

interface

FORCE MEASUREMENT SOLUTIONS.

CASE STUDY

Automation and Robotics Demands Absolute Precision



About

One of the most significant trends occurring in product development across nearly every industry today is automation and the use of robotics to supplement human workers. The ability to implement and trust automated manufacturing processes and robotics is achieved through absolute precision of the equipment. Any mistakes in calculations can mean total failure and losses of product and revenue across the entire production line. This is why Interface has invested resources in helping customers who are developing solutions in automation and robotics. Interface load cells and torque transducers can be used to test and monitor automation equipment in action to ensure complete accuracy and reliability.

Challenge

Enabling automation and robotics is a delicate process. Robotic arms are often used on the manufacturing and assembly line to take on repetitive tasks or tasks which are too precise or small for the human hand. Because of this, the robotic arm needs to be calibrated and tuned to the exact force needed for its specific function. If these machines aren't tested and refined, the arm could end up breaking the technology it's handling. With the rise of microelectronics and miniaturization, these robotic processes need to become even more precise as they handle delicate boards and other electronic components. The same challenge occurs for Interface customers who work with an automated production line. For example, a key automated process in the medical industry is stamping pills to categorize and organize them. This process is completed by an automated stamping press. As pills go along the line, the press must provide the exact force necessary to stamp the pill with a label without crushing it.

Interface Solutions

Interface offers a wide variety of load cells, torque transducers, multi-axis sensors, load pins and load shackles, as well as digital instrumentation to collect data, to improve the testing and monitoring process for robotics and automation. These devices are used to run various tests that help to refine the force used by manufacturing line machines and robotics.



6A40A 6-Axis Load Cell



BX80-HD44 Data Acquisition



1200 Standard Precision Load Cell



T2 Ultra Precision Shaft Style Torque Transducer

This helps OEM's of this type of equipment design their products to the highest quality. In addition to testing, Interface force measurement products can also be installed on the machine or robotic equipment to monitor force or torque in real-time. This helps quality managers identify any issues with the machines prior to a disruption in the production line. By using Interface force measurement products for real-time monitoring, OEM factories can inch closer to the dream of a self-sufficient Industry 4.0 model.

Applications

An Interface customer who manufactures robotic arms needed a solution to measure both the force and torque of a robotic arm as it picked up and placed objects onto a conveyor belt. Due to the complicated movements of the robotic arm on multiple axes, the customer needed a more advanced solution that could measure the force in all directions. Interface supplied a Model 6A40A 6-Axis Load Cell and a Model BX8-HD44 Data Acquisition and Amplifier device. The multi-axis load cell and data acquisition devices were able to log, display, and graph these measurements while sending scaled analog output signals for these axes to the robot's control system. This testing process helped the customer refine each motion of the robotic arm and ensure accurate force of the grapple arm.

Another robotic application of Interface force measurement product is in the drone delivery services field. Many shipping plants are introducing the use of drones to deliver packages more quickly and efficiently to consumers. One of the critical components to ensuring drones can successfully deliver packages is by optimizing the amount of torque it takes the propeller motor to lift and fly with a package of various weights. To do this, Interface provided a 1200 Series Standard Precision Low Profile Load Cell to measure the weight of the payload and six T2 Series Ultra Precision Shaft Style Rotary Torque Transducers to measure the torque of the propeller. In this application, the Interface torque transducers remain on the drone throughout the flight process to monitor and record torque data in real-time.

Interface was asked by a customer to supply a solution for a candy stamping press. Interface developed a test apparatus with a Model WMC Mini Load Cell and attached it to hydraulic actuators to measure the compression force. Using this apparatus, the customer was able to determine the specific force needed to properly stamp the candy without breaking it. With a stamping press in either the medical or consumer packaging industry, load cells can also remain on the machine to monitor the force in real-time and let the line engineer know if service is needed on the machine.

Learn More

Automation and robotics are quickly taking over the product development world to create more efficient processes and save OEM's money. Interface offers a wide variety of products to help our customers design and test robotics and automated machines on a production line. If you're a manufacturer interested in implementing automation or you need to optimize products and processes already in place, contact our application experts today.

