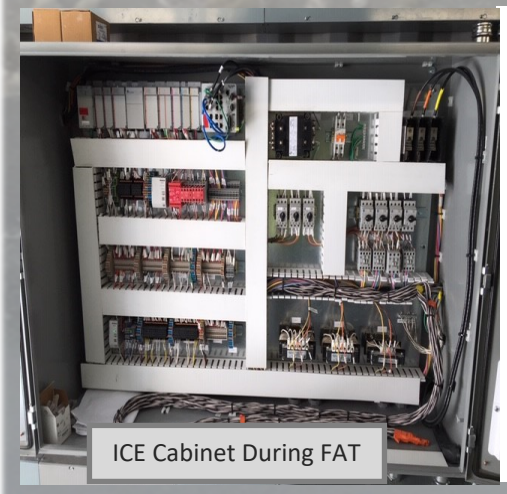
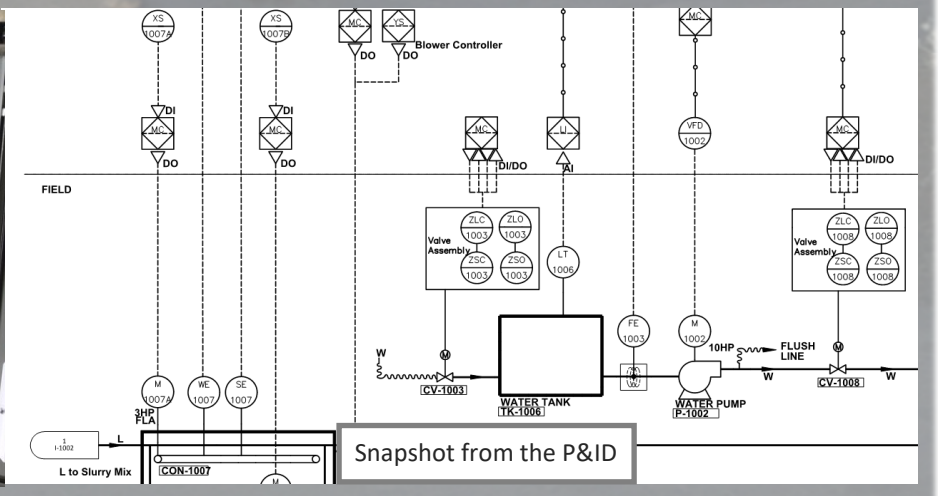
INDUSTRIAL SYSTEMS INTEGRATION—CASE STUDY

Summary

Following twenty years of service, a rock crushing and processing facility in Northern Nevada found itself requiring a major revitalization upgrade for their Asphalt and Lime Mixing plants. The Lime Mixing plant was run entirely manually due to a defunct control system. Rex Moore was called to perform an assessment of the "AS-IS" state and then implement a "TO-BE" automation solution for the Lime Mixing plant. A Integration Execution Strategy was employed. Following a detailed survey, an estimate along with a four stage Baseline plan (Front End Design & Engineering (FEED), Procurement, Construction and Test/Commission) was produced and approved for two batched operations: Dry Materials Blend and Slurry Blend. Within two months, the team had designed and built two Integrated Control and Electrical (ICE) cabinets ready for Factory Acceptance Testing (FAT). To achieve alignment on expectations while meeting an aggressive schedule, very close and fast paced coordination of the specifications and design was required with numerous parties involved. Using international standards, a Piping and Instrument Diagram (P&ID) along with Outside Plant Cabling System (OSP) design package was developed based off site walks, interviews and antiquated documentation of existing machinery, vessels and belts. Next, the existing PLC and HMI programs were migrated over to the new hardware, which included desired operational changes by the stakeholders. All changes were documented in the P&ID. Following installation of cabinets, instruments and wiring, a detail Testing and Commissioning Procedure was developed and implemented, which included performance scaling and tuning of the control system, IO and "loop checks" between the HMI/PLC and the instruments, pumps and valves. In conclusion, a modernized turnkey electrical and control system was implemented using Rex Moore's Integration Execution Strategy.



ICE Cabinet During FAT



Snapshot from the P&ID

PROJECT HIGHLIGHTS

CONTROLS

- 61 IO's
- 5 PID Control Loops
- 25 HMI Screens
- 369 Lines of Code

MACHINES AND VESSELS

- Pumps, Valves and Blower
- Tanks and Silo
- Bins and Mixers
- Conveyors and Auger

MOTORS AND INSTRUMENTS

- Coriolis and Mag Flow Meters
- 19 Motors and 6 VFDs
- Level Instruments
- Rotary Vane
- Scales and Speed Sensors