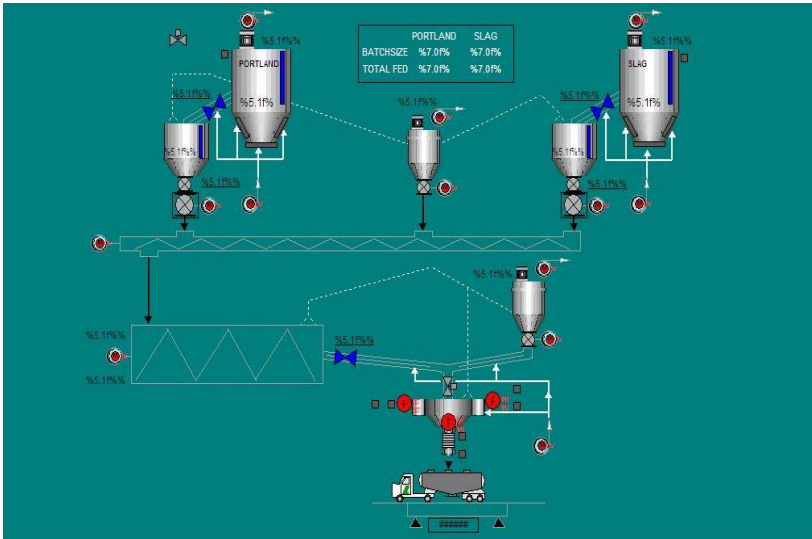


Control Masters Application Case Study

# Powder Batching System



## Technologies

Modicon Quantum PLC w/Concept  
Intellution iFix

## Services

Feeder Integration  
PLC Integration  
SCADA / HMI Integration  
Control Panel Design  
& Fabrication

## Project Description

The objective was to create a brand new product line by blending various ingredients with the cement that they currently produce. The initial design called for the cement to be mixed with slag with the ability to add up to two more ingredients in the future.

The blending is done in batches with the batch size and ingredient ratios variable to allow operators to adjust them based on individual customers needs. Once the batch parameters are set, the individual ingredients are fed simultaneously from their respective storage silos through an Acrison 270 Inline Feeder. The feed rate is varied such that the required amount of each ingredient is fed in the same amount of time regardless of how much of the ingredient is required. From the feeders, the product is placed in a mixer to ensure that it is thoroughly blended together. The blended product is loaded directly from the mixer into the customer's trucks to be taken to the job site.

The process is controlled by a Modicon Quantum PLC processor, which is located in a separate rack in the plant server room. Two remote racks of I/O are located in the control panel in the field and another two remote racks are integrated into the MCC assembly. The processor is connected via Ethernet to the rest of the plant PLCs as well as the plant wide HMI. The PLC also communicates via an Ethernet/Modbus bridge to an Acrison Data Concentrator. The Data Concentrator handles all the communications to the individual Acrison feeders. The PLC program was written using the Concept programming software and was done with function blocks and sequential flow charts (SFC).

The plant had an existing iFIX HMI application that is used to control all aspects of the plant operation. The additional screens necessary for the operational control of the cement blending system were created separately and integrated into this existing plant iFIX application during startup.