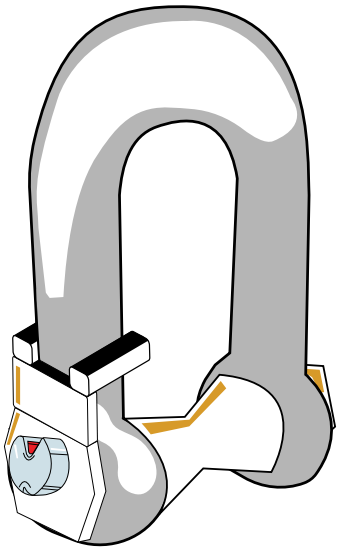
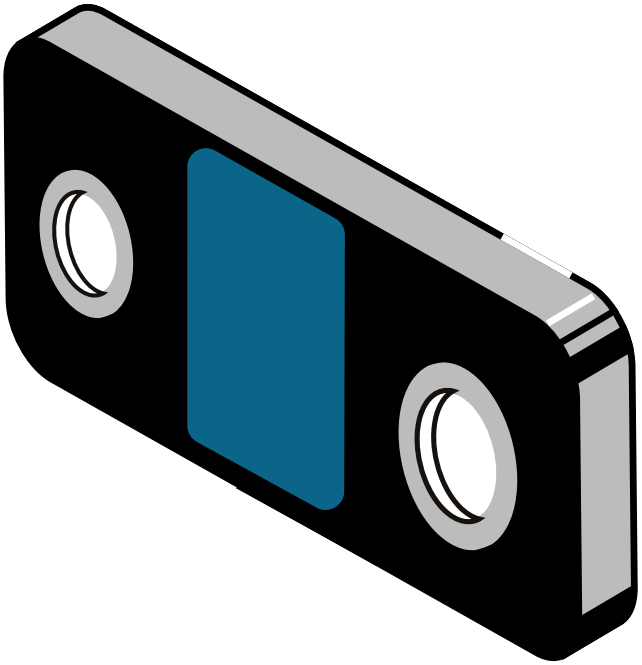
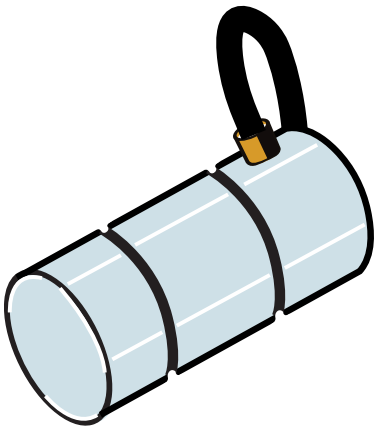
Interface

Application Notes Guide

Load Pins, Tension Links, and Load Shackles







Interface
FORCE MEASUREMENT SOLUTIONS

The World Leader in Force Measurement Solutions™

Aerospace

Aircraft Engine Hoist
Load Shackle

Industry: Aerospace

Summary

Customer Challenge

An aerospace company wants to test their aircraft engine hoist in order to safely lift, remove, or install engines efficiently and safety.

Interface Solution

Interface's solution is to install WTSSHK-B-HL Wireless Bow Shackles to the aircraft engine hoist. A heavy load will be added to the hooks where the aircraft engine would be. Results from the heavy load will be sent wirelessly to both the WTS-BS-4 USB Industrial Base Station attached to the customers computer or laptop, and the WTS-1-HS Handheld display for single transmitters

Results

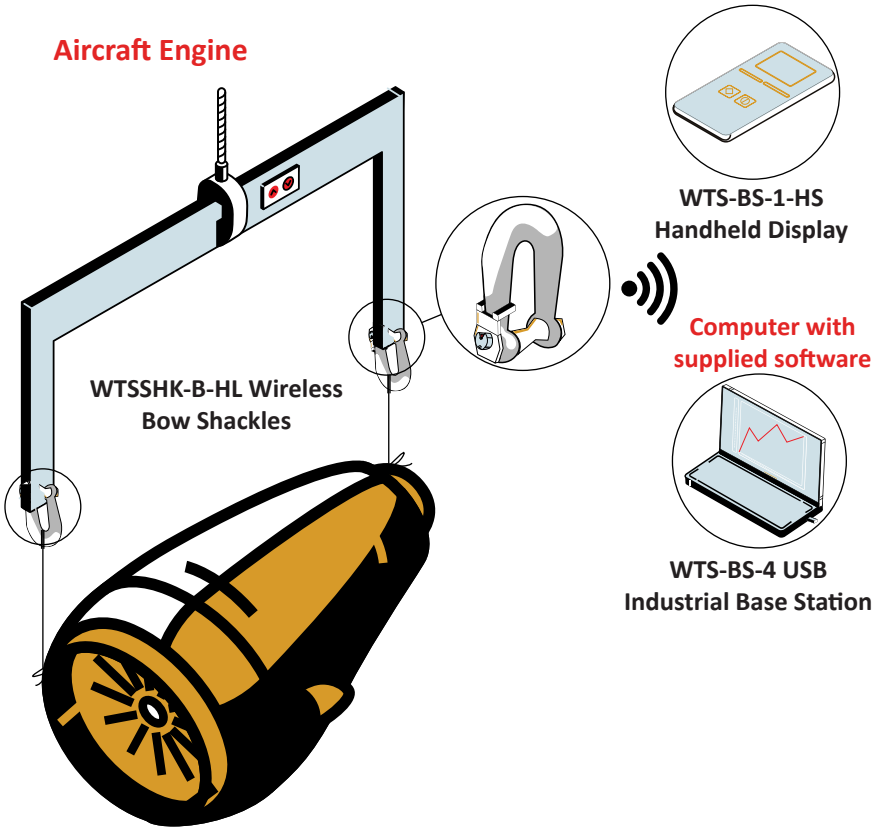
The customer was assured that the aircraft engine hoist was strong and secure enough to lift a heavy engine when installing or removing an engine inside of an aircraft.

Materials

- Two WTSSHK-B-HL Wireless Bow Shackles
- WTS-BS-4 USB Industrial Base Station
- WTS-BS-1-HS Handheld Display for Single Transmitters
- Customer PC or Laptop

How It Works

1. Two WTSSHK-B-HL Wireless Bow Shackles are installed onto the aircraft engine hoist.
2. A heavy load is attached to the hooks of the hoist and slings.
3. The WTSSHK-B-HL Wireless Bow Shackles measure the forces of the heavy load, and transmit the data wirelessly to the customers computer or laptop through the WTS-BS-4 USB Industrial Base Station. The customer can also view results wirelessly when the data is sent to the WTS-BS-1-HS Handheld Display for single transmitters.



Inflatable Space Habitat Load Cell

Industry: Aerospace

Summary

Customer Challenge

Inflatable space habitats are the newest innovation in the space industry, creating a new space for humans can live and work past the Earth's atmosphere. A space company wants to test the overall design and material of the inflatable habitat by conducting a burst test.

Interface Solution

Multiple clevises and LP Stainless Steel Load Pins are attached to the in the webbing material that create the inflatable habitat. When pressure is increased within the inflatable habitat, the load pins will capture how much force the heavy duty material will hold at specific pressures until it explodes.

Results

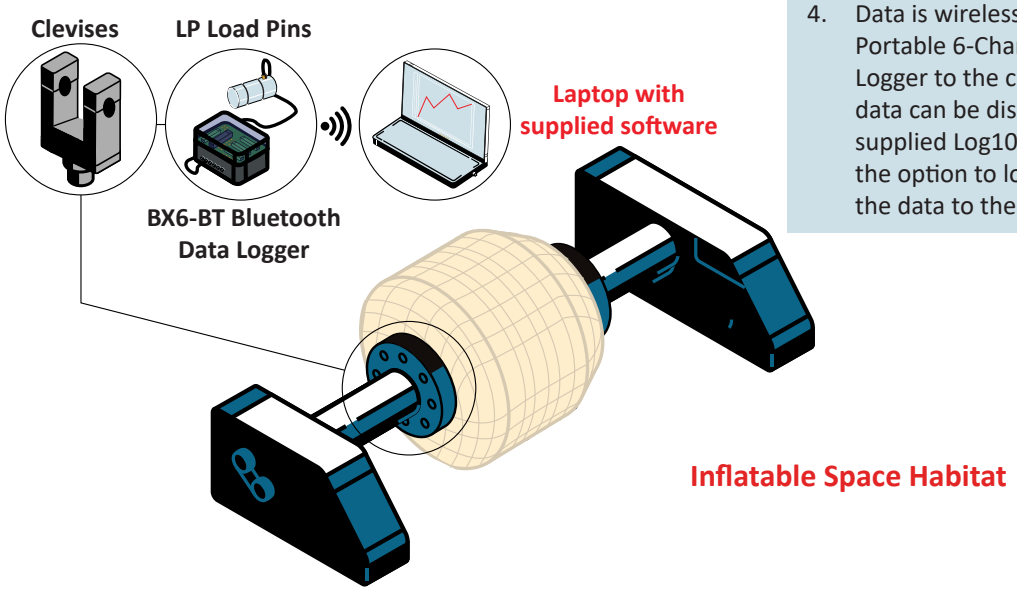
Interface's LP Stainless Steel Load Pins successfully measured the amount of force the inflatable habitat could withstand during the burst test.

Materials

- LP Stainless Steel Load Pins
- Clevises
- BX6-BT Portable 6-Channel High Speed Bluetooth Data Logger with supplied Log100 Software
- Inflatable Structure
- Customer PC

How It Works

1. Clevises and LP Stainless Steel Load Pins are embedded in the base of the inflatable habitat, where straps of hard duty material are woven together, creating the habitats structure. The LP's are connected to the BX6-BT Portable 6-Channel High Speed Bluetooth Data Logger.
2. The habitat is inflated, and PSI is increased slowly until the habitat bursts.
3. The LP's measure the amount of force the woven heavy duty fabric could handle until it bursts.
4. Data is wirelessly transmitted from the BX6-BT Portable 6-Channel High Speed Bluetooth Data Logger to the customer's PC via Bluetooth. The data can be displayed, recorded, and graphed using supplied Log100 software. The customer also has the option to log data onto an SD Card and upload the data to the PC through the SD Card.



Landing Gear Joint Testing
Load Pin

Industry: Aerospace

Summary

Customer Challenge

An aerospace company wants to test their new spacecraft assembly and design by testing its landing gear joints. They want to ensure there are no flaws in the gear shock absorber design and can handle the applied forces when the craft lands from a flight.

Interface Solution

Interface's WTSLP Wireless Stainless Steel Load Pins can be installed and replace the normal pin joints. The spacecraft undergoes multiple drop tests at different heights, where the forces applied on the load pins are measured. The force results are transmitted wirelessly to the WTS-BS-4 USB Industrial Base Station in the customer's computer, and the WTS-BS-1-Ha Handheld Digital Display for multiple transmitters.

Results

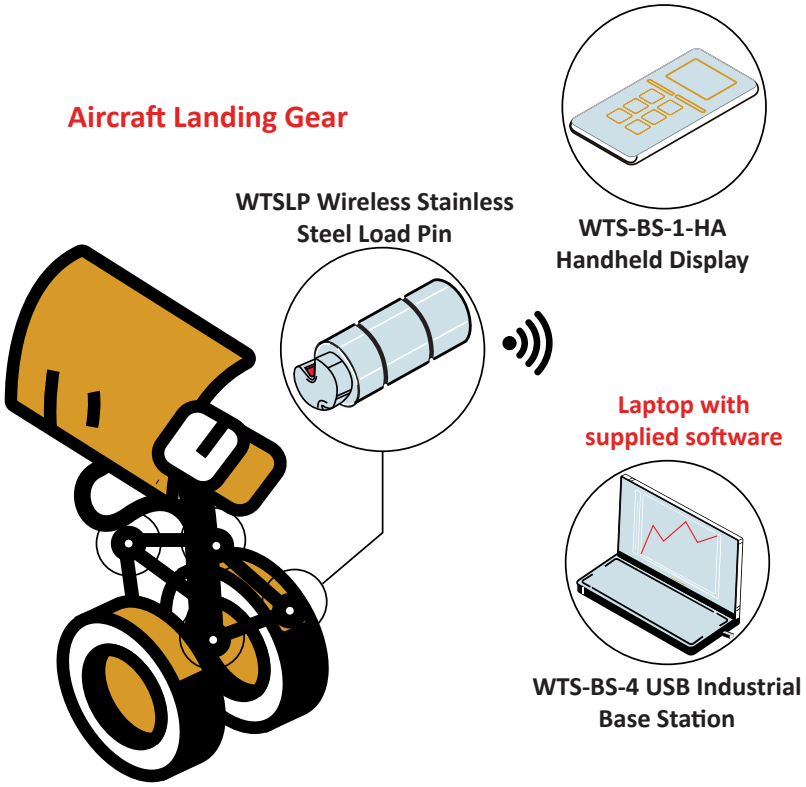
The customer was able to validate their spacecraft's landing gear structure is working effectively and safely.

Materials

- WTSLP Wireless Stainless Steel Load Pins
- WTS-BS-4 USB Industrial Base Station
- WTS Toolkit
- WTS-BS-1-HA Handheld Display for multiple transmitters
- Customer PC or Laptop

How It Works

1. The WTSLP Wireless Stainless Steel Load Pins are installed in the multiple articulating pin joints.
2. After multiple drop tests, the force measurements are transmitted wirelessly to the customer's computer through the WTS-BS-4 USB Industrial Base Station and the WTS-BS-1-HA Handheld Display for multiple transmitters.
3. The customer can record and log data with the supplied WTS toolkit that comes with the WTS-BS-4 USB Industrial Base Station.



Rescue Helicopter Hoist Test
Load Shackle

Industry: Aerospace

Summary

Customer Need / Challenge

A customer wants to test the strength of the cable line used in the hoist of their helicopter during rescue missions and situations. They want to see if both the cable and the hoist can withstand a heavy load safely, and for long periods of time while the helicopter is in flight.

Interface Solution

Interface's WTSSHK-D Wireless Crosby™ Load Shackle is 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/ Laptop. Data can also be transmitted to the WTS-BS-1-HS Handheld Display for Single Transmitters, giving the customer the option to view mooring cable line tension.

Results

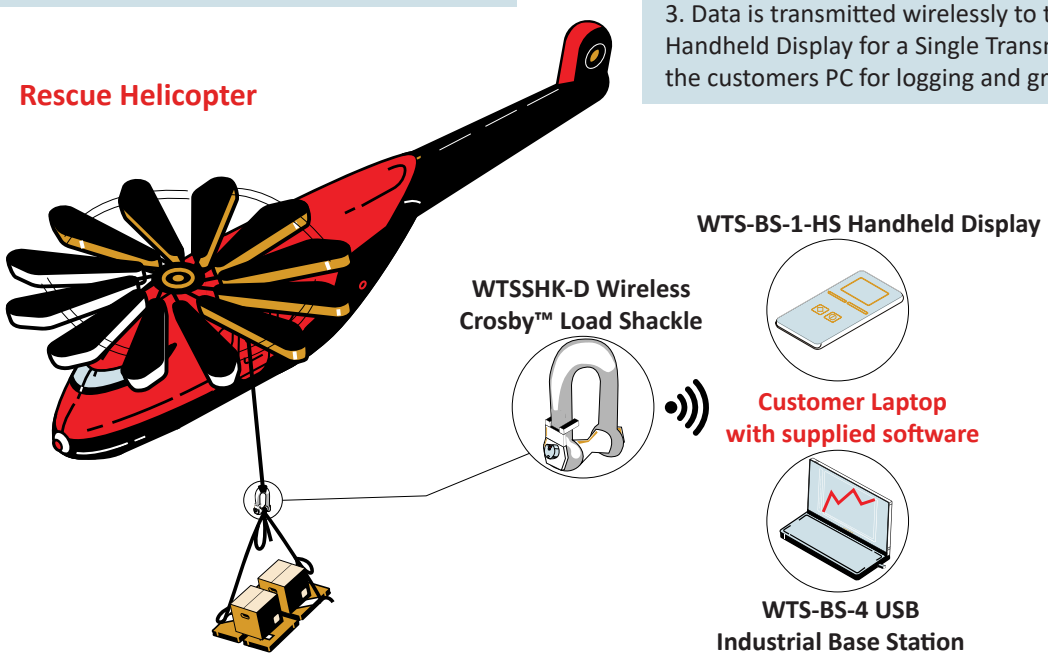
The customer was able to add a heavy load to the end of the helicopter hoist, to ensure it is strong and safe enough to carry both rescue personnel and objects while being in midair.

Materials

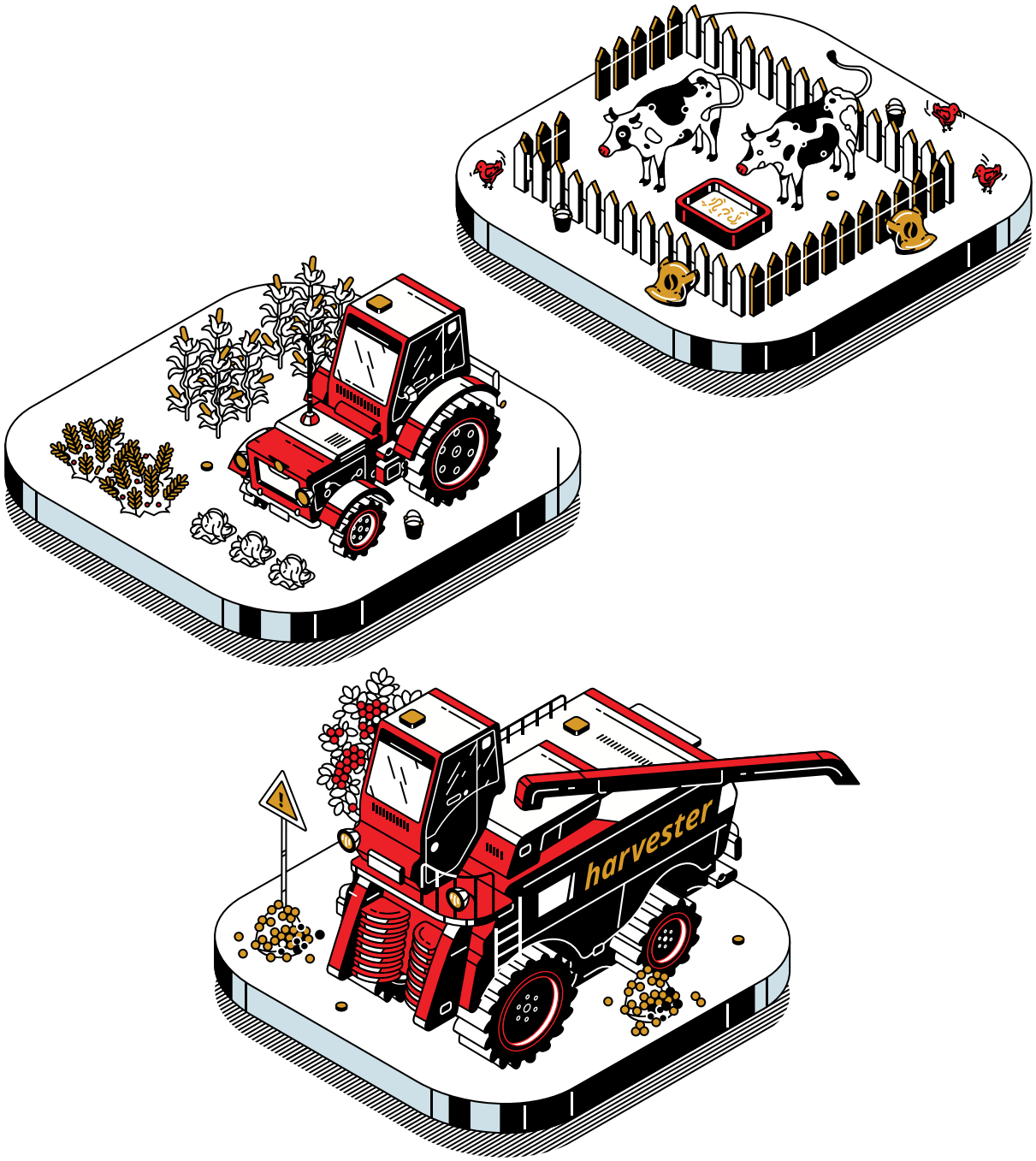
- WTSSHK-D Wireless Crosby™ Load Shackle
- WTS-BS-1-HS Handheld Display for Single Transmitters
- WTS-BS-4 USB Industrial Base Station
- WTS Toolkit & Log100 Software
- Customer supplied PC/Laptop

How It Works

1. The WTSSHK-D Wireless Crosby™ Load Shackle is installed at the end of the hoist.
2. A heavy load is attached to the shackle at its maximum capacity, and tested through mid flight in order to monitor the condition of the helicopter hoist.
3. Data is transmitted wirelessly to the WTS-BS-1-HS Handheld Display for a Single Transmitter, and also to the customers PC for logging and graphing information.



Agriculture



Tractor Linkage Draft Control Load Pin

Industry: IoT

Summary

Customer Challenge

A farmer wants to measure the forces applied on their tractor's draft control, between the tractor and any linked on attachments. Measuring the force will help the farmer be able sense any strains on the hitch of the tractor, and will be needed in order to apply any specific settings to the draft control when the tractor encounters rough terrain.

Interface Solution

Interface's WTSLP Wireless Stainless Steel Load Pin is a wireless load pin that can be installed directly in the hitch, replacing the normal shear pin of the tractor. Force results are transmitted wirelessly to the WTS-BS-4 USB Industrial Base Station, where the customer can view the results on their PC computer or Laptop with the supplied WTS toolkit. The customer can also view results on the WTS-BS-1-HS Handheld Display for Single Transmitters in real-time.

Results

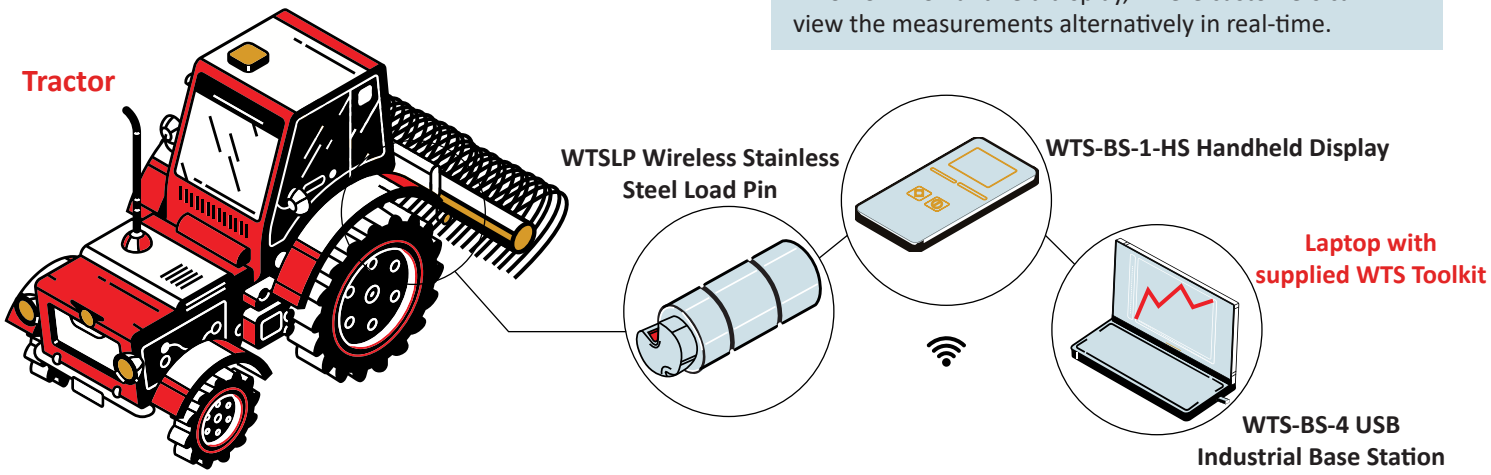
The customer is able to determine the specific draft control settings for their tractor after using Interface's custom solution Wireless Load Pin and Wireless Telemetry System products.

Materials

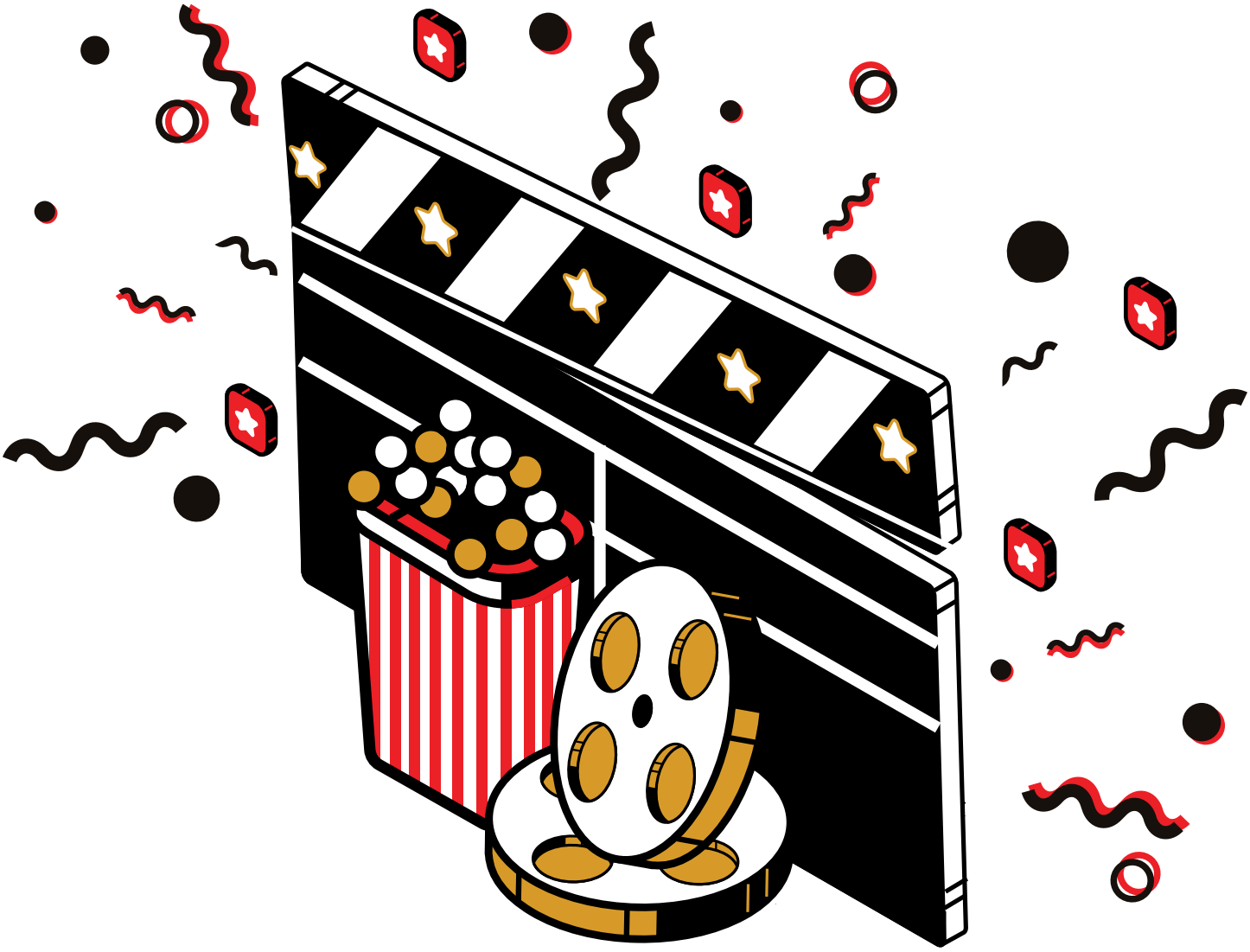
- WTSLP Wireless Stainless Steel Load Pin
- WTS-BS-1-HS Handheld Display for Single Transmitters
- WTS-BS-4 USB Industrial Base Station
- WTS Toolkit (graphing, logging, and set up software, included with WTS-BS-4)
- Customer PC Computer or Laptop

How It Works

1. The WTSLP Wireless Stainless Steel Load Pin is installed where the tractor's original shear pin would be located.
2. An implement is installed to the hitch.
3. The force results are measured and relayed to the wireless telemetry systems, such as the WTS-BS-4 USB Industrial Base Station, where the customer is able to review the results on their PC computer or laptop with the supplied WTS toolkit. It is also transmitted to the WTS-BS-1-HS handheld display, where customers can view the measurements alternatively in real-time.



Entertainment



Bluetooth® Show Booth Monitoring

Load Shackles and Bluetooth® Telemetry System

Industry: Entertainment

Summary

Customer Challenge

Every year, auto test shows use different displays and show booths to show off the world's newest innovative vehicles. Some displays are more complex than others, but the cars need to be displayed in the best light. A wireless monitoring system to monitor the different components that are attached to the truss above the show booth, holding both light fixtures and video screens.

Interface Solution

Interface suggests installing multiple WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles connected to Bluetooth® Telemetry System, to the truss hanging above the auto show booth. The load shackles force load data will wirelessly transmit directly to the customer's phone through the BTS Toolkit Mobile App.

Results

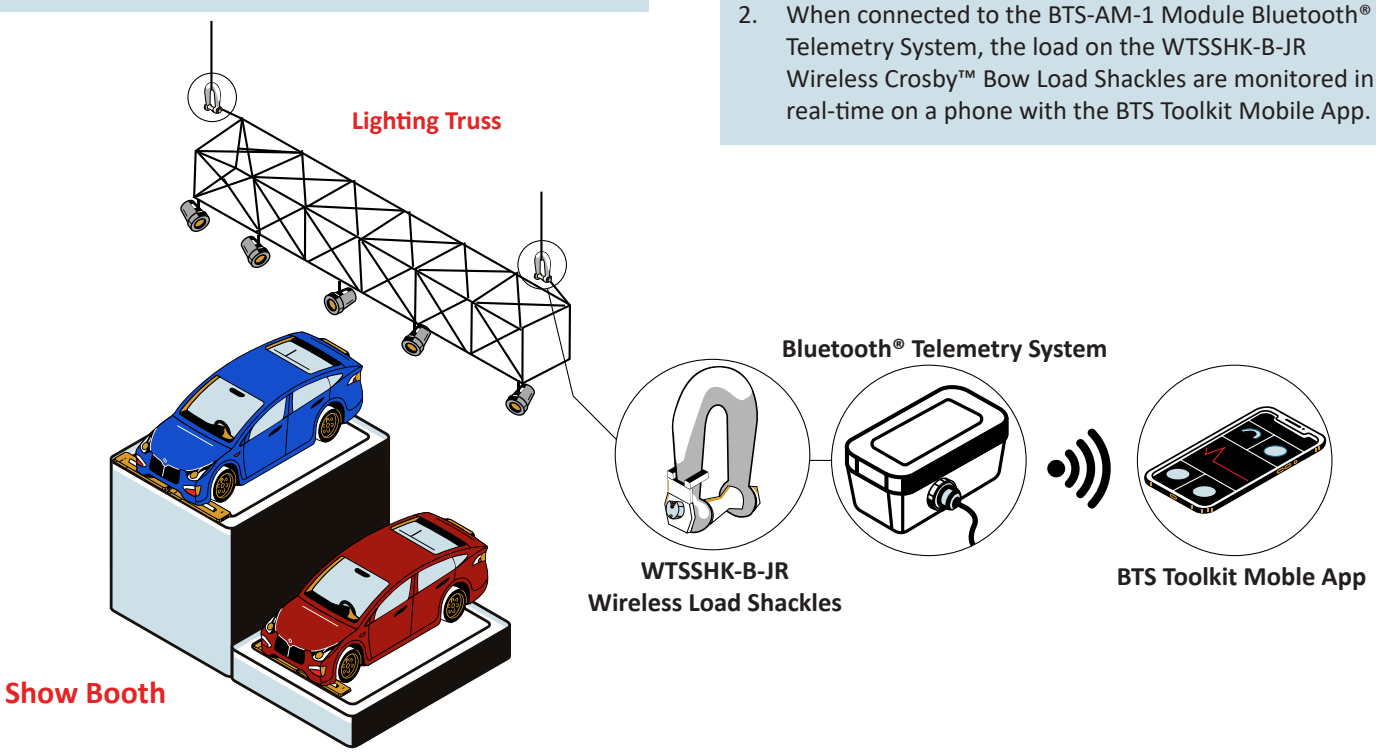
Interface's wireless load shackles and BTS Bluetooth® Telemetry System were the perfect system to monitor the load of the truss hanging above the auto show booth.

Materials

- WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles
- BTS-AM-1 Module Bluetooth® Telemetry System
- BTS Toolkit Mobile App for iPhone or Android devices

How It Works

1. Multiple WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles are attached to the lighting truss that is right above the vehicle's show booth.
2. When connected to the BTS-AM-1 Module Bluetooth® Telemetry System, the load on the WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles are monitored in real-time on a phone with the BTS Toolkit Mobile App.



Customized Light Fixture System
Load Shackles
Industry: Entertainment

Summary

Customer Challenge

Complex lighting fixtures in hotels or artistic installations need to be properly installed and monitored for safety reasons. The weight of heavy lighting fixtures can affect the structural integrity it is mounted on, causing it to weaken and possible cause accidents or other damage. A weight monitoring system is needed for these kinds of applications.

Interface Solution

Interface suggests installing multiple WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles to rig system on the ceiling, with integrated Wireless Strain Bridge Transmitter Modules. The load shackles will wirelessly transmit the light fixtures weight to the WTS-BS-4 Wireless Base Station with USB Interface in Industrial Enclosure connected to the customer's PC. Results of all load cell points or individual points can be wirelessly transmitted and displayed through a customer computer with Log 100 software, or using the WTS-BS-1-HA Wireless Handheld Display for Multiple Transmitters.

Results

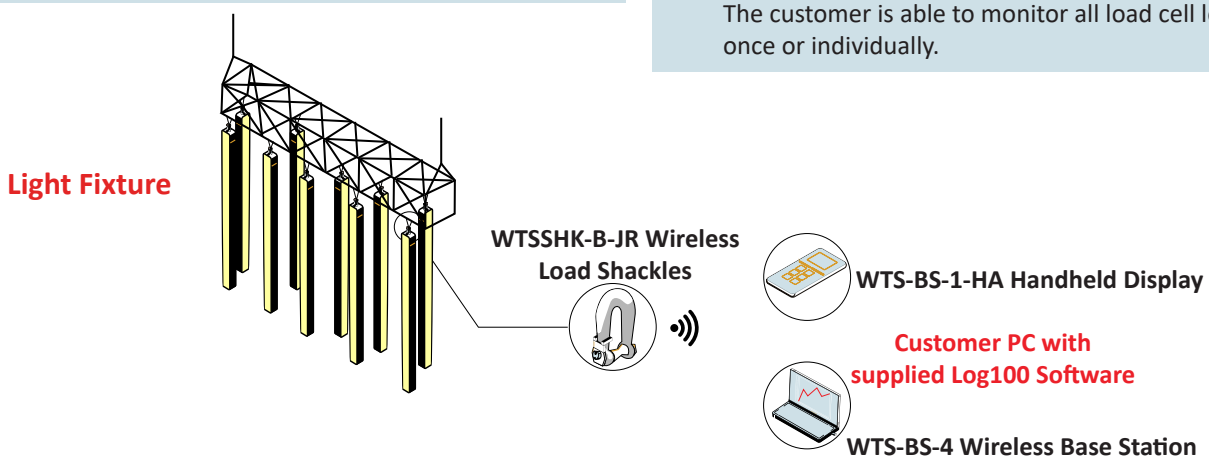
Interface's wireless load shackles successfully monitored the multiple loads of each of the light fixtures at once or individually. This created a safe and secure environment.

Materials

- WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles with integrated Wireless Strain Bridge Transmitter Modules
- WTS-BS-4 Wireless Base Station with USB Interface in Industrial Enclosure
- Supplied Log100 software
- WTS-BS-1-HA Wireless Handheld Display for Multiple Transmitters
- Customer PC or Laptop

How It Works

1. Multiple WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles are installed on the lighting system.
2. Heavy lighting fixtures are attached to the shackles, which collect the load data.
3. The shackles collect the force data, where it is wirelessly transmitted and displayed on the customer's computer with Log 100 software, or using the WTS-BS-1-HA Wireless Handheld Display for Multiple Transmitters. The customer is able to monitor all load cell locations at once or individually.



Theater Rigging System

Load Shackles and WTS Wireless Telemetry System

Industry: Entertainment

Summary

Customer Challenge

To prevent cable tangling, a theater needs a wireless system to monitor multiple load cells at once during stage rigging activities. They want to monitor multiple locations of the load cells at once or individually, especially when equipment and loads such as curtains are being rigged on stage.

Interface Solution

Interface suggests installing multiple WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles to the stage's rigging system, with integrated Wireless Strain Bridge Transmitter Modules. When a load is implemented, the load shackles will wirelessly transmit the data to the WTS-BS-4 Wireless Base Station with USB Interface in Industrial Enclosure connected to the customer's PC. Results of all load cell points or individual points can be wirelessly transmitted and displayed through a customer computer with Log 100 software, or using the WTS-BS-1-HA Wireless Handheld Display for Multiple Transmitters.

Results

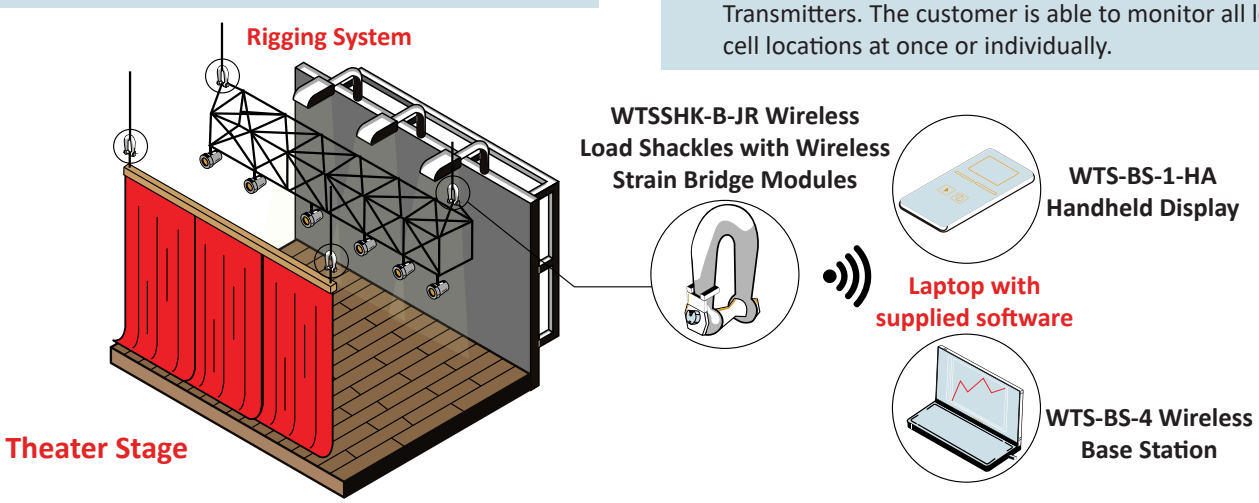
Interface's load cells and WTS Wireless Telemetry System successfully achieved the customer's need to monitor the multiple load cells at once or individually- especially during different stage rigging activities.

Materials

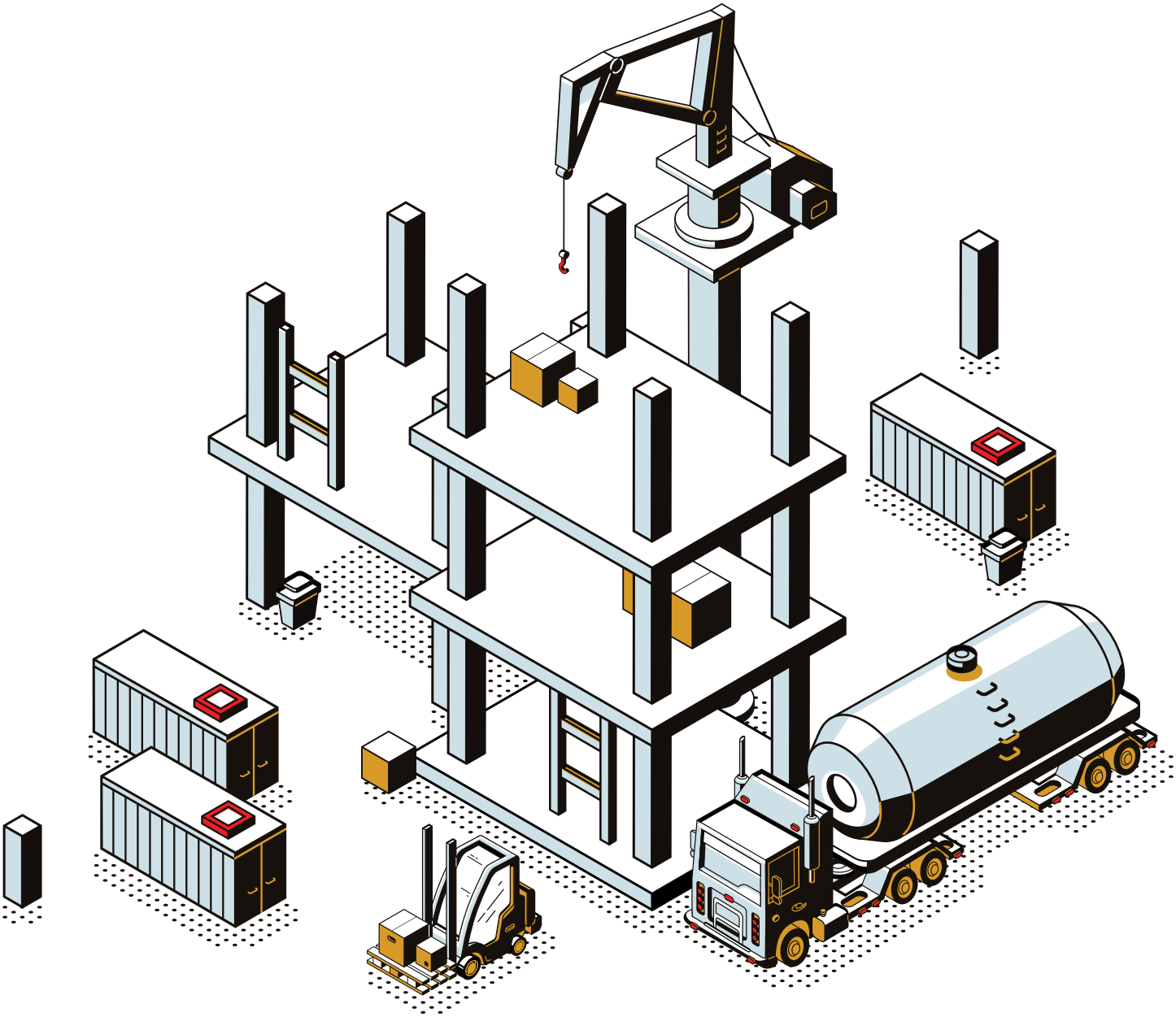
- WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles with integrated Wireless Strain Bridge Transmitter Modules
- WTS-BS-4 Wireless Base Station with USB Interface in Industrial Enclosure
- Supplied Log100 software
- WTS-BS-1-HA Wireless Handheld Display for Multiple Transmitters
- Customer PC or Laptop

How It Works

1. Multiple WTSSHK-B-JR Wireless Crosby™ Bow Load Shackles are installed on the theater's rigging system.
2. Loads such as curtains or lighting fixtures are rigged onto the theater's stage.
3. The load shackles collect the force data, where it is wirelessly transmitted and displayed on the customer's computer with Log 100 software, or using the WTS-BS-1-HA Wireless Handheld Display for Multiple Transmitters. The customer is able to monitor all load cell locations at once or individually.



Infrastructure



Bridge Seismic Force Monitoring Solution

Load Pin

Industry: Infrastructure

Summary

Customer Challenge

Customer would like to monitor seismic activity that occurs to a bridge by using force sensors and then continuously monitoring bridge forces before, during and after earthquakes occur. Customer would prefer a wireless solution so they would not need to run long cables on the bridge.

Interface Solution

Using Interface's WTSLP Load Pin custom made to fit their needs along Interface's WTS Wireless Telemetry System continuous force monitoring was able to take place without long cables.

Results

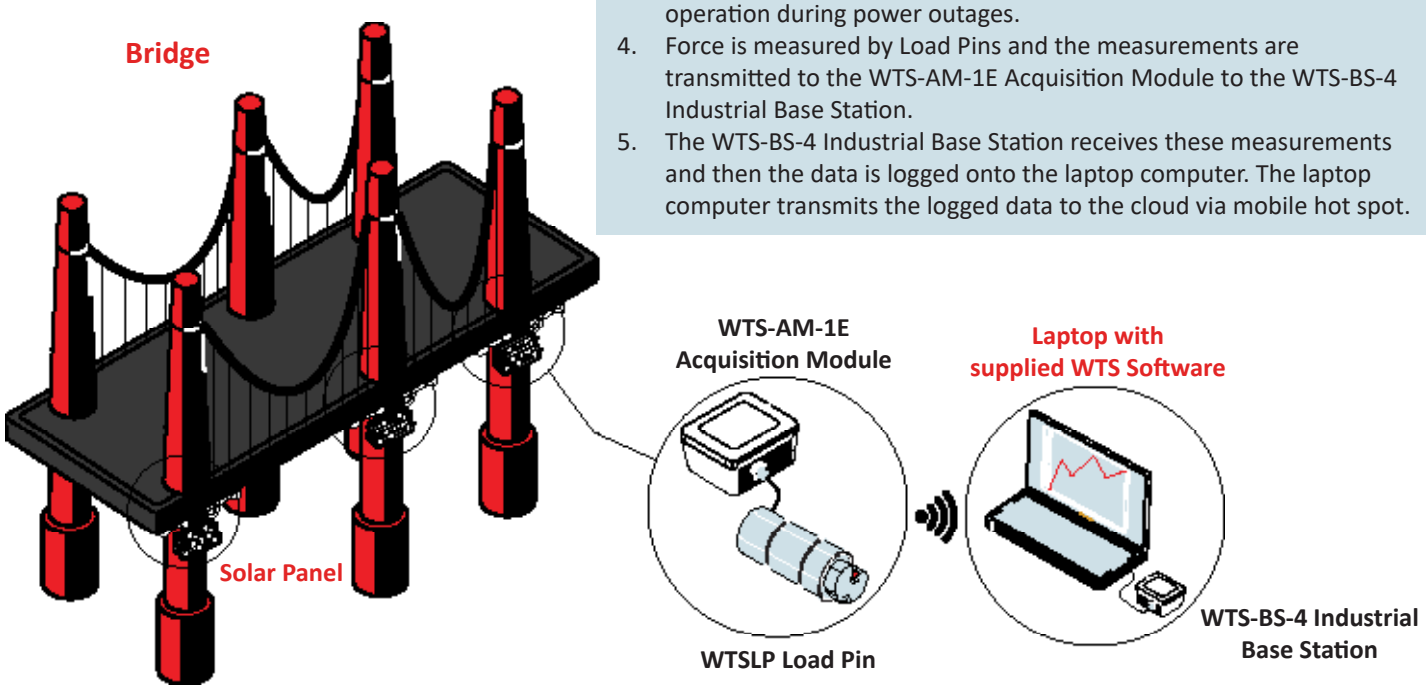
Customer was able to monitor continuous loads, log information to the cloud and review information.

Materials

- WTSLP Load Pin
- WTS-AM-1E Acquisition Module
- WTS-BS-4 Industrial Base Station
- Customer's Data Acquisition System
- PC computer with supplied WTS Software
- Solar Panel

How It Works

1. WTSLP Load Pins and the WTS-AM-1E Acquisition Module are installed onto the bridge. The WTS-AM-1E Acquisition Module is installed in a way that will be a clear line of site.
2. WTS-BS-4 Industrial Base Station is connected to the PC computer and installed up to 800 meters of the WTS-AM-1E Acquisition Module.
3. WTS-AM-1E Acquisition Module and Laptop Computer are also connected to a Solar Panel Backup System to ensure continuous operation during power outages.
4. Force is measured by Load Pins and the measurements are transmitted to the WTS-AM-1E Acquisition Module to the WTS-BS-4 Industrial Base Station.
5. The WTS-BS-4 Industrial Base Station receives these measurements and then the data is logged onto the laptop computer. The laptop computer transmits the logged data to the cloud via mobile hot spot.



Reach Stacker
Load Pin

Industry: Infrastructure

Summary

Customer Challenge

A reach stacker is a vehicle used in shipping ports and container terminals to lift, move, and stack heavy containers. A force monitoring system is needed to ensure the safety of surrounding personnel, and if the reach stacker is capable of lifting heavy loads.

Interface Solution

Interface's WTSLP Wireless Stainless Steel Load Pins can be installed into the corners of the lifting mechanism of the reach stacker, where heavy loaded containers are lifted and moved. The force results are then wireless transmitted to both the WTS-BS-1-HS Wireless Handheld Display for Single Transmitters, or directly to the customer's PC with the WTS-BS-6 Wireless Telemetry Dongle Base Station.

Results

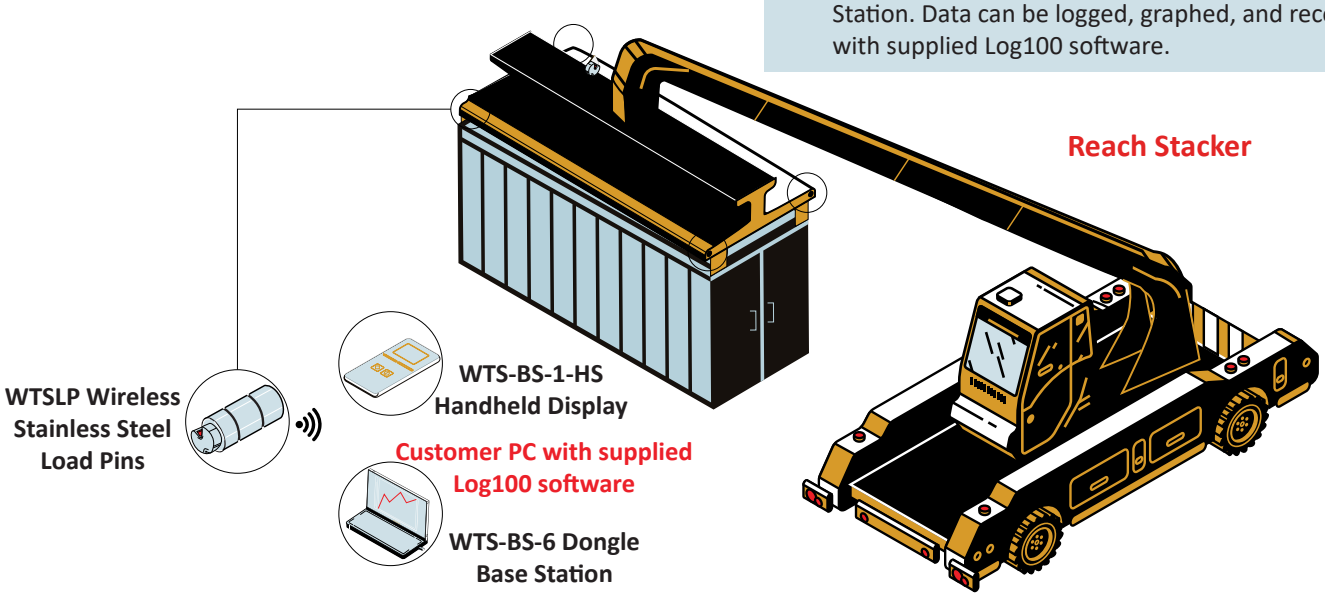
The customer was able to monitor their reach stacker with Interface's Wireless Telemetry System and ensure its ability to lift heavy loads at the shipping ports and terminals.

Materials

- Four WTSLP Wireless Stainless Steel Load Pin
- WTS-BS-1-HS Wireless Handheld Display for Single Transmitters
- WTS-BS-6 Wireless Telemetry Dongle Base Station
- Supplied Log100 software
- Customer PC

How It Works

1. The four WTSLP Wireless Stainless Steel Load Pin are installed at the our corners of the lifting mechanism of the reach stacker.
2. A heavy load or container is lifted.
3. The WTSLP's wirelessly transmits the force data results to TS-BS-1-HS Wireless Handheld Display for Single Transmitters, or directly to the customer's PC with the WTS-BS-6 Wireless Telemetry Dongle Base Station. Data can be logged, graphed, and recorded with supplied Log100 software.



Road Bridge Lift Monitoring
Load Pin

Industry: Infrastructure

Summary

Customer Challenge

Road bridges lifts are specially constructed on roads or highways that intersect with water bodies such as rivers, canals, or harbors, allowing navigation to continue unimpeded. A force sensor system is needed to ensure the structural integrity of the bridge along with safe operation.

Interface Solution

Interface suggests installing their LP Stainless Steel Load Pins within the pulley's of the pulley system of the bridge. When the bridge is lifted, the LP's will detect the force implemented. Results are displayed for the customer using the 920i Programmable Weight Indicator and Controller.

Results

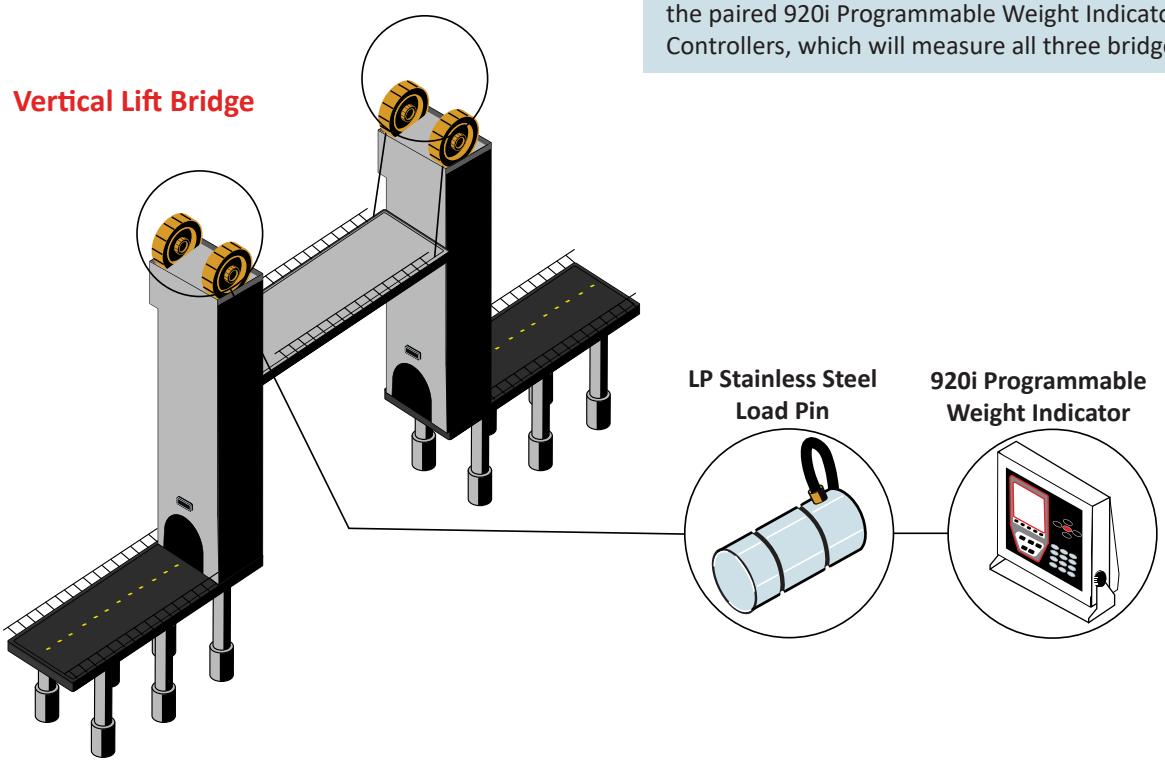
Interface's load pins and instrumentation successfully monitored the forces of the road bridge lift during its operation.

Materials

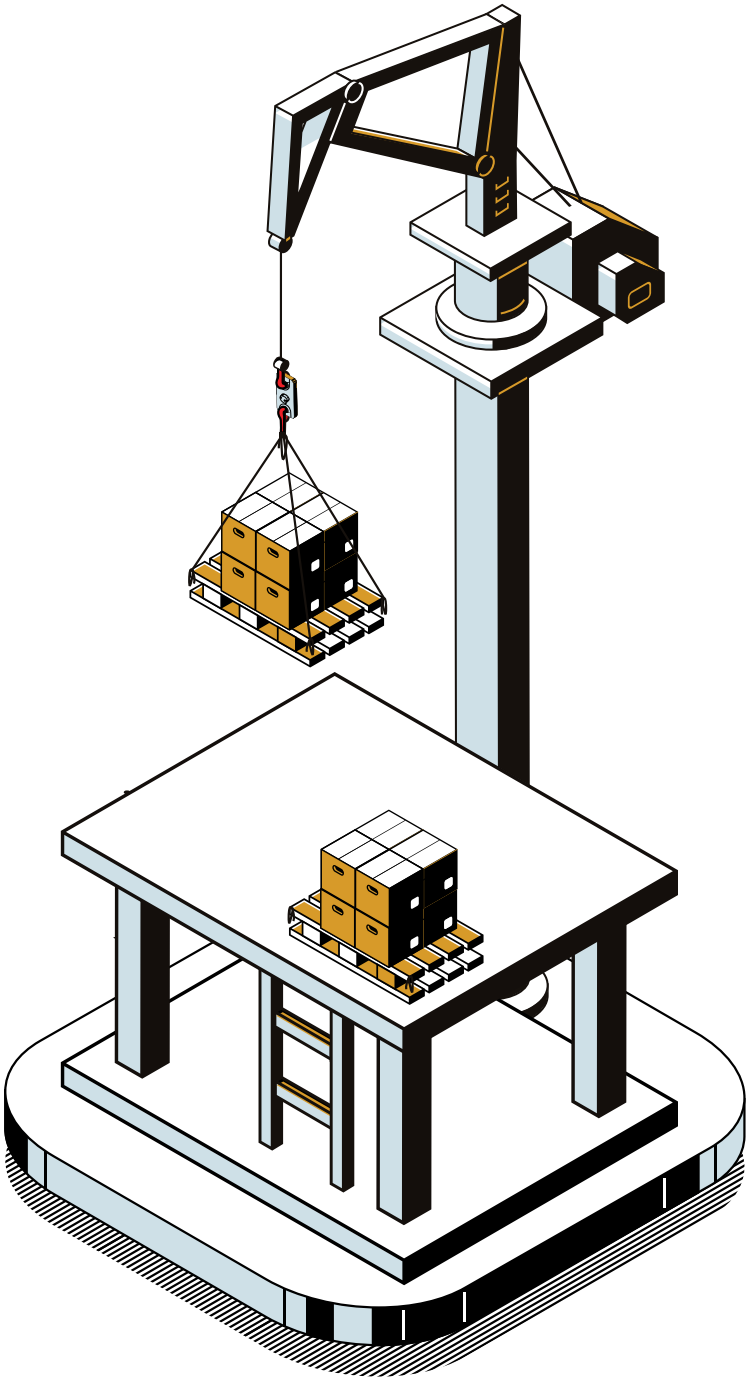
- Multiple LP Stainless Steel Load Pins
- Multiple 920i Programmable Weight Indicator and Controllers

How It Works

1. The LP Stainless Steel Load Pins are installed in the pulley's of the pulley system used to lift the vertical bridge.
2. Force data can be displayed when connected to the paired 920i Programmable Weight Indicator and Controllers, which will measure all three bridges.



Lifting



Bridge Lifting and Positioning

Load Pins and Wireless Telemetry System

Industry: Lifting

Summary

Customer Challenge

New bridges on construction sites need to be carefully lifted and positioned to their final destination. This requires a load monitoring system in order to improve safety and ensure efficiency of the overall application.

Interface Solution

Interface suggests installing WTSLP Wireless Stainless Steel Load Pins in the cranes performing the lifting and positioning. Loads are monitored and data is wirelessly transmitted to the customer's PC through WTS-BS-4 Wireless Base Station with USB Interface in Industrial Enclosure. It can also be transmitted to the WTS-BS-1 Wireless Handheld Display for Unlimited Transmitters Data can be displayed, logged, and graphed with supplied Log100 software.

Results

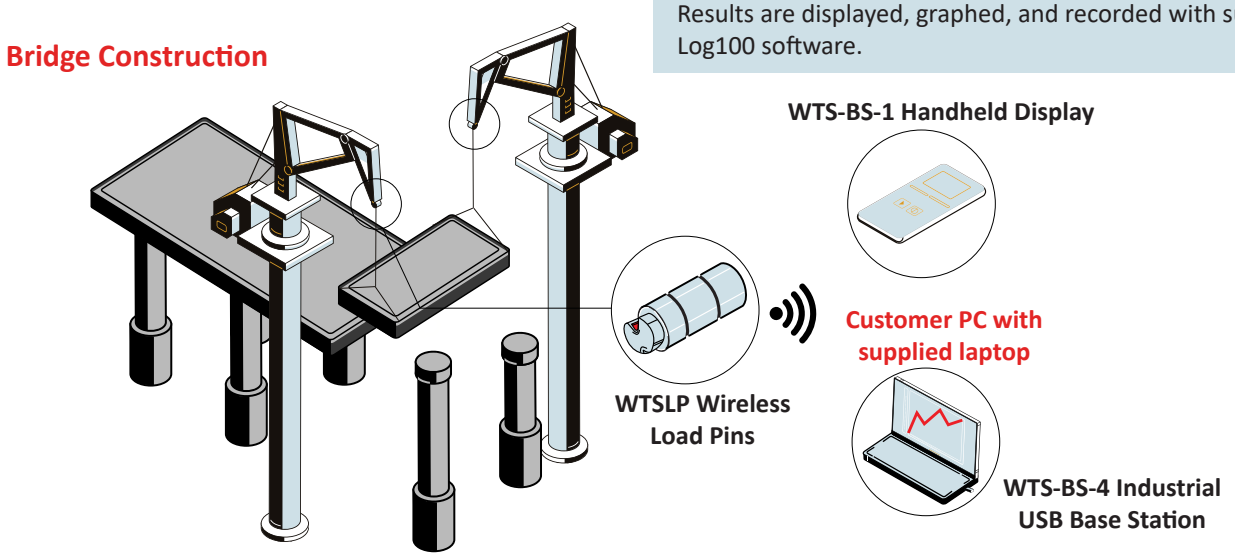
Interface's WTSLP Wireless Stainless Steel Load Pins paired with Interface's Wireless Telemetry System was the perfect monitoring system solution for lifting and positioning a bridge.

Materials

- WTSLP Wireless Stainless Steel Load Pins
- WTS-BS-4 Wireless Base Station with USB Interface in Industrial Enclosure with included Log100 Software
- WTS-BS-1 Wireless Handheld Display for Unlimited Transmitters
- Customer Laptop

How It Works

1. WTSLP Wireless Stainless Steel Load Pins are installed into the cranes that will lift the bridge pieces.
2. The WTSLP Wireless Stainless Steel Load Pins capture the bridge's load and wirelessly transmits it to the customer's PC through the WTS-BS-4 Wireless Base Station with USB Interface in Industrial Enclosure.
3. Customer's also have the option of using the WTS-BS-1 Wireless Handheld Display for Unlimited Transmitters. Results are displayed, graphed, and recorded with supplied Log100 software.



Jib Crane Tension Monitoring
Load Shackle

Industry: Lifting

Summary

Customer Challenge

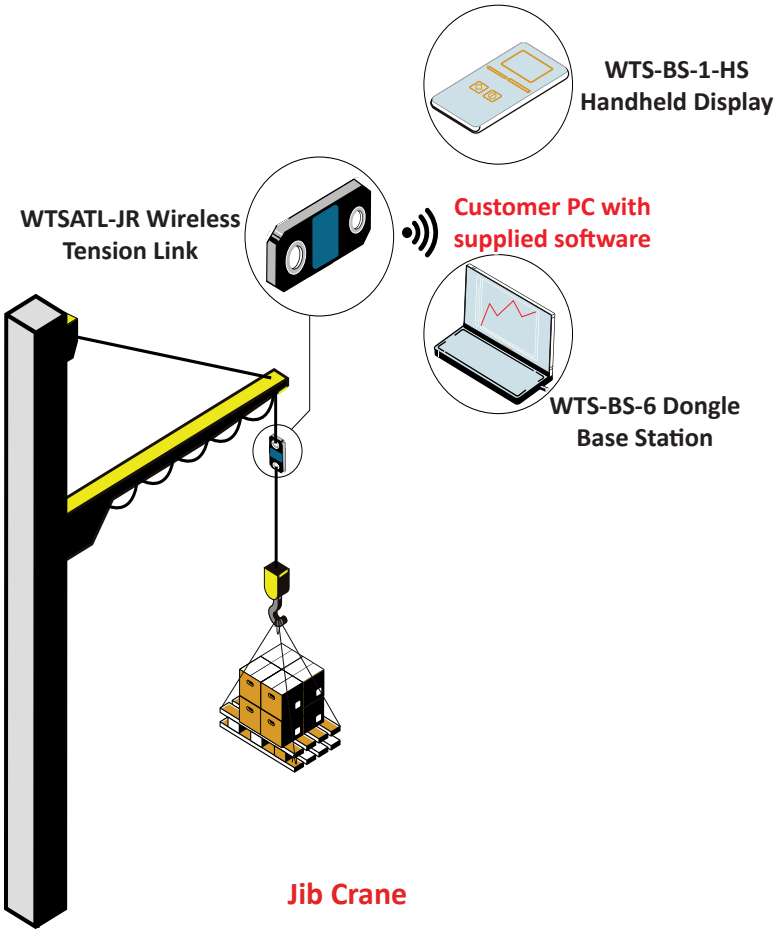
Jib cranes are used to move or carry heavy loads, as it is attached to a vertical mast or strong support structure. A tension monitoring system is needed to ensure the loads being lifted does not go over the jib crane's capacity.

Interface Solution

Interface's WTSATL-JR Aluminum Compact Wireless Tension Link can be attached to the cable of the jib crane. When a heavy load is place at the end of the jib crane, the force results are wirelessly transmitted to the WTS-BS-1-HS Wireless Handheld Display for Single Transmitters or displayed on the customer's PC through the WTS-BS-6 Wireless Telemetry Dongle Base Station.

Results

The customer was able to monitor the cable tension forces of the jib crane to ensure it did not reach its maximum capacity.



Materials

- WTSATL-JR Aluminum Compact Wireless Tension Link
- WTS-BS-1-HS Wireless Handheld Display for Single Transmitters
- WTS-BS-6 Wireless Telemetry Dongle Base Station
- Supplied Log100 software
- Jib Crane
- Customer PC

How It Works

1. The WTSATL-JR Aluminum Compact Wireless Tension Link is installed into the cable of the jib crane.
2. A heavy load is added, and the force measurements are monitored ensuring the crane does not max out its capacity and break.
3. The force results are wirelessly transmitted to WTS-BS-1-HS Wireless Handheld Display for single transmitters, or to the customer's PC through the WTS-BS-6 Wireless Telemetry Dongle Base Station with supplied Log100 software. Data can be displayed, graphed, and logged.

Gantry Crane Weighing
Load Pin

Industry: Lifting

Summary

Customer Challenge

Gantry cranes are used for a number of mobile and lifting applications within industrial or construction environments. A weighing system is needed to see if the gantry crane can handle lifting heavy containers or loads, preventing crane failure or accidents.

Interface Solution

Interface's WTSLP Wireless Stainless Steel Load Pins can be installed into the corners of the lifting mechanism of the gantry crane, where heavy loaded containers are lifted and moved. The force results are then wireless transmitted to both the WTS-BS-1-HS Wireless Handheld Display for Single Transmitters, or directly to the customer's PC with the WTS-BS-6 Wireless Telemetry Dongle Base Station.

Results

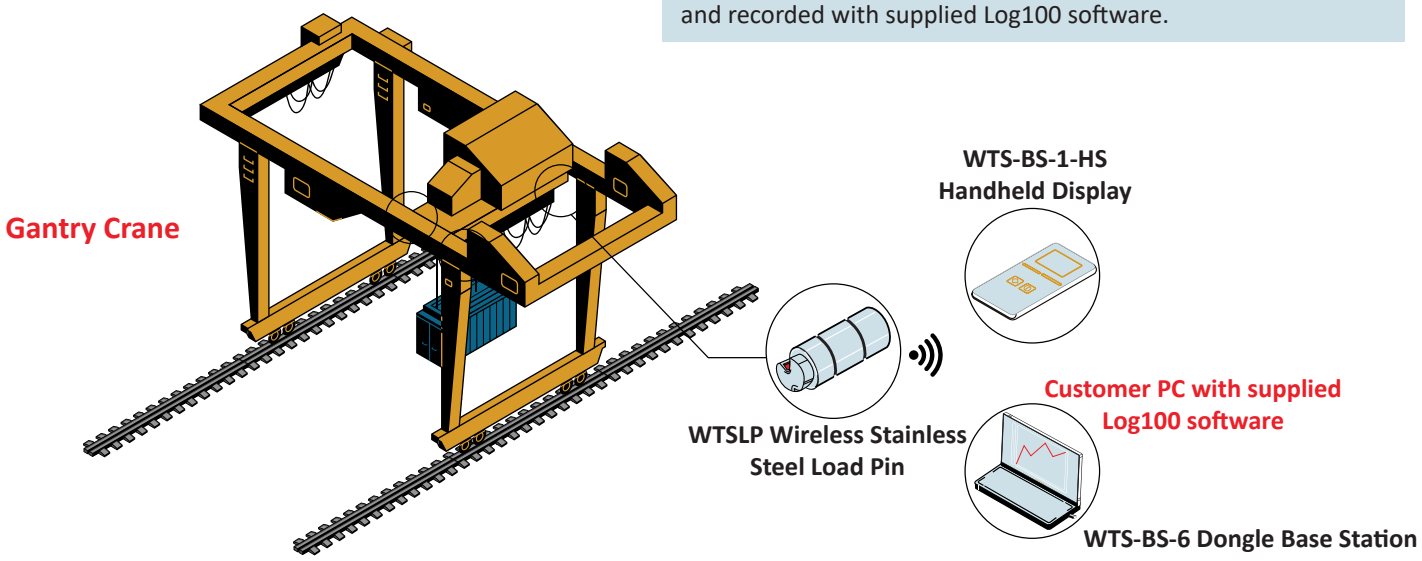
The customer was able to monitor the loads lifted from their gantry crane with Interface's Wireless Telemetry System, and determine whether or not their gantry crane was able to handle lifting heavy loads.

Materials

- Four WTSLP Wireless Stainless Steel Load Pin
- WTS-BS-1-HS Wireless Handheld Display for Single Transmitters
- WTS-BS-6 Wireless Telemetry Dongle Base Station
- Supplied Log100 software
- Customer PC

How It Works

1. The four WTSLP Wireless Stainless Steel Load Pin are installed at the our corners of the lifting mechanism of the gantry crane. A heavy load or container is lifted.
2. The WTSLP's wirelessly transmits the force data results to WTS-BS-1-HS Wireless Handheld Display for Single Transmitters, or directly to the customer's PC with the WTS-BS-6 Wireless Telemetry Dongle Base Station. Data can be logged, graphed, and recorded with supplied Log100 software.



Lifting Heavy Objects
Wireless Telemetry System
Industry: Industrial Automation

Summary

Customer Challenge

Customer needs to use a crane to move heavy construction materials around the work site and need to monitor the weight of these objects as they are lifted.

Interface Solution

Interface Model WTSSHK-B Wireless Load Shackle are connected in crane load string to measure forces. Model WTS-BS-1-HA Battery Powered Handheld Display is used to wirelessly receive load information and display results.

Results

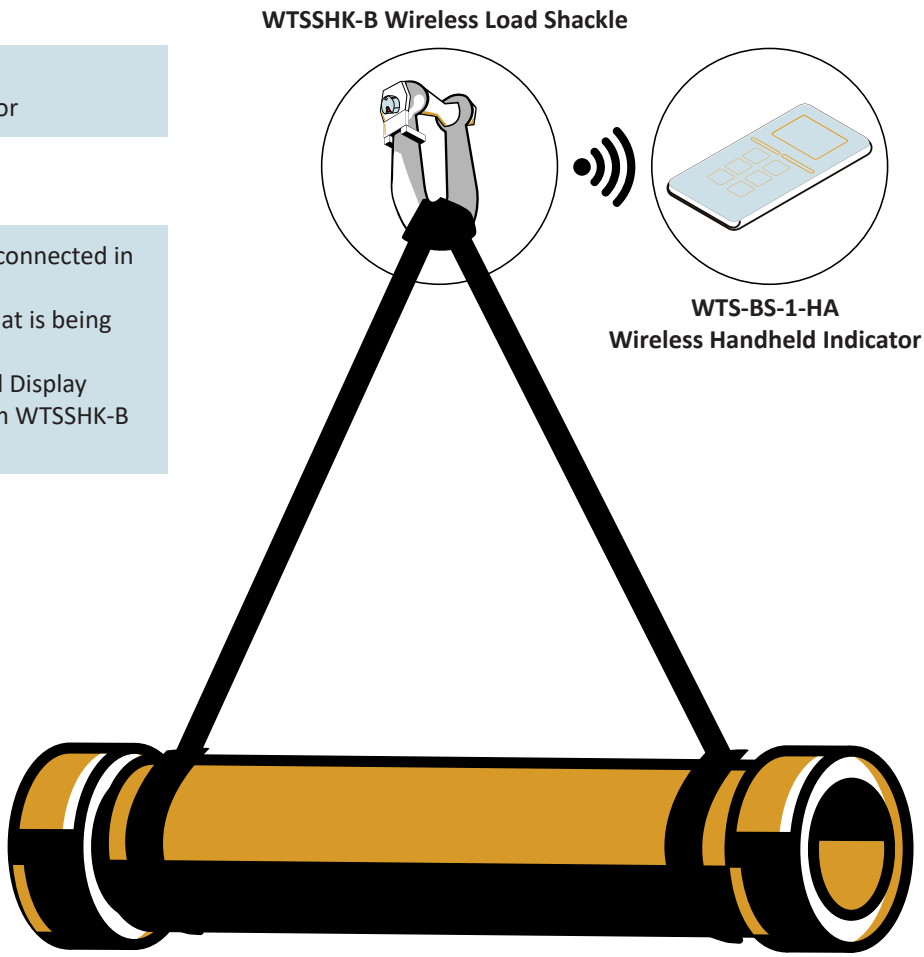
Customer is successfully lifting and reading weight (wirelessly) on a handheld display while material is being relocated.

Materials

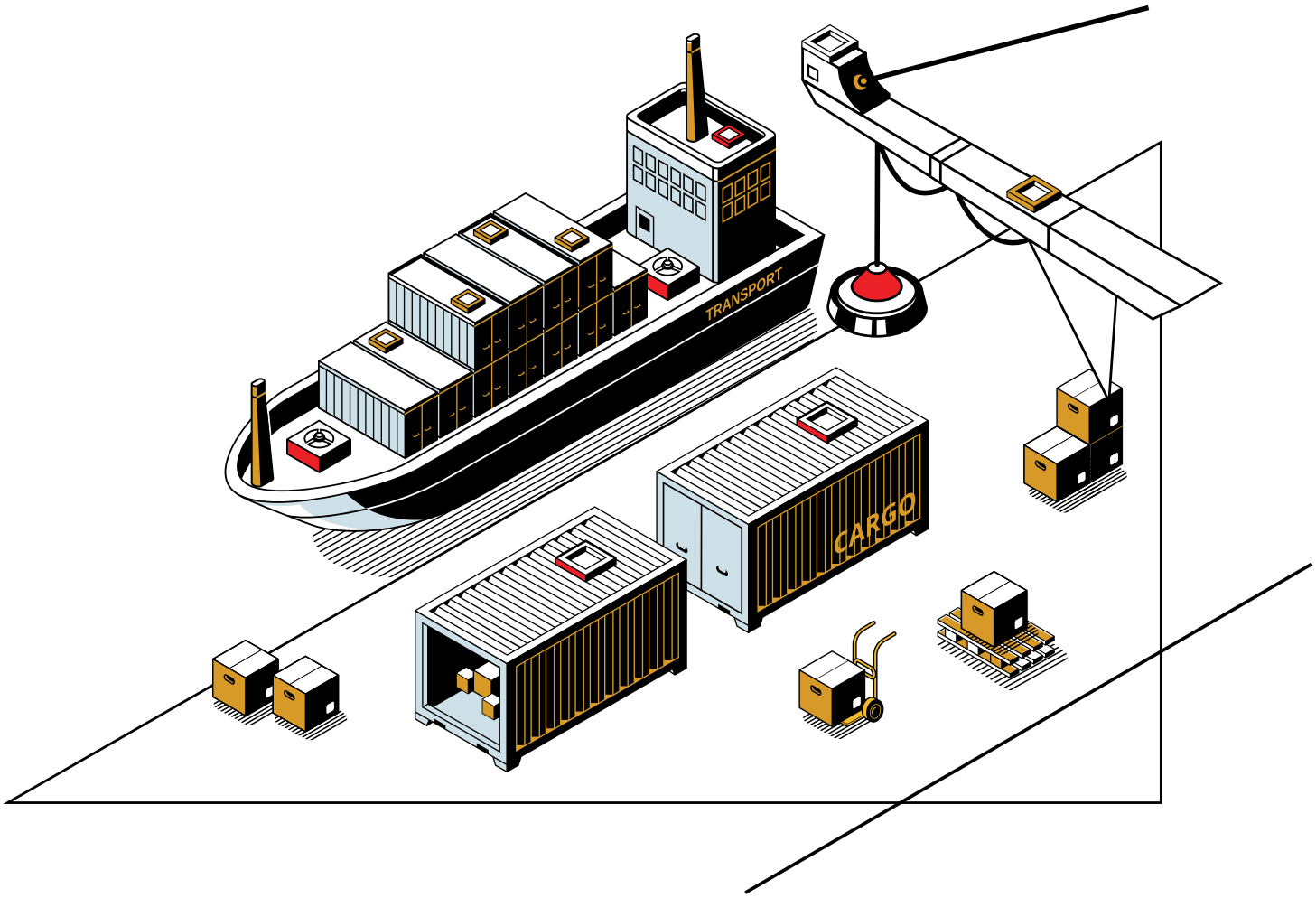
- WTSSHK-B Wireless Load Shackle
- WTS-BS-1-HA Wireless Handheld Indicator

How It Works

1. The WTSSHK-B Wireless Load Shackle is connected in the load string of the crane.
2. Customer connects straps to the item that is being lifted and to the load shackle.
3. WTS-BS-1-HA Battery Powered Handheld Display will wirelessly display force readings from WTSSHK-B Wireless Load Shackle.



Maritime



Boat Hoist

Load Shackles and Wireless Telemetry System

Industry: Maritime

Summary

Customer Challenge

A customer needs a boat hoist system in order to lift boats out of water for maintenance purposes. They would like a wireless solution in order to monitor the forces being applied through the hoist system.

Interface Solution

Interface suggests using multiple WTSSHK-B Wireless Crosby™ Bow Load Shackles at the pick up points of the hoist mechanism. Data results of the individual loading points and total weight can be transmitted wirelessly to the WTS-BS-4 Industrial USB Base Station when connected to a PC or laptop with supplied Log100 software.

Results

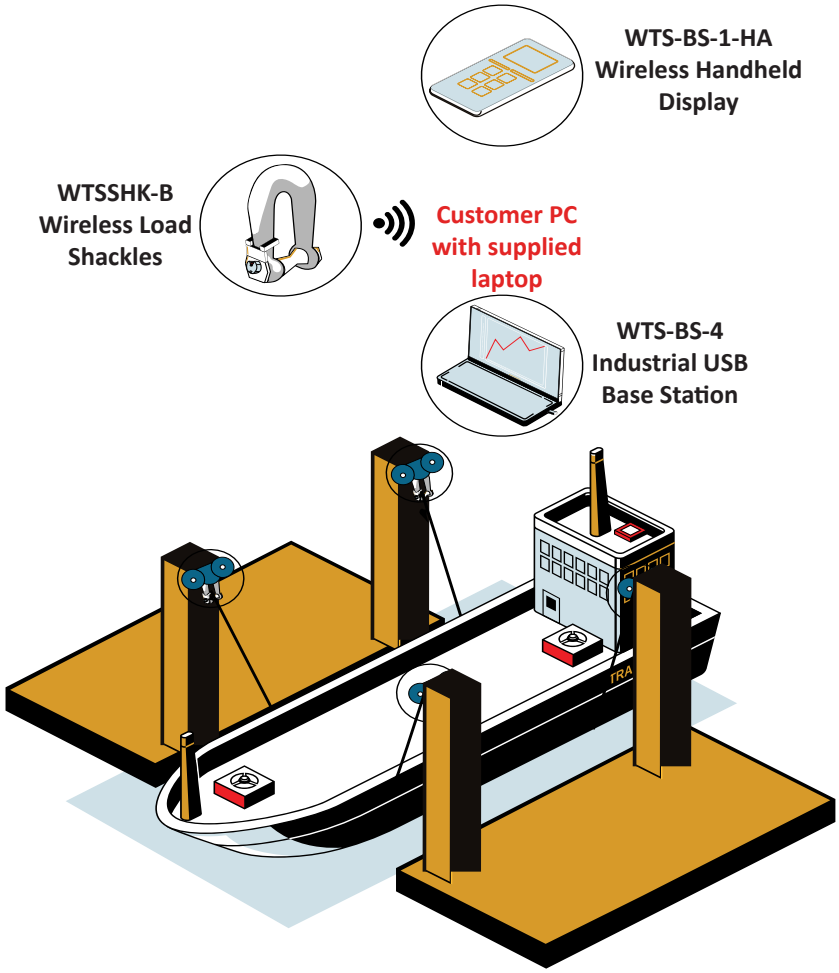
Interface's wireless system and solution successfully measured the weight of the boat and ensured it would be safely lifted out of the water.

Materials

- WTSSHK-B Wireless Crosby™ Bow Load Shackles
- WTS-BS-4 Industrial USB Base Station with supplied Log100 software
- WTS-BS-1-HA Wireless Handheld Display for Multiple Transmitters
- Customer PC or Laptop

How It Works

1. Multiple WTSSHK-B Wireless Crosby™ Bow Load Shackles are installed to the boat hoist mechanism.
2. The boat is lifted out of the water, and the force measurements are wirelessly transmitted to the WTS-BS-4 Industrial USB Base Station. The customer can measure the individual loading points and total weight.
3. When connected to a PC or laptop, force data can be logged and graphed with Log100 supplied software. Loads can also be seen using the WTS-BS-1-HA Wireless Handheld Display for Multiple Transmitters.



Catenary Mooring System
Load Shackles

Industry: Maritime

Summary

Customer Challenge

A customer has a catenary mooring system, which is used for a variety of offshore applications. They need to ensure the anchors and chains are securely locked to the node. They need to measure the strength and fatigue of the main node the chains and anchors attach to, so they do not risk any mooring lines breaking or the node being damaged.

Interface Solution

Depending on how many points there are on the node, Interface's special submersible ISHK-B Bow Type Crosby™ Cabled Load Shackles are attached to the node. The chains and anchors are then attached to the shackles. The shackles measure the forces implemented by the chains and anchors, and results are displayed, logged, and graphed using the 9325-1 Portable Sensor Display. This instrument also comes with supplied software to connect to the customer's PC.

Results

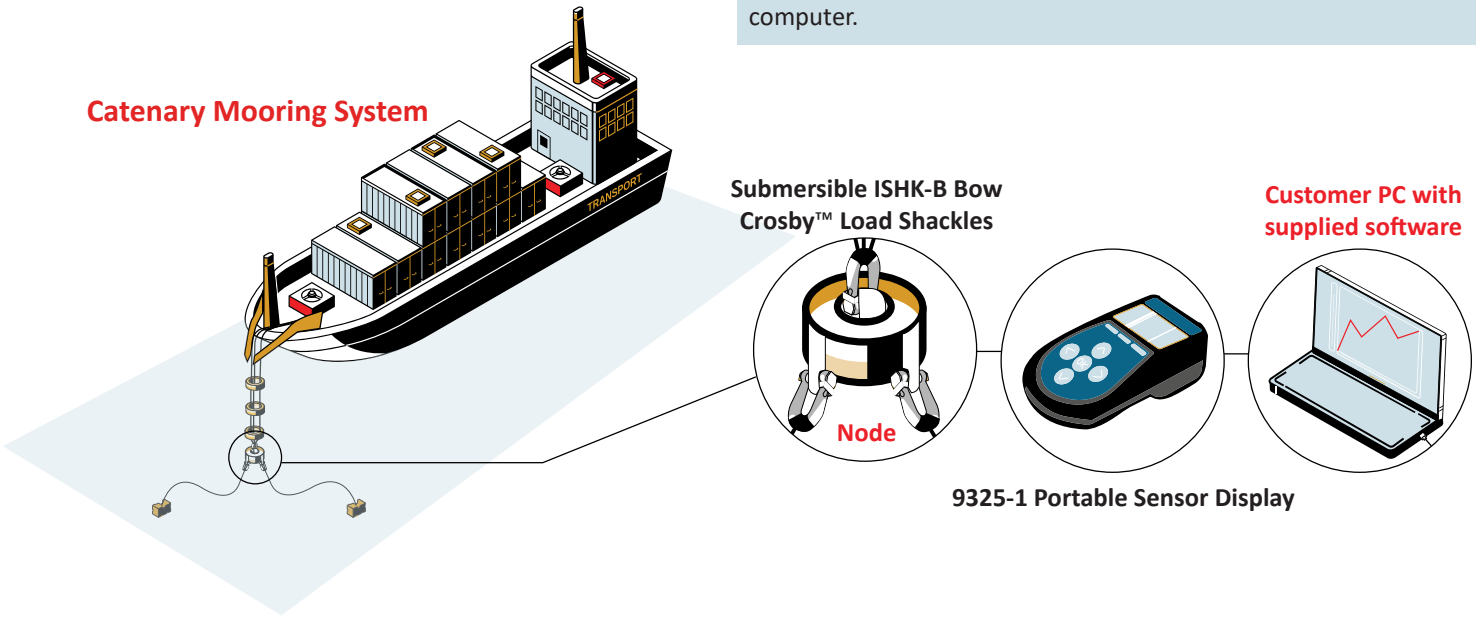
Interface's submersible shackles and instrumentation helped verify the tensions of the anchors and chains attached to the node of their catenary mooring system.

Materials

- Submersible ISHK-B Bow Type Crosby™ Cabled Load Shackles
- 9325-1 Portable Sensor Display with supplied software
- Customer PC or Laptop

How It Works

1. The submersible ISHK-B Bow Type Crosby™ Cabled Load Shackles are attached to the node of the catenary mooring system. The chains and anchors are then attached to the shackles.
2. When the anchors are let loose, thus causing tension on the chains attached to the shackles, force measurements are read using the 9325-1 Portable Sensor Display. With the supplied software, results can be logged and graphed to the customer's computer.



Crane Block Safety Check
Load Pin

Industry: Maritime

Summary

Customer Challenge

A customer wants a system to detect if their crane block can lift heavy loads securely, in order to keep working conditions and personnel safe. If lifting capacities are exceeded, the customer wants a system to alarm them in real-time.

Interface Solution

Interface's WTSLP Wireless Stainless Steel Load Pin can replace the existing load bearing pin in the crane block in order to measure the force being applied by the heavy load. Data will be transmitted and displayed through both the WTS-BS-4 USB Base Station (when paired with the customer's supplied PC computer or laptop) and the WTS-BS-1-HA Wireless Handheld for real-time results. The WTS-RM1 Wireless Relay Output Receiver Module will also trigger an alarm when maximum capacity has been reached.

Results

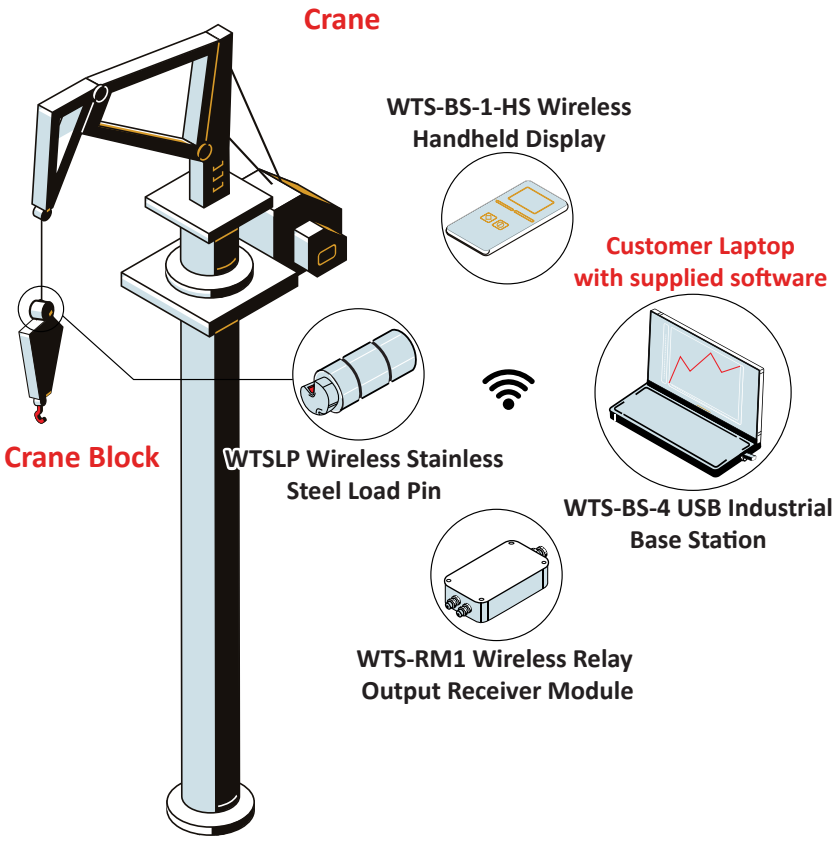
The WTSLP Wireless Stainless Steel Load Pin, combined with the WTS products, was able to measure and determine force applied the moment a heavy load is lifted. The results were transmitted wirelessly, and ensured the customer whether or not the crane block was safely operational during production.

Materials

- WTSLP Wireless Stainless Steel Load Pin
- WTS-RM1 Wireless Relay Output Receiver Module
- WTS-BS-1-HA Wireless Handheld Display for Multiple Transmitters
- WTS-BS-4 USB Industrial Base Station
- WTS Toolkit Software & Log100 Software Included
- Customer PC or Laptop

How It Works

1. WTSLP Wireless Stainless Steel Load Pin is installed, replacing the normal load bearing pin on the block of the crane. A heavy load is added to the end of the block.
2. The WTS-RM1 Wireless Relay Output Receiver Module captures the data transmitted from the WTSLP Wireless Stainless Steel Load Pin and uses this to trigger and alarm when the setpoint is reached. Simultaneously, these transmitted force readings are displayed in real-time to the customer through the WTS-BS-1-HA Wireless Handheld Display or the WTS-BS-4 USB Base Station (connected to the customer's PC computer or laptop).



Crane Capacity Verification
Tension Link
Industry: Maritime

Summary

Customer Challenge

A customer wants to verify that their crane is strong enough to safely lift a heavy load, at it's rated maximum load capacity for maritime applications. A wireless solution is needed to avoid long cables, and to have a faster installation time.

Interface Solution

Interface, Inc's Model WTSTL Wireless Tension Link Load Cell can measure the load's maximum capacity. The WTS-RM1 Wireless Relay Output Receiver Modules also can trigger an alarm that can be set when the maximum capacity of weight/force has been reached. The data is transmitted and can be reviewed with the WTS-BS-1-HS Wireless Handheld Display, or on the customer's PC.

Results

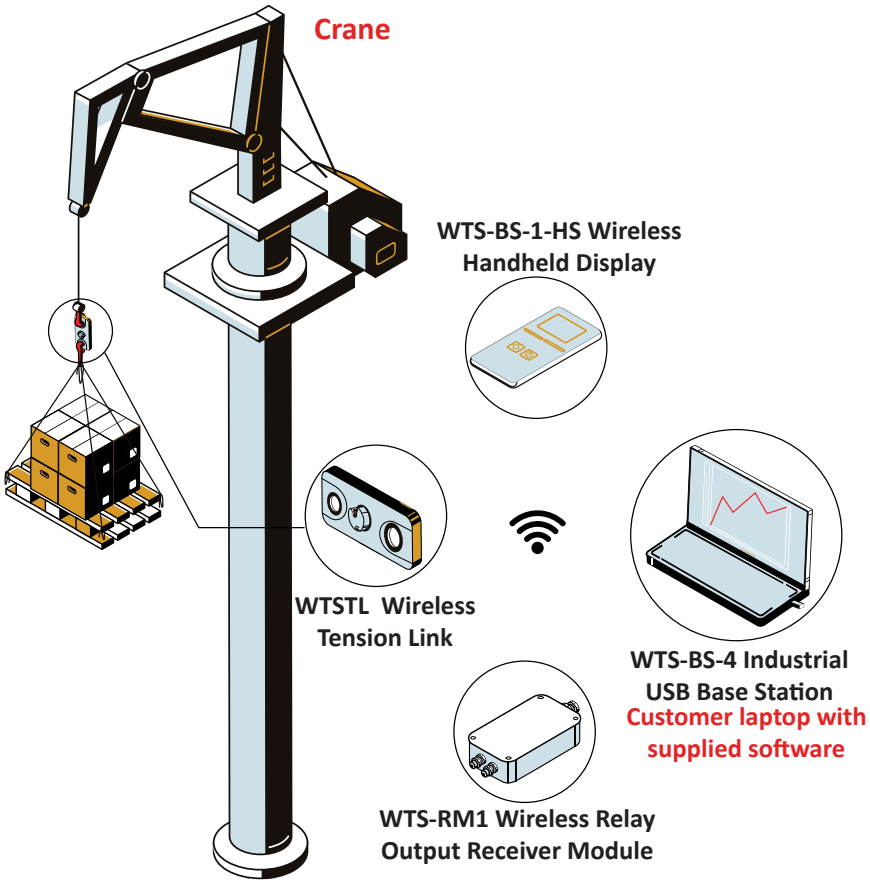
Customer was able to verify if the crane is safe and functional enough to lift it's working load limit (WLL) or safe working load (SWL) capacity. The data is transmitted and logged to the customer's PC or laptop, or to a handheld device in real-time.

Materials

- WTSTL Wireless Tension Link Load Cell
- WTS-RM1 Wireless Relay Output Receiver Module
- WTS-BS-1-HS Wireless Handheld Display for Single Transmitters
- WTS-BS-4 Industrial USB Base Station
- WTS Toolkit Software & Log100 Software Included
- Customer PC or Laptop

How It Works

1. The WTSTL Wireless Tension Link Load Cell is installed on the crane, lifting an item that maxes out to the crane's working load limit (WLL).
2. The WTSTL transmits data to the WTS-RM1 Wireless Relay Output Receiver Module and can trigger an alarm when the capacity has been reached. Information is also transmitted both to the laptop (through the WTS-BS-4 USB Base Station) and the WTS-BS-1-HS Wireless Handheld Display for single transmitters in real-time.



Crane Force Regulation
Load Pin
Industry: Maritime

Summary

Customer Challenge

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 Inc. 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

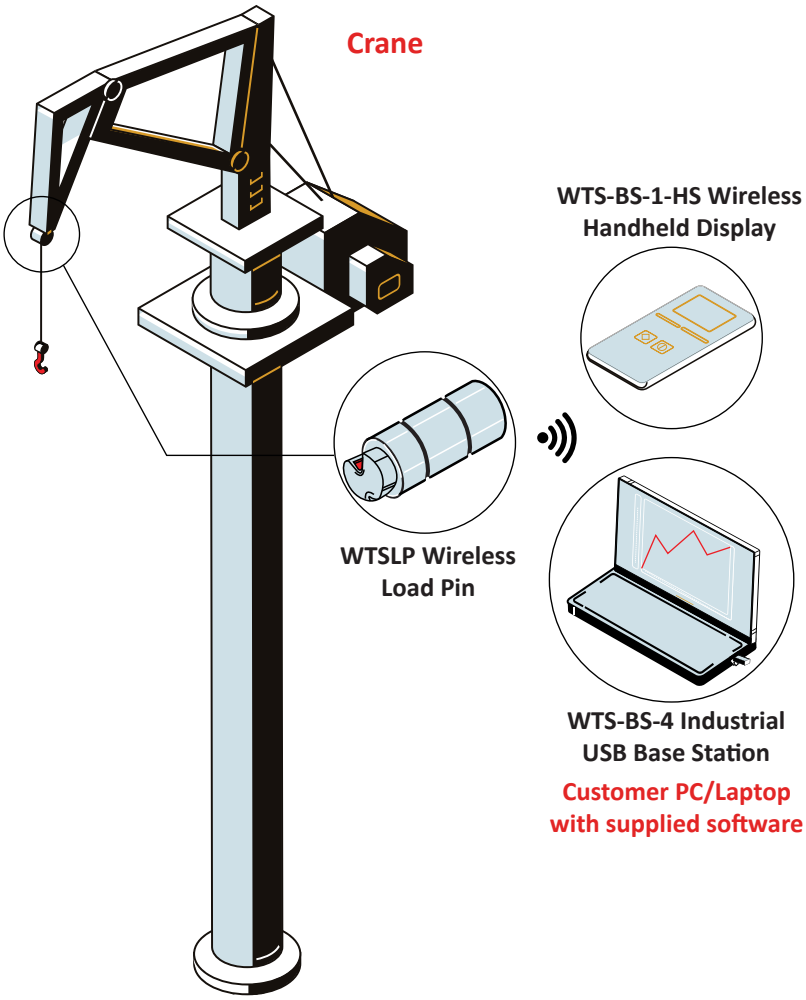
Customer was able to monitor the continuous force from the crane, and gather information on loads being lifted. Data is transmitted and logged to the customer's PC/laptop and is available to be reviewed.

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/Laptop

How It Works

1. The WTSLP Wireless Load Pin is installed at the turning block of the crane.
2. WTS-BS-4 Industrial USB Base Station is connected to the customers PC Computer/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.
3. The USB Base Station receives force measurements, and the data is logged onto the laptop computer.



Commercial Fishing Wire Rope Testing

Tension Link

Industry: Maritime

Summary

Customer Challenge

A commercial fishing owner wants to measure the force tension of the wire fishing rope connected to the fishing cage or net when their vessel goes to catch. They want to ensure the wire rope is strong enough and safe enough to hold the maximum capacity of fish caught in the cage or net.

Interface Solution

Interface's WTSTL Wireless Tension Link Load Cell was attached between the end of the cable, and the end that hooks onto the fishing net. This tension link will be able to measure the forces of the full net of fish, or, a heavy load at maximum capacities. The data information can be transmitted to both the WTS-BS-1-HS Handheld Display for Single Transmitters, or to the customers computer laptop through the WTS-BS-4 USB Industrial Base Station.

Results

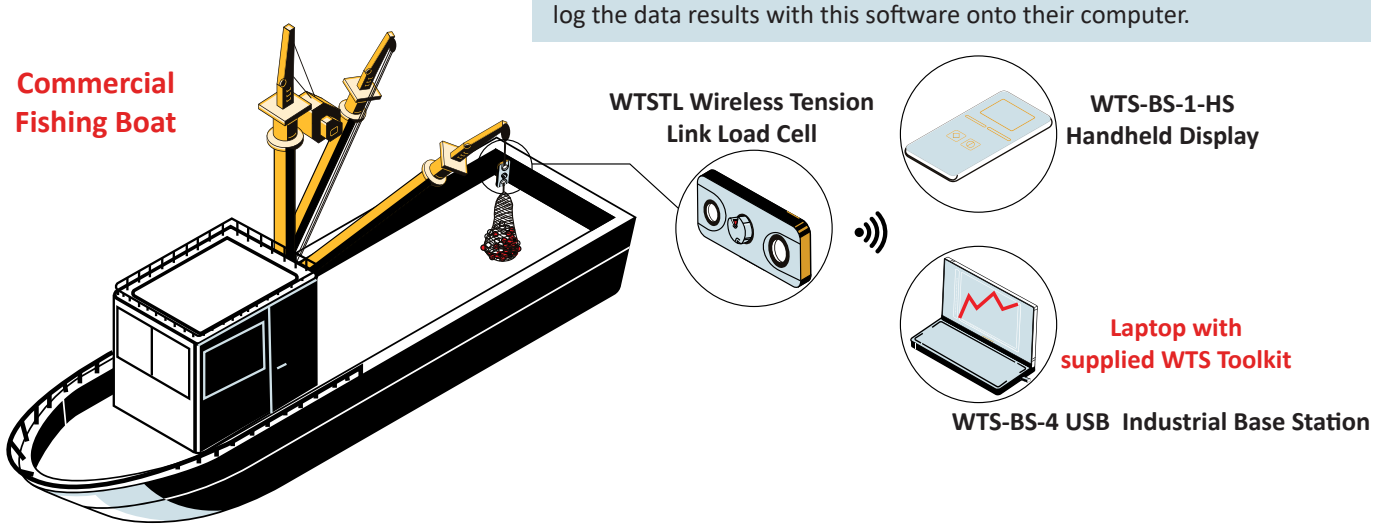
The customer was able to determine if the fishing cable on their vessel was strong enough to hold the fish cage or net at maximum capacity when out catching.

Materials

- WTSTL Wireless Tension Link Load Cell
- WTS-BS-1-HS Handheld Display for Single Transmitters
- WTS-BS-4 USB Industrial Base Station
- WTS Toolkit (graphing, logging, and set up software, included with WTS-BS-4)
- Customer PC Computer or Laptop

How It Works

1. The WTSTL Wireless Tension Link Load Cell is attached at the end of the wire fishing rope.
2. A heavy load that reaches maximum capacity for the wire rope, was added to the end of the WTSTL Wireless Tension Link Load Cell.
3. Force measurements are transmitted to the WTS-BS-1-HS Handheld Digital Display for Single Transmitters and to the customers computer or laptop through the WTS-BS-4 USB Industrial Base Station. With the WTS Toolkit (included with the WTS-BS-4) the customer is able to graph and log the data results with this software onto their computer.



Floating Wind Turbine Monitoring
Load Shackle

Industry: Maritime

Summary

Customer Challenge

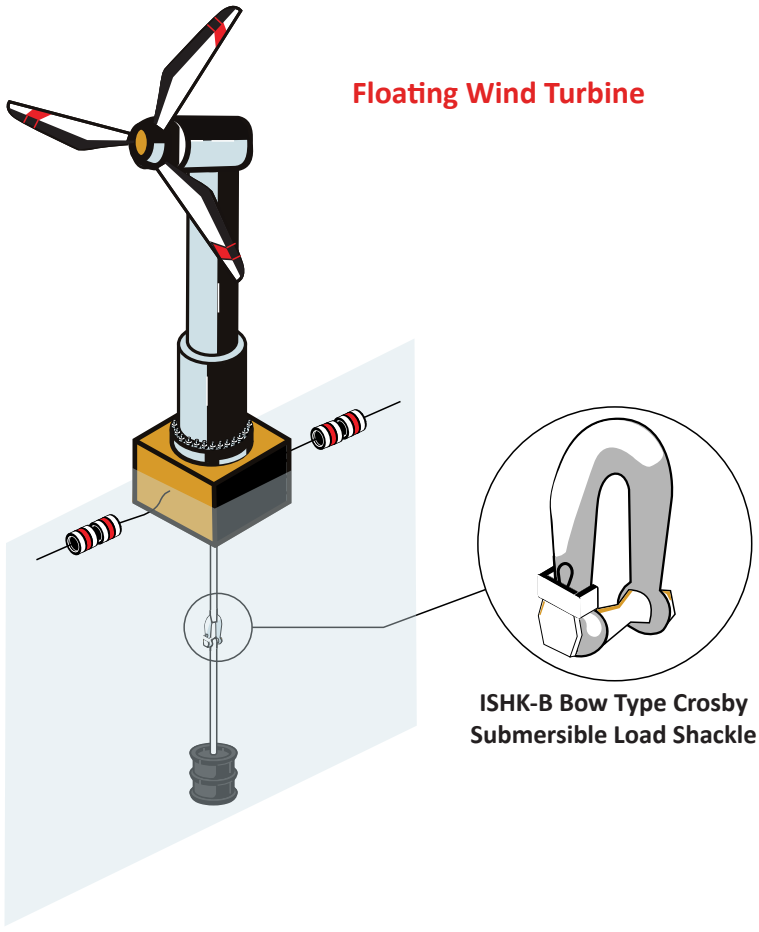
Floating or offshore wind turbines are being created to generate electricity at depths where normal turbines cannot. A customer would like to measure the tension of the mooring line of each of their turbines on their floating wind farm. They want to monitor the tension of the mooring line that keeps the turbine in place, in order to detect crack initiation or potential fractures.

Interface Solution

Interface's ISHK-B Bow Type Crosby™ Submersible Load Shackle Load Cell can be attached to the floating wind turbine's mooring line, which is attached to an anchor. With customer instrumentation, the customer is able to monitor the force tension of the mooring line based on the force results captured by the load cell.

Results

The floating wind farm was completely monitored by Interface's submersible force measurement solution system.



Floating Wind Turbine

ISHK-B Bow Type Crosby
Submersible Load Shackle

Materials

- ISHK-B Bow Type Crosby™ Submersible Load Shackle Load Cell
- Customer Instrumentation
- Customer PC or Laptop

How It Works

1. The ISHK-B Bow Type Crosby™ Submersible Load Shackle Load Cell is attached to the floating wind turbine's mooring line.
2. The ISHK-B Bow Type Crosby™ Submersible Load Shackle Load Cell captures force tension of the mooring line.
3. Force results are sent to the customer's instrumentation for monitoring.

Mooring Line Tension Testing

Tension Link

Industry: Maritime

Summary

Customer Challenge

Due to the changing weather conditions, mooring cable lines undergo wear and tear. A customer wants to ensure all mooring lines for ships or vessels are securely locked at the same loading tension, so that they do not risk the mooring lines to breaking or causing damage.

Interface Solution

Interface's WTSTL Wireless Tension Link Load Cells can be attached to each mooring cable while 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.

Results

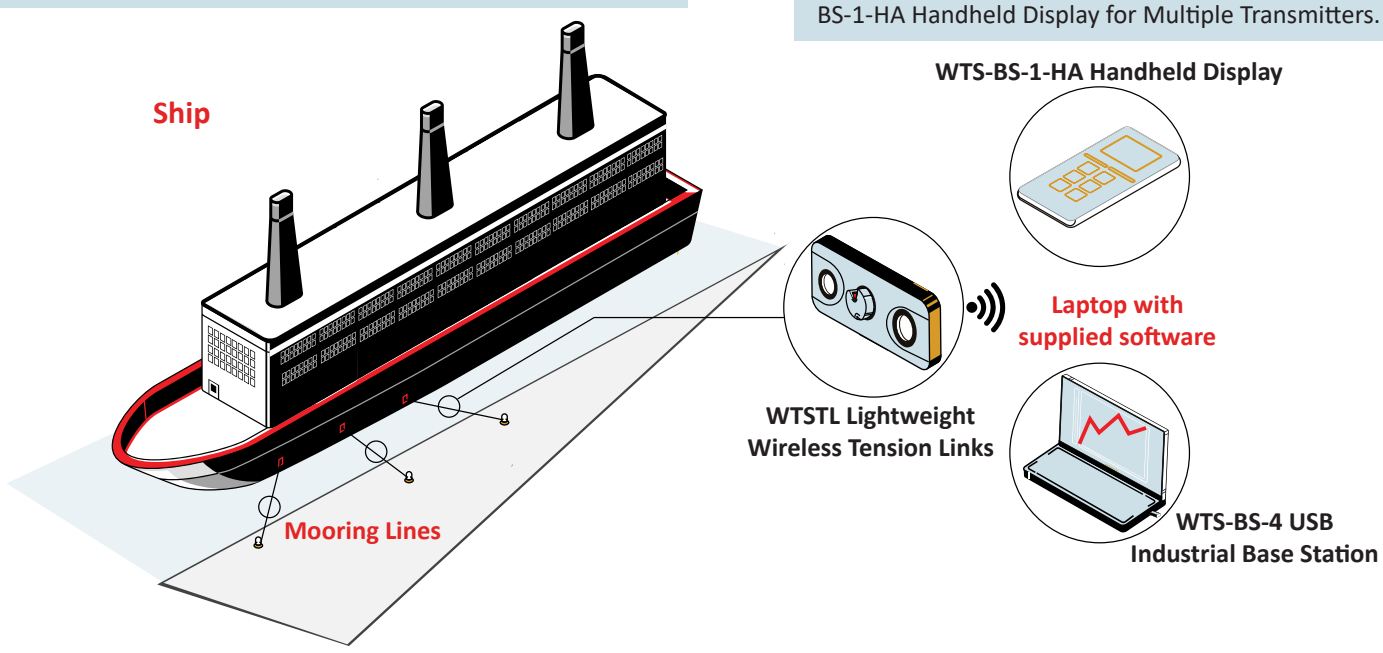
The customer was able to verify the tensions to multiple mooring cable lines. Thus, their ship being safely docked.

Materials

- WTSTL Wireless Tension Link Load Cell
- WTS-BS-4 USB Industrial Base Station
- WTS-BS-1-HA Handheld Display for Multiple Transmitters
- WTS Toolkit and Log100 Software
- Customer PC or Laptop

How It Works

1. The WTSTL Wireless Tension Link Load Cell are attached to all mooring cables being tested.
2. Force measurements are transmitted wirelessly in realtime to the customer's PC or laptop through the WTS-BS-4 USB Industrial Base Station, or to the WTS-BS-1-HA Handheld Display for Multiple Transmitters.



Mooring Quick Release Hooks (QRH)

Load Pin

Industry: Maritime

Summary

Customer Challenge

A customer wants to test the strength of the cable line used in the hoist of their A customer wants to test their Quick Release Hook (QRH) system when their vessels are docked. They want to ensure the mooring lines are secured, but also, the quick release hooks are able to be easily and safely released.

Interface Solution

Interface's WTSLP Stainless Steel Load Pin can be installed into the quick release hook, where forces from the mooring lines can be measured and displayed when paired with the WTS-BS-4 USB Industrial Base Station. The load tension forces are displayed in real-time on the customers PC or laptop. The WTS-RM1 Wireless Relay Output Receiver Module alarm can also be triggered for the customer when maximum safety work load capacities have been reached or are overloaded.

Results

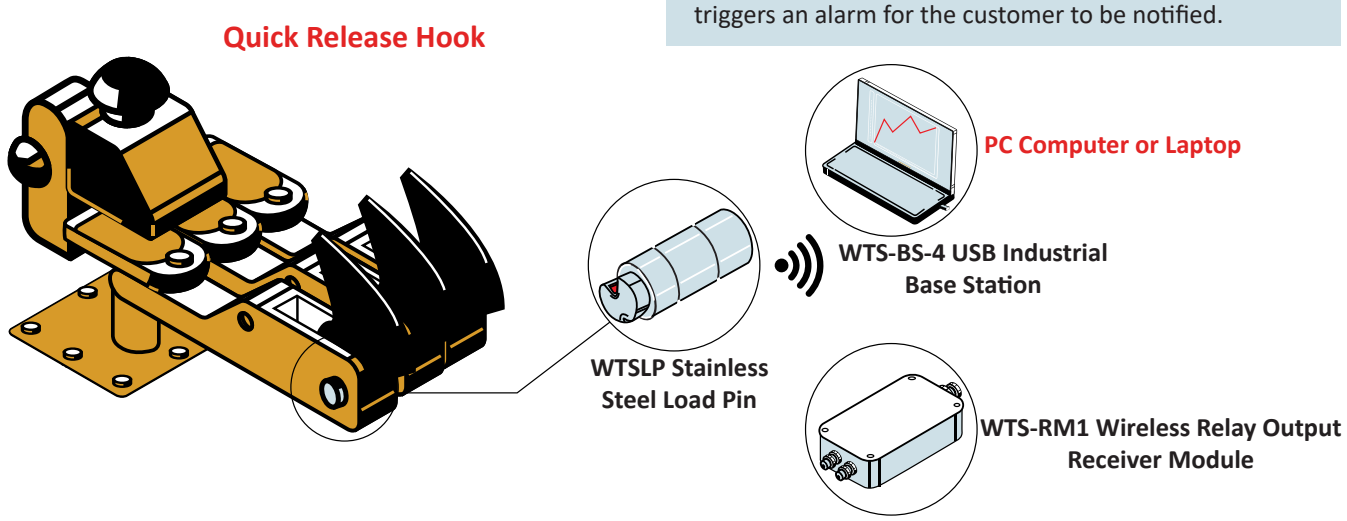
The customer was able to determine if their quick release hooks worked effectively within the safe working limit specifications, and was aware of any potential overload situations.

Materials

- WTSLP Stainless Steel Load Pin
- WTS-RM1 Wireless Relay Output Receiver Module
- WTS-BS-4 USB Industrial Base Station
- WTS Toolkit (graphing, logging, and set up software, included with WTS-BS-4)
- Customer PC Computer or Laptop

How It Works

1. The WTSLP Stainless Steel Load Pin is installed in the quick release hook.
2. Forces are measured and recorded using the WTS-BS-4 USB Industrial Base Station, and results are displayed on the customers PC computer or laptop.
3. When maximum capacities have been reached, the WTS-RM1 Wireless Relay Output Receiver Module triggers an alarm for the customer to be notified.



WTS Yacht Rigging Inspection
Load Shackle

Industry: Maritime

Summary

Customer Challenge

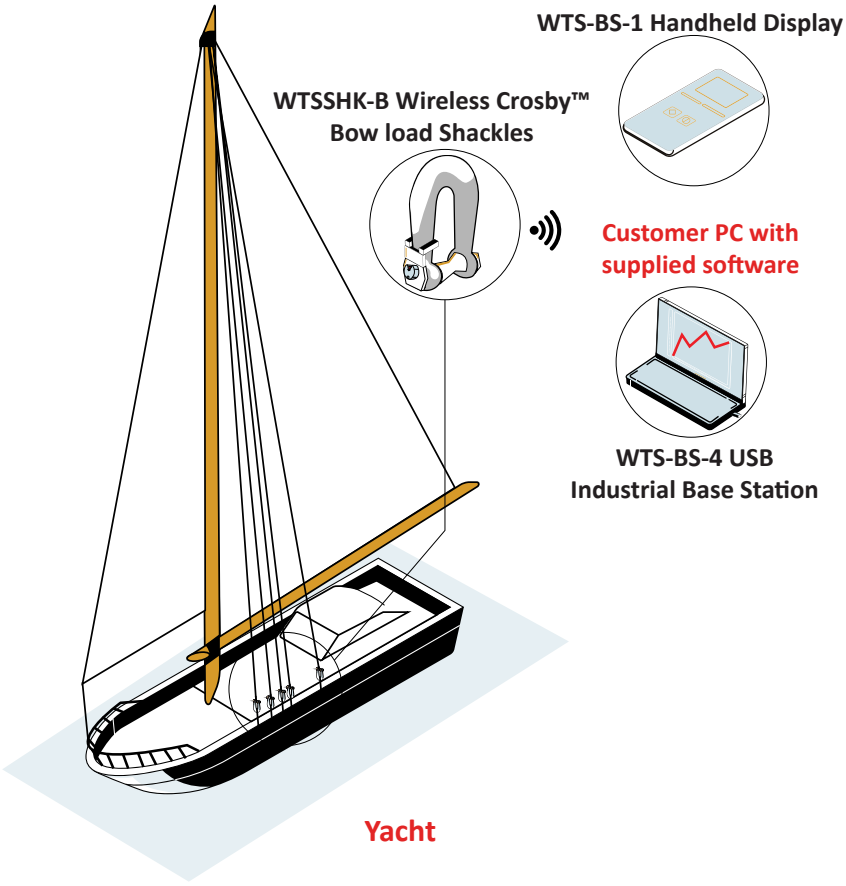
A customer wants to have a complete rigging inspection to make sure the mast, still lines, and all movable hoisting lines are functional and meet the proper specifications for sailing. The customer wants to test the tension of the forestay, shroud, and backstay cables. They also want to test the tension of the movable lines when sailing.

Interface Solution

With Interface, Inc's WTSSHK-B Wireless Crosby™ Bow Load Shackle paired with the WTS-BS-1 Wireless Handheld Display for Unlimited Transmitters, the customer can switch and view between multiple shackles being tested. The WTS-BS-4 USB Industrial Base Station can also be attached to the customer's PC/Laptop to display realtime measurements from the shackles and log data.

Results

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.



How It Works

1. WTSSHK-B Wireless Crosby™ Bow Load Shackles are attached to the vessels forestay, shroud, and backstay cables.
2. The measurement at a is transmitted wirelessly to the WTS-BS-1 Wireless Handheld Display for Unlimited Transmitters, where the customer is able to view all results of all shackles in realtime.
3. The WTSSHK-B Wireless Crosby™ Bow Load Shackles also transmit information to the WTS-BS-4 USB Industrial Base Station, attached to the customer's PC/Laptop for realtime results.

Materials

- WTSSHK-B Wireless Crosby™ Bow Load Shackles
- WTS-BS-4 USB Industrial Base Station
- WTS-BS-1 Handheld Display for Unlimited Transmitters
- WTS Toolkit & Log100 Software
- Customer supplied PC/Laptop

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.

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