

interface

FORCE MEASUREMENT SOLUTIONS.

CASE STUDY

Force Sensor Applications in Heavy Machinery Testing and Monitoring



About

The industrial landscape in the construction, infrastructure, and natural resource sectors demands precision and safety when using heavy-duty machines and equipment. Test and monitoring solutions offer oversight and vital data collection to ensure equipment meets industry performance, quality, and safety standards.

Interface, a leading provider of force measurement solutions, offers advanced sensor technologies to augment heavy equipment design, testing, performance, maintenance, and operator safety. Engineers select our load cells, torque transducers, multi-axis sensors, instrumentation, and wireless telemetry systems for heavy machinery OEM and testing applications.

Challenge

Interface heavy machinery manufacturers require real-time force, torque, and weight measurements. The challenges they look to address when designing and assembling these machines range from accurate capacity measurements to overload protection.

Maintaining safety and efficiency is paramount with heavy-duty equipment. These massive machines operate on job sites all over the world. Ensuring that machinery, such as large cranes, loaders, mixers, and pavers, maximizes performance, reduces downtime, and protects operators and onsite workers is paramount.

Load Monitoring: Ensuring that heavy machinery does not exceed its load capacity, which can lead to equipment failure or accidents, is a critical concern for heavy machine makers. Cranes and hoists need accurate load monitoring to prevent overloads.

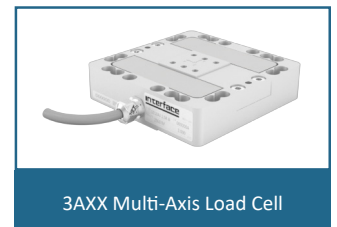
Structural Integrity: Monitoring machinery's structural integrity is necessary, especially in harsh environments such as construction sites, mining operations, or offshore installations. Structural failures can have catastrophic consequences, leading to costly downtime and potential safety hazards.



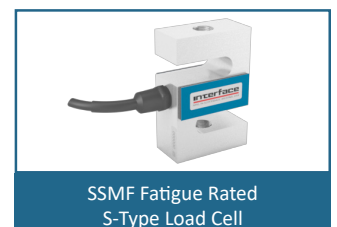
1200 Standard Precision LowProfile® Load Cell



WTS-AM-1E Wireless Strain Bridge Transmitter Module



3AXX Multi-Axis Load Cell



SSMF Fatigue Rated S-Type Load Cell

Interface Heavy Machinery Solutions

Interface has developed various solutions tailored to these challenges, including our standard load cells and specialized solutions such as our miniature load cells, load pin load cells, load shackles, and wireless devices.

Types of Machines Using Interface Sensor Technologies:

- Harvesting & Processing Equipment
- Extraction and Tunnelling Machines
- Pavers, Pumps and Mixers
- Drilling Machines
- Compactors and Rollers
- Cranes and Lifting Equipment
- Material Handlers
- Earth Movers

Interface Product Applications

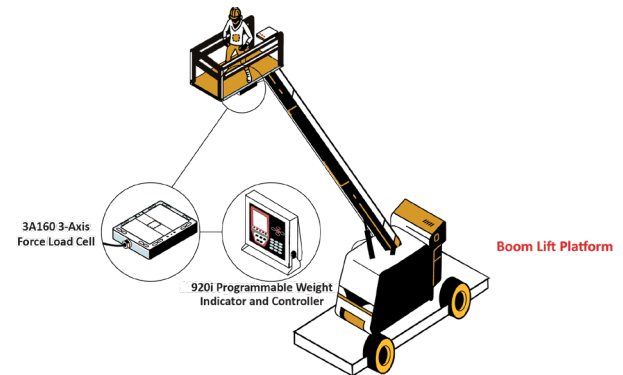
Interface's LowProfile® Load Cells are integrated into cranes and hoists to provide real-time data on the lifted loads. These load cells ensure machinery operates within safe load limits, preventing overloading and potential equipment failure.

The WTS Wireless Telemetry System allows continuous heavy machinery monitoring without requiring extensive cabling. Measurements can be used for signals, alarms, preventative maintenance, and onsite monitoring with real-time portable instrumentation.

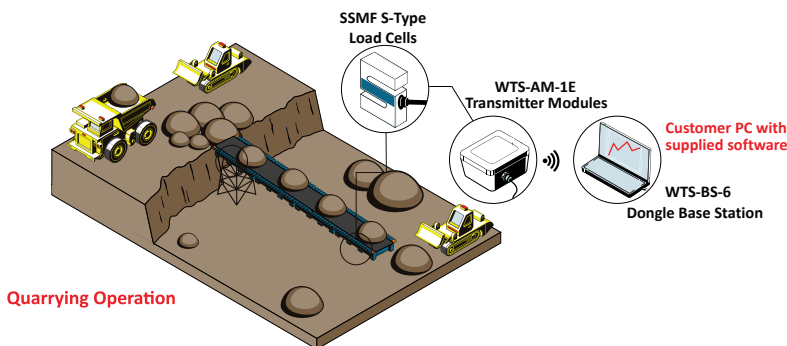
Interface provides specialized sensors that are ATEX-certified and used in hazardous environments. We also provide environmental monitoring solutions for exposed environments, high temperatures, and submersible areas.

Aerial Lift Overload Control

A manufacturing company for aerial lifts wanted to test its self-propelled boom lift to ensure it could operate at heavy capacities and at different angles. They also wanted to prevent any accidents in case of a lifting overload for the safety of any working individual who uses it. Interface's solution was to attach the 3A160 3-Axis Force Load Cell to the bottom of the bucket of the boom lift, providing high-accuracy results, which could be displayed using the 920i Programmable Weight Indicator and Controller in real-time.



Quarrying Conveyor Belt Scale



A quarrying belt scale measures the flow rate and monitors the total quantity of material transported on conveyor belts in quarrying and mining operations. Gravel, sand, or minerals are processed in stockpiling areas. Interface suggested installing multiple SSMF Fatigue-Rated S-Type Load Cells within the conveyor belt. The SSMF provides easy replacements without disrupting the alignment of the conveyor belt. The SSMF measured and monitored the weight of the materials being transported. The WTS-AM-1E transmitted the data to a computer using the WTS-BS-6 Wireless Telemetry Dongle Base Station.

Integrating Interface sensor technologies into heavy machinery testing, equipment design, and performance monitoring capabilities enhances operational safety, efficiency, and reliability across multiple industries. By providing precise real-time data, these Interface sensor technologies empower engineers and operators to make informed decisions, reducing the risk of equipment failure and ensuring compliance with safety standards. Interface solutions continue to set the standard for excellence in measurement for heavy machinery.