



A COMPLEX MATERIAL TRACKING AND OPERATIONAL CONTROL SYSTEM AT AN ABRASIVES MANUFACTURING PLANT

A manufacturer of high-performance abrasives plastics uses a complex process involving 320 silos, or portable storage tanks that store 180 grains with different properties and different lot IDs as well as liquids, additives, and bonding agents that make up the materials provided to seven production lines in order to manufacture 800 products. A control system that included FactoryTalkBatch was implemented at the facility to:

1. Clearly specify the procedures and formulas in each recipe,
2. Enforce execution of the recipe, and
3. Verify, with data, the completed process.

The previous system not only failed to obtain these objectives, but several issues arose. Code troubleshooting was difficult, as was identification of the source of a problem. Tracking of inventory and of the lot IDs of grain was not possible resulting in a lack of traceability. The lack of batch tracking meant that there was no feedback to the operators. ECS reviewed the situation and concluded that the control system needed to be re-engineered, this time with the correct implementation of FactoryTalkBatch, Materials Manager, FactoryTalkView SE, Control Logix, FactoryTalkHistorian and S88Builder.

FactoryTalkBatch was implemented together with the ISA S88 standard and, for data flow, the ISA S95 standard. This implementation required identification of batching units as well as specification of the procedures needed to execute the recipe. It was also necessary to identify containers, specify the liquids and additives involved in the recipe and to identify all the phases needed. It was also important to include the "Material Based Recipe" option, which refers to the materials inventory database to establish the required materials. In the absence of this option the normal response would be to supply materials that had been specified in a previous recipe not necessarily in the designated recipe.

Within the project, ECS Engineers built an ERP interface at which orders were received, allowing production orders to be defined and scheduled for execution. Data was collected to include operator events, time series data and event data, resulting in the compilation of a detailed report. The ISA S88 procedures showed a coordination of all activities, i.e. grain collection, addition of liquids and additives, bond materials and grain-handling and both Mixer 1 and Mixer 2. FactoryTalkBatch prompts the operators regarding required manual activities.

The re-engineering of the Batch Control system has provided the client with the information needed, i.e., material specification, execution of a recipe, and product verification (with all relevant data). The system now operates without any of the issues previously encountered.