

Ferro Forehearth Coloration Standard Specification Equipment Package

A full design service is offered with recommendations based on customer's existing forehearth layout and product requirements. We work closely, as required, with forehearth project engineers to design-in our colorant equipment package during new plant installations or furnace/forehearth rebuild projects.

A. Colorant Weigh System

1. Colorant feed system weigh scale frame, comprising:

- Tubular mild steel frame with stainless steel supply hopper
- Panels to enclose scale frame with lift-off front panel and side door window
- Weigh hopper mounted on a single point load cell
- Pneumatic air controls; filter regulator, low air pressure switch and scale discharge solenoid
- Fluorescent enclosure light
- Scale feed and colorant distribution vibratory feeders
- Supply hopper product low level indicator
- Variable speed control for distribution feeder
- Digital voltage display for setting feed rate of the distribution feeder

2. Colorant feed system weight and logic control, comprising:

- NEMA 12 enclosure
- Flex weigh model DWM-IV digital load cell set point control
- Allen-Bradley Model SLC501 modular type programmable logic controller
- Indication lights for "power-on," "distribution feeder-on," "scale filling," "scale-at-weight," "scale discharge," "tube conveyor-on"
- Alarm lights for "low air," "low product," "long cycle," "distribution feeder-off," "scale gate open," "tube conveyor-off," "stirrer faults," "over/under weight," "feed-tube temperature"
- Temperature indicator with high and low set point for feed tube-thermocouple input
- Relay outputs for all alarms
- Audible alarm to alert operator there is an alarm condition
- Load-cell digital weight display and keypad for setting weight set points
- Digital cycle timer for setting product discharge interval time
- Potentiometer controls for adjusting feed rates of the scale feeder and the tube conveyor
- RS-232 output for printing weights
- Power supply
- Load cell wire (6 conductors w/shield)
- Feed rate capacity
- 8-2250 kgs/hr (20-5000 lbs./hr)

B. *Colorant Delivery System*

- Vertical feed tube for installation through the cover of the forehearth; feed tube is connected to existing low pressure furnace cooling air for internal and external air cooling
- Vibratory tube conveyor, which interconnects the distributor vibratory feeder and the vertical feed tube
- Port valve and pressure gauge for adjusting internal feed tube cooling air
- Type K thermocouple with Inconel sheath and lead wire
- Temperature indicator and alarm feed tube

C. *Color Forehearth Stirring Mechanism*

- The total number and configuration of stirrers dependent on the forehearth width, dimensions and pull rate required. The mechanism consists of all necessary framing support and superstructure, stirrer head assemblies, carbon bearings and stainless steel chucks.

D. *Stirring Mechanism Drives and Speed Controls*

- Includes 1.5 H.P. Eurodrive gear motors with Mitsubishi AC inverters (6-40 r.p.m.). AC inverters are mounted in NEMA 12 enclosure, with the speed control parameter units door mounted.

E. *Spare Parts Package*