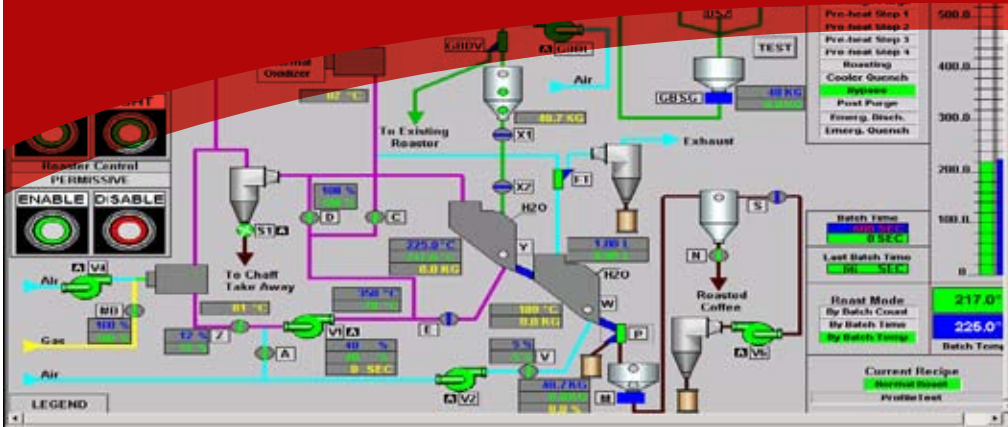


COFFEE ROASTING - COLUMBIA, SOUTH AMERICA



PROJECT: Automation of a Fluidized Bed Coffee Roaster

LOCATION: Columbia, South America

CLIENT: Confidential

SERVICES: Instrumentation, Controls, Procurement, Software Engineering and Start-up Assistance

DESCRIPTION

River Consulting provided electrical and control system design and software development to automate batch coffee roasters to produce 10,000 pph. A ControlLogix based control system was utilized for the coffee roaster and balance of plant and allowed integrated coffee production planning, operation and tracking, with production activity based on automated inventory updates.

The custom designed software for the computer based operator interface graphics included operations screens for each segment of the roasting process. The software designs included custom blending screens for configuring the green bean contributions from three different coffee types, step roasting configuration screens, custom batch recipe database, cooler system configuration for dwell time and final product temperature.

The custom designed PLC and HMI software was fully tested against a simulation program and function tested in-house prior to shipment to the end user's facility in South America.

PRINCIPAL FEATURES

- Designed controls, instrumentation, and integration of proprietary controllers into an Allen-Bradley ControlLogix PLC system
- Design scope included all elements of the coffee roasting system including green bean blending, batching scales, roaster, cooler, quenching system, circulating air controls, burner, thermal oxidizer, and finished product discharge controls
- Designed and procured a custom power and controls cabinet to house the motor controls, variable frequency drives, burner controllers, relays, PLC system, and safety equipment
- Provided software engineering for the PLC to include code for controlling the coffee blending, batch size, burner control sequencing, step roasting sequences, cooler sequencing, and quench water control
- Software design included historical archiving of each roasting cycle to include system temperatures, batch sizes, green bean blend percentages, air damper settings, and burner data
- Data archiving also included daily and weekly production reports as well as alarm and event logging history

