

interface

FORCE MEASUREMENT SOLUTIONS.

CASE STUDY

Measurement Tech Drives Factory Production and Supply Chains



About

Modern manufacturing and distribution facilities depend on automated material-handling systems to keep products moving efficiently from inventory storage through production and ultimately to shipping. Conveyors, robotic systems, guided vehicles, palletizing equipment, and other automated machinery continuously move and position materials throughout these environments. Approximately \$300B in global factory automation depends on these systems for high throughput.

Reliable operation of these systems requires accurate measurement of the physical forces involved. Load cells, torque transducers, and multi-axis sensors provide data for controllers, equipment, and motion systems. These sensors turn physical tension and stress into electrical signals, enabling machinery to operate smoothly, adjust power in real time, and protect goods during transfer.

Challenge

Standard monitoring tools often lack the resolution for minor weight changes during rapid sorting and overload capacity for obstructions or erratic behavior. Routing cables through robotic arms or conveyors adds wear and interference. Integration into digital networks and smart systems requires more advanced sensor hardware. Engineers must choose sensors with accurate, repeatable measurements, strong overload ratings, and reliable wireless or digital data transmission to maintain steady throughput without system halts. Traditional wired setups are impractical due to cable entanglement.



PBLC Pillow Block Load Cell



WTS-HK-S Next-Generation Wireless Handheld



6A40 6-Axis Standard Capacity Load Cells



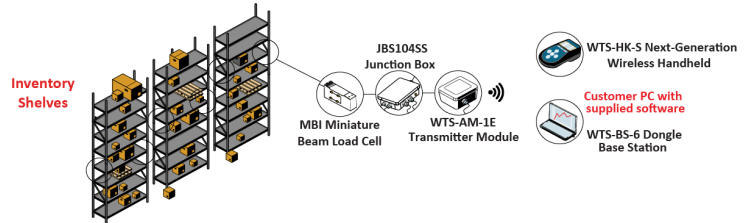
BX8-HD44 Data Acquisition System

Interface Solutions

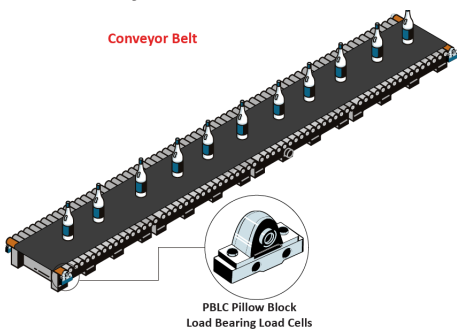
Interface offers measurement solutions, including load cells, torque transducers, and multi-axis sensors, to convert physical forces into electrical signals for automated manufacturing, handling, and distribution. Combining these transducers with instrumentation, seamlessly integrates data into factory control systems to support automated functions like inventory tracking, robotic grip adjustment, and safe load monitoring.

Warehouse Inventory

Interface MBI Overload-Protected Miniature Beam Load Cells are integrated directly beneath warehouse inventory rack platforms to track real-time stock levels through continuous weight changes. Four individual load cells connect to a stainless-steel junction box and a wireless strain bridge transmitter, aggregating the total weight of stored items. The system routes real-time data to a central logistics computer, providing automated reordering triggers and exact stock verification without requiring manual cycle counts.



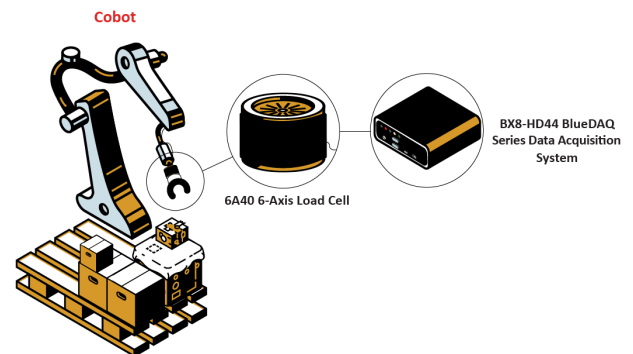
Conveyor Belt



Conveyor systems must maintain proper loading, alignment, and mechanical performance to reliably transport products and materials. Interface PBLC Pillow Block Load Bearing Load Cells can be integrated into conveyor systems to measure and monitor the forces acting on the belt and supporting components. By monitoring these forces, manufacturers can identify changes in conveyor loading and help maintain proper belt operation. Continuous force measurement can support preventative maintenance, reduce the risk of mechanical problems, and help keep material moving through the facility.

Cobot Palletizing

Collaborative robots, or cobots, are increasingly used to pick, position, and stack products for storage, transportation, and distribution. Measuring the forces and moments generated during these movements can provide valuable feedback to the robotic control system. Interface's Model 6A40A 6-Axis Load Cell can be installed between a robot flange and its grabber mechanism to measure forces and moments across six axes. When paired with the BX8-HD44 Data Acquisition System and BlueDAQ software, the system provides force and torque measurement data that can be integrated into the robot's control system for monitoring and process optimization.



Results

Integrating Interface force measurement technology into automated material-handling systems gives manufacturers real-time data to improve process visibility, prevent equipment damage, and maintain efficient material flow.