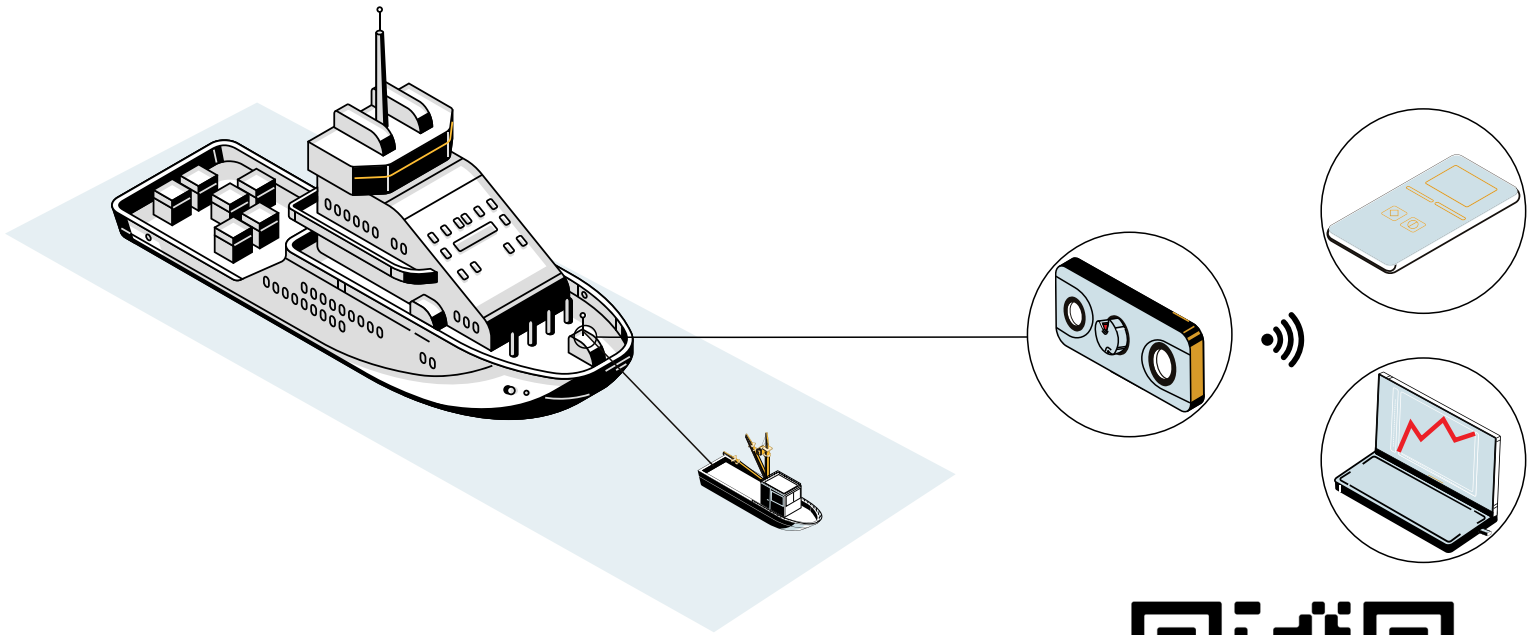


Interface

Maritime Solutions



Maritime Solutions v1.4

Interface
FORCE MEASUREMENT SOLUTIONS.

The World Leader in Force Measurement Solutions™



Maritime Solutions

Interface measurement technologies are commonly used in the maritime industry for testing and monitoring performance. Our products are known for quality, durability, and accuracy. From shipyard hoist and lift equipment to submersible vessel and engine testing, Interface sensors are built to withstand the challenges of extreme environments.



Maritime

Interface is committed to designing products that have high quality, durability and reliability for the maritime industry. Our products play a huge role in creating force measurement solutions for waterborne vessels, maintenance, safety equipment, and offshore products. We have been a long-time supplier of sensor technologies and instrumentation that are applied in building and maintaining boats, yachts, and other water vessels of all sizes. Our products have the capability to transmit data wirelessly in submersible applications and work effectively in harsh environments.

Since 1968, Interface has proven success in supplying high performance sensors for several different maritime applications, extending from shipbuilding to shipyard equipment monitoring. We take pride from providing our customers with products they can trust onshore, near-shore or completely submersed under water.

No matter the extreme use case, Interface has been involved with providing products that withstand the rigorous requirements of monitoring underwater tension lines, seaborne components and material testing, boat and ship engine testing, equipment durability and safety regulation monitoring, lift capacity measurements, energy extraction equipment, and storm and tsunami monitoring. Our team of experts work with you to get the right solution based on your precise requirements.

Industry Leading Quality

Interface products are built in accordance with A2LA, International Standard ISO/IEC 17025:2005 and ANSI/NCSL Z540-1-1994. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system.



Solution Capabilities

- Stainless steel and rugged designs for different temperatures and climates
- Environmentally sealed products used in harsh environments
- Wide variety of wireless telemetry system components to use in all types of environmental conditions
- Vast inventory of sensors and instrumentation for fast delivery
- Custom solutions designed to your exact safety and regulatory specifications
- OEM engineered products for submersible solutions
- Data acquisition and durable instrumentation for safety monitoring
- Load pins and load shackles for continuous hoist and lifting applications

Maritime Solutions

As a complete solutions provider, Interface has a variety of force measurement products that are perfect for harsh environments and submersible applications designed for both offshore and underwater locations.

Land, air, and sea are all the places where Interface force measurement devices are used to test and confirm product designs and measure real-time functions of equipment. Interface has long been providing an array of sensor solutions for use in the maritime industry.

Hydrofoil Testing In a Wave Tank

Hydrofoil design for watercraft is a delicate balance between performance and complexity. Finding the right shape without using overly complex angles to achieve the desired amount of lift is crucial when designing a successful hydrofoil. Once an engineer's concepts are ready for testing, using the best force measurement equipment is required to sense the subtle differences between hydrofoil designs. Lift and drag are the most important characteristics of a hydrofoil. The Interface Model 3A120 3-Axis Load Cell is needed to read these forces. The Fz senses lift and the Fx and Fy sense the drag. Using a model BSC4D-USB bridge amplifier increases the visibility of the load cells output signals. When using the load cell and bridge amplifier, the engineers can record the real-world lift and drag forces the hydrofoils are having on the watercraft. This data allows a more in-depth comparison of proposed hydrofoil designs to find the best model for the job.

Mooring Line Tension Testing

Due to the changing weather conditions, mooring cable lines undergo wear and tear. Users want to ensure all mooring lines for ships or vessels are securely docked at the same loading tension so that they do not risk the mooring lines to break or cause damage. Interface WTSLT Light Weight Wireless Tension Link can be attached to each mooring cable in use. Results are sent to the customers through the WTS-BS-4 USB Industrial Base Station when connected to the customer's supplied PC computer or laptop. Data can also be transmitted to the WTS-BS-1-HA Handheld Display for Multiple Transmitters, giving the customer the option to view multiple mooring cable line tensions. Using these Interface products, the customer was able to verify the tensions to multiple mooring cable lines. Thus, resulting in the security of their ship being safely docked on shore.

WTS Yacht Rigging Inspection

For a customer who wants to have a complete rigging inspection to make sure the mast, still lines, and all movable hoisting lines are functional and meet the proper specifications for sailing, Interface has the products to help. To test the tension of the forestay, shroud, and backstay cables, and the tension of the movable lines when sailing, Interface provided a WTSSHK-B Wireless Crosby™ Bow Load Shackle paired with the WTS-BS-1 Wireless Handheld Display for Unlimited Transmitters. This allows customers to switch and view between multiple shackles being tested during the inspection. The WTS-BS-4 USB Industrial Base Station can also be attached to the customer's PC or laptop to display real time measurements from the shackles and log data. With this combination, the customer was able to conduct both a running and standing rigging inspection of their ship or vessel and was able to determine if all lines were functional and met safety standards.

Examples of Maritime Applications Using Interface Measurement Solutions:

- Commercial fishing wire testing
- Crane capacity verification
- Weight and tension monitor
- Hydrofoil testing in wave tank
- Mooring quick release hooks (QRH)
- Motor and engine testing
- Crane block safety check
- Crane force regulation
- Submersible equipment tests
- Mooring tension testing
- WTS yacht rigging inspection
- Defense submersible tests

HIGHLIGHT: Crane Force Regulation

Customer Need / Challenge

Our customer wants to regulate the maximum amount of heavy loads being lifted, so that production time can be both safe for workers and efficient. The customer wants to complete lifting duties faster and with little or no expense. A wireless solution is preferred, so that there would be no long cable interference during production.

Interface Solution

With Interface's WTSLP Wireless Stainless Steel Load Pin, this product can be custom made to be used for any and all types of cranes. It is also great for lifting both short and long distances. Paired with the WTS Wireless Telemetry System, force is measured and logged.

Results

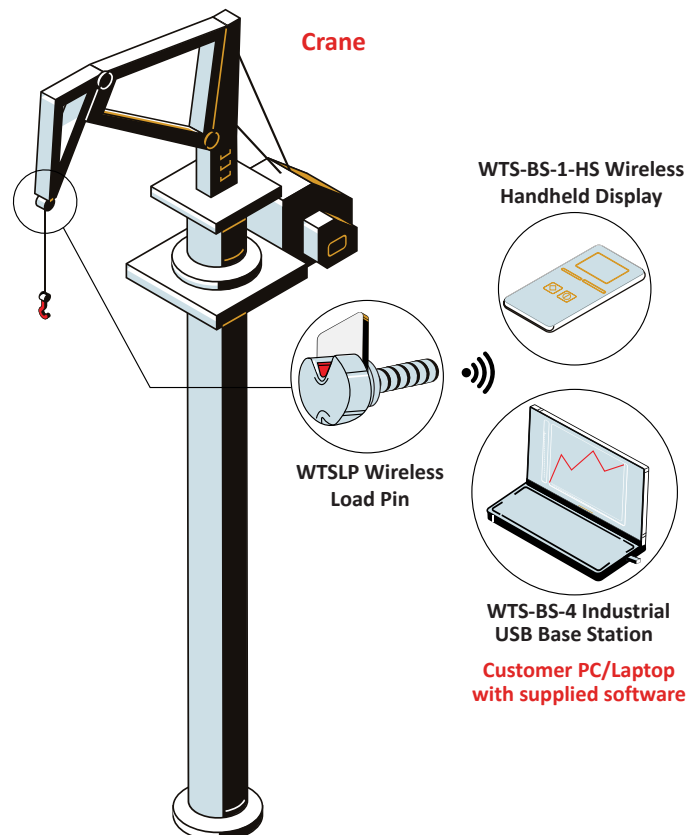
The customer was able to monitor the continuous force from the crane, and gather information on loads being lifted. Data is transmitted and logged to the customer's PC/laptop and is available to be reviewed.

Materials

- WTSLP Wireless Load Pin
- WTS-BS-4 Industrial USB Base Station
- WTS-BS-1-HS Wireless Handheld Display for Single Transmitters
- WTS Toolkit Software & Log100 Software Included
- Customer PC or Laptop

How it Works

The WTSLP Wireless Load Pin is installed at the turning block of the crane. WTS-BS-4 Industrial USB Base Station is connected to the customer's PC or laptop via USB port. The WTSLP can wirelessly transmit information up to 600 meters in distance to both the laptop or the WTS-BS-1-HS Wireless Handheld Display for single transmitters. The USB Base Station receives force measurements, and the data is logged onto the laptop.



Product Examples for Maritime Solutions



1200 WTS Standard Precision
LowProfile™ Load Cell
300 lbf to 100K lbf
1.5 kN to 450 kN



1200 Standard Precision
LowProfile™ Load Cell
300 lbf to 100K lbf
1.33 kN to 445 kN



1100 Ultra Precision
LowProfile™ Load Cell
200 lbf to 300K lbf
1.33 kN to 890 kN



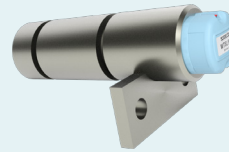
2400 Standard Stainless
Steel Low Capacity Load Cell
100 lbf to 5K lbf
0.44 kN to 22 kN



3200 Precision Stainless
Steel Load Cell
2.5 lbf to 100K lbf
12.5 kN to 445 kN



WTSTL Wireless Tension
Link Load Cell
11K lbf to 220.4K lbf
5 mt to 100 mt



WTSPL Wireless Stainless
Steel Load Pin
Up to 3,000 lbf
Up to 1,360 MT



3AXX 3-Axis Force Load Cell
Force: 4.5 lbf to 112K lbf
Force: 10 N to 500 kN



WTSSHK-B Wireless Crosby™
Bow Load Shackle
26.5K and 265K lbf
12 to 120 MT



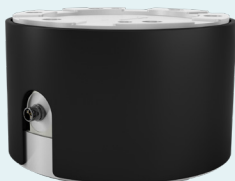
WTSSHK-D Wireless Crosby™
Bow Load Shackle
26.5K to 77.2K lbf
12 to 35 MT



BSC4D Multi-Channel Bridge
Amplifier and PC Interface
Module
4-Channel Capability



6A Series 6-Axis Standard
Capacity Load Cells
Force: 11.2 to 22.5K lbf
Torque: 8.85 to 88.5K lb-in
Force: 50 to 100K N
Torque: 1 to 10K Nm



6A Series 6-Axis High
Capacity Load Cells
Force: 11.2K to 180K lbf
Torque: 88.5K to 354K lb-in
Force: 50K to 800K N
Torque: 10K to 40K Nm



WTS-WSS Wireless Wind
Speed Transmitter Module
Low power mode providing exceptional
battery life in excess of 12 months
Constantly monitors average wind speed



WTS-BS-1-HA Wireless Display
for Multiple Transmitters
Connect up to 12 transmitters
Provides summation of up to 12
transmitters



WTS-BS-1-HS Wireless Display
for Single Transmitters
Simple operation
Connection to single transmitter module



WTS-RM1 Wireless Relay
Output Receiver Module
Accepts up to 16 devices
Provides a range of relay operation
modes



WTS-BS-6 Wireless Telemetry
Dongle Base Station
Compact & Portable
Fast Configuration
500m Wireless Range



WTS-BS-4 Wireless Base Station
with USB Interface in Industrial
Enclosure
Up to 800 m (2,625 ft) range
Configure & calibrate the WTS range



WTS Wireless Telemetry System
17.7 lbf-in to 44.3K lbf-in
2 Nm to 5K Nm

Harsh Environments and Submersible Applications

As a complete solutions provider, we have a variety of force measurement products that are designed for marine type environments and submersible applications. Our Interface expert engineers can help you design customizable solutions for all types of applications using our products designed for offshore, underwater, and splash zone locations.

Interface load cells, wireless load pins, tension shackles, and tension links can be paired with our Wireless Telemetry Systems (WTS) for long distance tension testing, load testing, rigging inspections, and more.

We Provide Critical Accuracy for Maritime Applications

Interface understands that the maritime industry has high standards and requirements for force and torque testing, measurement, and weighing. We understand accuracy in testing is absolutely critical. Interface's quality measurement solutions provide accurate data needed for all types of maritime equipment that is used to ensure safety and success in your test and measurement projects, programs and monitoring.

Interface supplies test and measurement equipment, as well as OEM solutions to marine affiliated manufacturers and organizations that develop hardware to support shipyards, marine terminals, fishing, aquaculture, seafood processing, commercial diving, and marine transportation.

Our products can be paired together, using our force and torque measurement sensors with advanced instrumentation to ensure efficiency, sustainability, and proper production planning for all types of maritime test and measurement applications.

Interface provides solutions use to regulate through harsh weather conditions such as humidity and unbearable temperatures while still maintaining a high testing accuracy and reliable measurement performance.

The industry is complex, with growing requirements in environmentally safe and durable sensor capabilities. From innovator's R&D projects to shipbuilders production advancements, Interface has all your maritime needs covered with a wide variety of products suitable for submersion and the harsh weather that can be found at sea.

In addition, if our off-the-shelf products don't quite meet your use case, Interface's custom solutions team will work alongside you to create the most effective and efficient solution based on your needs.

Contact our application experts today and let us help you get the precise solution for your next challenge.

Maritime Solutions

- Load Cells
- Multi-Axis Sensors
- Tension Links
- Wireless Telemetry Solutions
- Load Shackles
- Load Pins
- Interface Mini™ Load Cells
- Data Acquisition Systems
- Instrumentation
- Digital Instrumentation

If you know what you need and are ready to talk to our application engineers, email or call today!

To learn more about the Interface maritime solutions provided call 480-948-5555.

Interface is the world's trusted leader in technology, design and manufacturing of force measurement solutions. Our clients include a "who's who" of the aerospace, automotive and vehicle, medical device, energy, industrial manufacturing, test and measurement industries.

Interface engineers around the world are empowered to create high-level tools and solutions that deliver consistent, high quality performance. These products include load cells, torque transducers, multi-axis sensors, wireless telemetry, instrumentation and calibration equipment.

Interface, Inc., was founded in 1968 and is a US-based, woman-owned technology manufacturing company headquartered in Scottsdale, Arizona.