

**SIEMENS**

PROCESS INSTRUMENTATION

Solutions with weighing technology and control systems for concrete plant design

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In a concrete manufacturing plant, instrumentation integration is ideal. In Ontario, Canada, J. McCoy Equipment and Oshawa Bearing Service know this for a fact.

For more than 30 years, J. McCoy Equipment has built concrete batch plants and ready mix concrete facilities.

Oshawa Bearing provides the plant automation component, joining both electrical and mechanical components.

Add Siemens weighing and automation technology to the mix and the result is an ideal partnership with innovative solutions.

Concrete across the continent

Cement, water, and aggregate are the primary components for making concrete for storm drainage/retention structures, gravity pipes, precast bridges, and many other concrete items at one of J. McCoy and Oshawa Bearing's customers.

One of their customers is on of the largest manufacturers of concrete products in North America. This company manufactures concrete pressure pipe and pre-stressed bridge girders. Their products form the backbone of roadways, highways, and drinking water systems.



The SIWAREX WP231 weighing module for static weighing applications integrates seamlessly into the SIMATIC S7-1200 bus, providing weighing information and calibration settings within the automation programming.

In the concrete manufacturing process, the precision of the recipe dictates the quality of the finished product and full reporting of every batch for CSA and MTO are an absolute requirement.

Materials that are stored in multiple bins are monitored using weighing systems to accurately control each ingredient in the right amounts. Using microwave moisture sensing the Siemens PLC adjusts the target weights to compensate for the water content within the aggregates and in turn adjusts the water target in the mixture.

Concrete integration

Oshawa Bearing working with J. McCoy Equipment is a long-standing Siemens automation technology user.

Why Siemens? Many years ago, the company decided to use this technology when a customer requested that its solution include a Siemens PLC.

Since then they have adopted Siemens as their solution partner that provides multi-vendor integration for motor drives, weighing technology, instrumentation, and PLCs.

What they found was the Siemens' solution integrated many vendors, a plus when working with many different products.

Within Siemens Totally Integrated Automation (TIA) portal, Oshawa Bearing is able to seamlessly integrate the following technology into the manufacturing process:

- SIWAREX WP231 weighing module
- SIMATIC S7-1200 PLC
- Third party instrumentation and motor controls

High accuracy for high performance

The SIWAREX WP231 weighing module for static weighing applications integrates seamlessly into the SIMATIC S7-1200 bus, providing weighing information and calibration settings within the automation programming.

With its two million part analog-to-digital converter, the module provides very high accuracy weighing solutions with analog load cells.

As a bonus, SIWAREX WP231 includes analog output as well as digital inputs and outputs, which can be used within the control system for various tasks.

"It all just works"

With the SIWAREX weighing modules and the integration into the automation system, operators save on calibration effort, providing information throughout the plant.

No longer do operators need to physically zero and calibrate the hopper scales, but instead can diagnose issues and perform calibrations from the control room or a local HMI.

This solution does not require analog input cards, and needs no specialized displays, as all information can be wired to any user displays on the site, including tablet computers through plant wifi.

"It all just works," says John McCoy, President, J. McCoy Products. With TIA Portal and this flexible weighing module, the integration of devices from multiple vendors within this automation project was very quick and easy within one software tool.

Easy-to-access information

Another benefit operators have found is in the digitalization of the weighing readings – there is no scaling or loss of resolution, no troubleshooting adjustment pots or summation electronics.

As well, useable information like instrument diagnostics, plant operating statistics and plant efficiency is now at the operators' fingertips. Scale performance, and other crucial information can be seen in the control room and recorded for quality and traceability requirements.

If a problem with a piece of equipment or a certain process occurs, operators know instantly and can fix the issue quickly before it impacts the manufacturing plant's performance.

From the plant to a city near you

In some of J. McCoy and Oshawa Bearing's other projects, plant designers use SIMATIC S7-1500, SIWAREX weighing modules, along with other vendor instrumentation and controls.

The biggest impacts to these projects are the operational efficiencies the concrete plants now enjoy with the speedy and simple calibration process, which help to ensure calibrations are performed more efficiently.

With the simplicity and high performance of TIA Portal, Siemens automation components and the weighing modules, partners J. McCoy Equipment and Oshawa Bearing can spend more time on developing innovative solutions and increased value for their customers across North America.

Legal Manufacturer

Siemens Industry, Inc.
100 Technology Drive
Alpharetta, GA 30005
United States of America
Telephone: +1 (800) 365-8766
usa.siemens.com/pi
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