers where EMI can approach 200V/m and environmental conditions are extreme in the utmost.

## ON BOARD VEHICLE WEIGHING SYSTEM

This project successfully developed, demonstrated, and commercialized a unique sensor and system that bolts onto the chassis of a heavy duty articulated Class III vehicle and accurately weighs the load that the vehicle carries. An in-cab display combined with a single chassis temporary/permanently mounted sensor provides all the necessary information about the load to the driver that a far more expensive and complicated load cell based system ( where up to six load cells are required to be welded between the truck body and the chassis) would ordinarily provide. This unique and patented system is robust enough for the abuse of mining vehicles yet cost effective for light duty vehicles such as commercial delivery vans. This system opens markets for creating " smart" heavy/medium/light duty vehicles that have been cost prohibitive until now.

## COST EFFECTIVE, BLUETOOTH ENABLED, WIND SENSOR SYSTEM

Wind gusts can catastrophically damage awnings, covers, and temporary structures. Homeowners and RV Camper owners readily suffer wind damage to awnings on decks, patios, and recreational areas. This project successfully developed, demonstrated, and commercialized a unique, low cost sensor and system that continuously measures wind speed and alerts the user to excess threshold wind gusts via Bluetooth connectivity. The sensor system is battery operated and is mounted directly on the support structure for the awning, cover, etc. The system can measure wind speeds in excess of 100MPH at an update rate of 10ms, hence gusts are readily measured.

## IN-LINE, WATER FLOWMETER WITH NO MOVING PARTS

Residential and commercial water flowmeters typically are constructed as turbine meters in which the rotating impeller measures the flow rate. However, these low cost turbine meters are subject to failure due to scale buildup in hard water usage areas, and debris damage which prevent adequate rotation of the impeller. This project successfully developed a low cost sensor that that measures water flow rates but uses no moving parts so fouling does not present a problem. The sensor is high accuracy, can measure very low flow rates, is an in-line device allowing for easy integration into existing piping, and is low cost requiring no maintenance or periodic calibration.



# ABOUT BH SENSORS:

## WHO WE ARE:

We research, develop and commercialize innovative and disruptive sensors and sensor systems based on our patented sensing technology. These sensors and sensor systems include:

- Physical parameter monitoring such as force, load, pressure, temperature, torque, etc.
- Material presence and characterization for metals, insulators, and semiconductors
- Proximity sensing of both metal and dielectric targets
- Linear and angular displacement sensing

We conduct applied research and development for customers in our primary areas of focus:

- Sensing and instrumentation
- Industrial process control
- Material handling monitoring
- Materials characterization
- Defense Industry automation and logistics



## WHY IT MATTERS

Our applied R&D innovations evolve into products and technological solutions that address business, capability, and performance challenges for the industries we serve.

## MARKETS WE SERVE

We identify significant market opportunities, build promising intellectual property portfolios and prototypes, and deliver them into highly differentiated commercial applications. We draw on the vast intellectual, experiential, and experimental accomplishments of our staff and enhance the probability of commercial success through proof-of-concept development funded by government and corporate contract research and development.

### **Our Core markets include:**

- Aerospace
- Industrial
- Transportation
- Material handling
- Defense
- Automation



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