



OUR EXPERIENCE • YOUR SOLUTION

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## MARINE-GRADE LIQUID SENSORS BOW TO STERN FLUIDIC SOLUTIONS



OUR EXPERIENCE • YOUR SOLUTION

LEVEL | FLOW | PRESSURE | TEMPERATURE | SOLENOID VALVES | FLUIDIC SYSTEMS



SELF-CHECKING  
LIQUID LEVEL  
SWITCHES

LEVEL  
SWITCHES

FLOW  
SWITCHES

TANK LEVEL  
INDICATING  
TRANSMITTERS

SPECIALTY  
TANK LEVEL  
TRANSMITTERS AND  
RECEIVERS

PRESSURE  
TRANSDUCERS

VISUAL LEVEL  
INDICATORS

SOLID-STATE  
ACCESSORIES

## We've got the experience you need – and then some

Gems Sensors and Controls products have been field-tested by customers like you for over 60 years. We offer an extensive catalog of pressure, level and flow sensors, as well as miniature solenoid valves, available through our worldwide sales and distribution network. Our four, fully equipped ISO9001:2008 certified manufacturing sites, located in North America, Asia and Europe, ship more than 4 million sensors annually.

Gems Sensors has earned an international reputation for developing and manufacturing a wide variety of quality, dependable components. We use real-time customer and industry feedback to drive our manufacturing and quality initiatives. Once installed, our components run continuously in some of the world's harshest environments. There are Gems units in the field today that have been running for decades with no degradation in the original performance.

Gems Sensors work in a variety of Commercial Marine applications, such as:

- Lube and Fuel Oil Tanks
- Hydraulic Systems
- Coolant, Ballast, Storage and Cargo Tanks
- Gray Water and Potable Water Tanks
- Fire Fighting Foam
- Overfill Alarm Monitoring
- Sump Tanks
- Waste Oil & Oily Waste Holding Tanks
- Expansion Tanks
- Feed Water Systems
- Bilges and Voids

# Engineered Solutions for Commercial Marine



## From concept to commission – you've got a partner in Gems

The fastest way to solve any manufacturing problem is to let engineers speak directly with other engineers. While this may be rare in the industry, for us it's common sense. Gems engineers collectively have more than 400 years of work experience among active staff. Our engineers are working with customers around the globe, because the better we understand your challenge, the faster we can deliver a solution.

Gems Sensors is ever committed to accomplishing measurement goals on time and on budget. If you are looking for a custom engineered solution, the first step is always referencing the vast Gems legacy projects library. Chances are good that Gems has already successfully implemented designs of similar criteria. As a result, an off-the-shelf solution may be immediately available, saving time and costs.

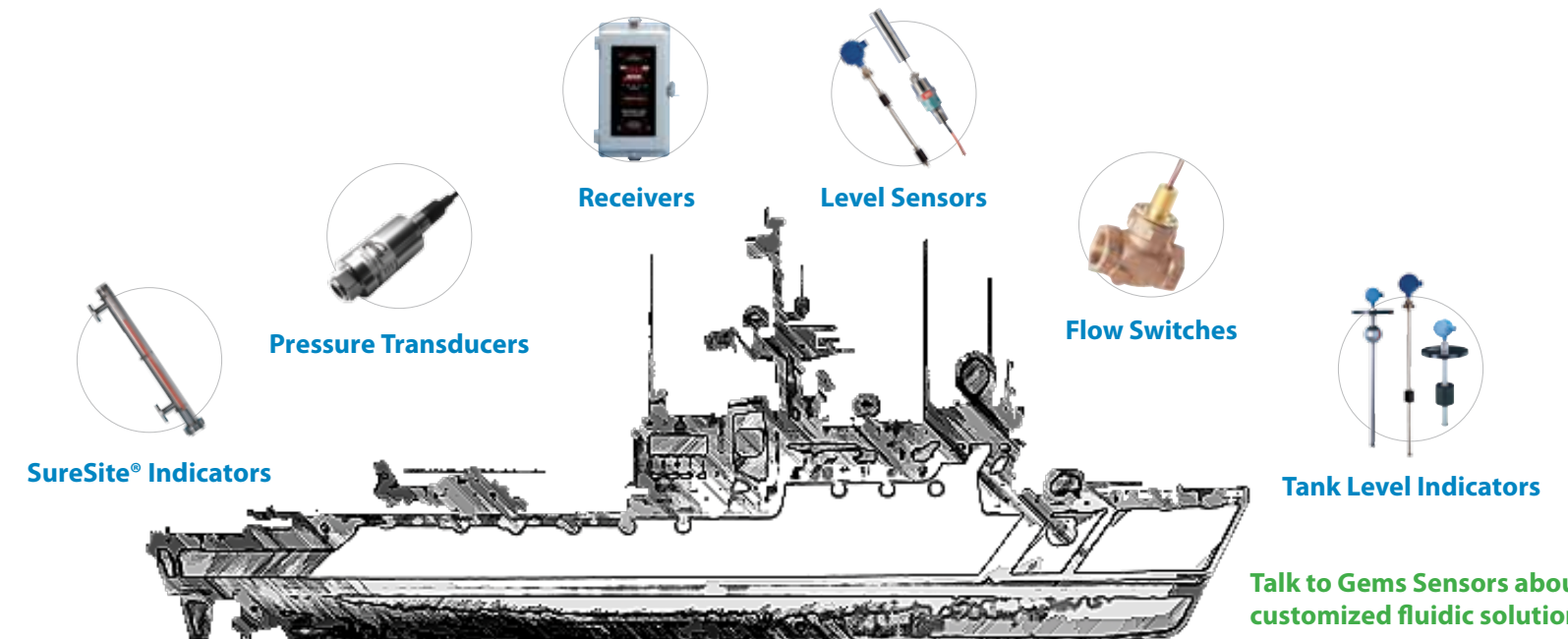
## Flexible, global manufacturing – same high standards on three continents

Your design or ours, we will build, test and ship quality sensors to fit your specific timing and budget. Our facilities are designed to adjust to short-runs or high volume. At each facility, Gems utilizes Lean Manufacturing principles and processes to make significant improvements to safety, quality, delivery, and cost. Areas of focus include:

- Assembly
- Testing
- Labeling/Packaging
- Documentation
- Production Process Validation and Control

## Durable in harsh environments – as tough as you are

The ships you build will operate in some of the most difficult environments on earth. Gems' sensors and controls are engineered to respond reliably and over the long haul in difficult environments. Our sensors are designed to meet minimal energy consumption requirements. Gems Sensors understands the critical value of our products to *your* solutions. Any component failure is a dangerous situation for your customers. Our durability and consistent performance over time helps to keep your customers up and running – and coming back to you.







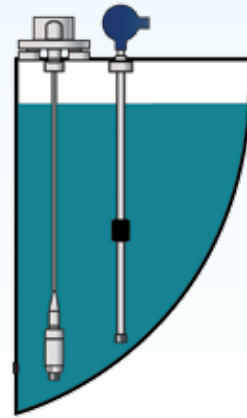
# Bow to Stern Solutions

## ANY TANK, ANY SHAPE

Versatile and durable pressure transducers

Designed to monitor hydraulic pressures in almost any tank; including fuel tanks, ballast tanks and chemical tanks. Gems pressure transducers are ideal for commercial marine applications because their performance is not affected by the unusual shapes of the storage tanks commonly found in commercial boats. Simple, dependable and durable even in the harshest marine conditions, Gems pressure transducers have no moving parts and a virtually unlimited life expectancy.

In marine applications, Gems pressure transducers function efficiently in turbulent liquids, liquids containing foreign material, seawater, liquid interfaces, high temperatures and in high-pressure fluids. Gems devices are designed to endure constant shipboard vibrations maintaining sensitivity and accuracy.



## DESIGNED TO FIT YOUR SPECIFIC NEEDS

The success of our newest transducers rests on the application of three distinct technologies: sputtered thin film technology, chemical vapor deposition technology (CVD) and application-specific integrated circuits (ASIC). Gems pressure transducers remain the sensor of choice in commercial marine.



Series 5000: Crafted for superior long-term stability.

## CLEARLY VISIBLE, NEARLY INDESTRUCTIBLE

Gems SureSite® Visual Level Indicators provide a clearly visible indication from more than one hundred feet. SureSite® Level Indicators require no power and are unaffected by extreme thermal changes. SureSite® Indicators easily mount to the exterior of tanks and are widely used in marine applications where quick visual communication of tank contents is critical.

Gems' proven design incorporates permanent magnets that rise and fall with liquid levels. Rising magnets invert brilliantly colored flags



Mini SureSite® and LED SureSite®: The LED SureSite® is ideal for low-light environments

that accurately indicate levels in the tank. The enclosed system is impervious to shock, vibration, surges and rapid level changes.

New Gems LED Level Indicators are ideal for low light environments. Just as durable and accurate as our traditional level indicators, our new LED model conveys visual and remote liquid level indication even in total darkness.

## MARINE LEVEL SWITCHES FOR VIRTUALLY ANY LIQUID

Gems Marine-Grade level switches allow level control and monitoring of virtually any liquid. With multiple independent actuation set points and lengths up to 20 feet (6.1 meters), our sensors set the standard for accurate, dependable level regulation. For more than 60 years, our vast assortment of floats, materials, mountings, relays and slosh shields have excelled in the most challenging marine applications. Our designs are suitable for just about any marine operation, and Gems' resourceful engineering department is always available to meet a new or exotic challenge.

Our bilge water sensing components, for example, have protective housings that maintain complete reliability even when there's solid matter in the bilge. These components can be fitted with vulcanized cables, offering level switches with an ingress protection rating of IP67 for use as submersibles – ideal for point level sensing in inaccessible areas of tanks.



LS-270: Lightweight, yet stable with bracket mounts.

## FLOW SWITCHES ARE SIMPLE IN CONCEPT, SOPHISTICATED IN DESIGN

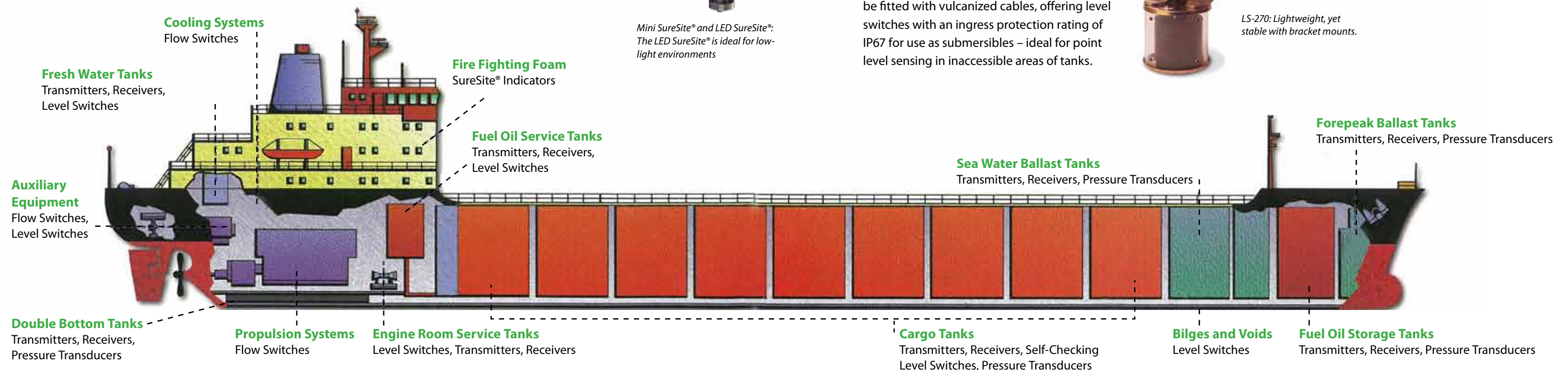
Gems flow switches use reliable reed switch technology that only responds to true liquid flow and is unaffected by changes in line pressure that can cause the false readings common in other types of sensors. Use Gems flow switches in heating, cooling, lube oil systems or any other critical flow area. Made of the highest quality corrosion-resistant materials, Gems flow switches come in two unique operating designs:

- Shuttle design is displaced by fluid flow at a preset rate. Gravity or a compression spring resets the shuttle when flow decreases.
- Paddle type provides flow/no flow detection where there is a velocity of at least .5 ft. per second (152 mm per second).



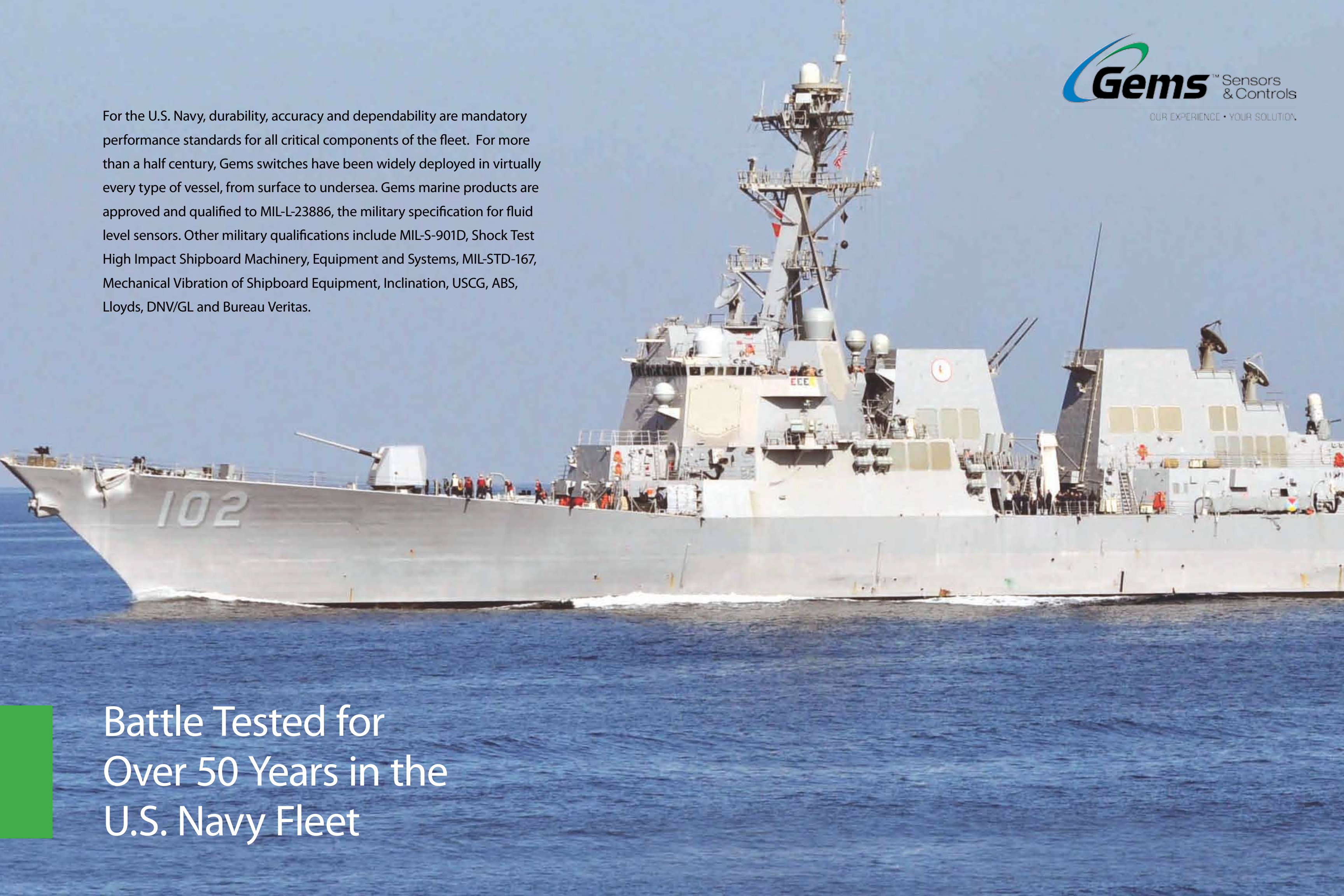
FS-200: Durable construction delivers long-life reliability in either water or oil.

These flow switches are used to operate remote alarms, indicators and annunciators, pumps, motorized valves or are integrated into automatic control systems.





For the U.S. Navy, durability, accuracy and dependability are mandatory performance standards for all critical components of the fleet. For more than a half century, Gems switches have been widely deployed in virtually every type of vessel, from surface to undersea. Gems marine products are approved and qualified to MIL-L-23886, the military specification for fluid level sensors. Other military qualifications include MIL-S-901D, Shock Test High Impact Shipboard Machinery, Equipment and Systems, MIL-STD-167, Mechanical Vibration of Shipboard Equipment, Inclination, USCG, ABS, Lloyds, DNV/GL and Bureau Veritas.



Battle Tested for  
Over 50 Years in the  
U.S. Navy Fleet