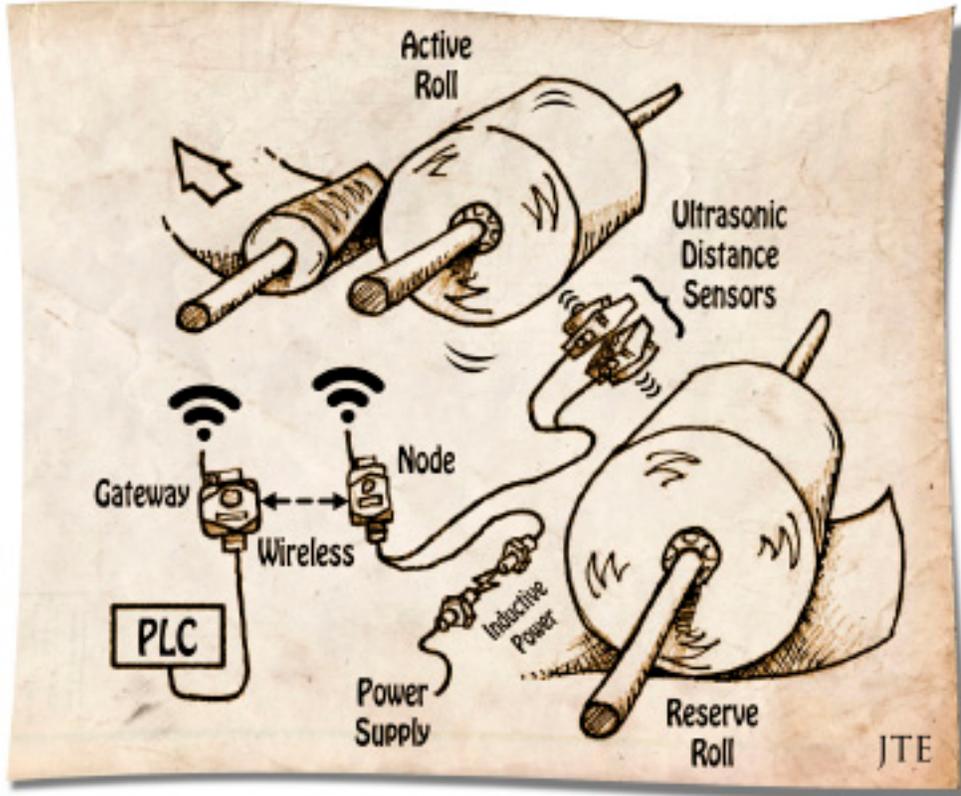


Using Ultrasonic Sensing and Inductive Couplers

A newer technology utilized in a unique way for a paper processing plant



The Challenge

A paper processing manufacturer wanted to find a way to automate the measurement of their paper rolls. Their machine operator would manually measure each roll before it was put onto the machine, which led to delays in production and inaccuracy. A slip ring*, which turned and moved the rolls of paper, was at maximum capacity, leaving no way to automate the process using conventional solutions. Developing a new machine, which would be expensive and time consuming, was not an option.

Our Solution

When approached with the issue, our VP of Business Development worked closely with a distributor to create a solution to our client's problem. The idea not only would solve the problem, but it would have the least amount of impact to the manufacturer's time and equipment.

*Slip Ring—an electromechanical device that allows the transmission of power and electrical signals from a stationary to a rotating structure. A slip ring can be used in any electromechanical system that requires rotation while transmitting power or signals. (Wikipedia)

The end result was to communicate wirelessly using an ultrasonic sensor application powered by an inductive coupler. The ultrasonic sensor would measure the paper's diameter and send the measurement back to the PLC for the operator to read on a HMI. The manufacturer's existing Siemens PLC would need to have analog input added to use this new feature.

The Result

- The solution was applied to the existing machine, and no new machine needed to be developed.
- The ultrasonic sensor automatically measures the rolls — saving production time and improving accuracy.
- The roll diameter information is easily viewable on a HMI screen.
- All components of the machine are now compatible with each other, creating increased production efficiency.

The Technology



Ultrasonic sensors use sound waves rather than light, making them ideal for stable detection of uneven surfaces, liquids, clear objects, and objects in dirty environments. These sensors work well for applications that require precise measurements between stationary and moving objects.
(source: Banner website)



The SureCross® Performance wireless I/O network provides reliable monitoring without wiring or conduit installation. The SureCross wireless network operates independently or in conjunction with a host system, PLC, and/or PC software
(source: Banner website)



The inductive coupler of the NIC series is designed for contactless bidirectional transmission of power and data. The devices consist of two components, the primary part NICP and the secondary part NICS. The primary part supplies the secondary part with power via the air interface. In return the secondary part provides data to the connected sensors and actuators.
(source: Turck website)

