Lime Injection to EAF

- **Airlock rate control eliminates fines flushing which can lead to plugging**
- **Rate control is unaffected by changes in material size analysis**
- **Gravimetric flow control with 1% overall batch delivered accuracy**
- **Fixed air flow resists plugging irrespective of injection rate.**
- **Up to 10:1 turndown range**
- **Automatic calibration update at each heat**

Application

The RotoFeed® is well proven in North America for carbon injection to EAFs. The combination of precision flow control coupled with easy controllability and low wear results in high reliability. The requirements for Lime Injection are different to carbon in that the batch sizes are larger and the time to inject is shorter leading to significantly higher injection rates. In addition, lime is generally larger and much more variable in particle size than carbon. So while the concept of using a volumetric feeder for rate control is the same, the type of feeder is different primarily for cost reasons.

For Lime Injection we replace RotoFeed with a high pressure capable airlock. Stronger valve body and a different shaft seal arrangement permits pressures up to 50 psig. That allows significantly higher injection line loadings than a typical 15 psig capable airlock would. As the same time, balancing the pressure across the rotor (just as with a RotoFeed) dramatically reduces valve wear.

Operating Principles

The Coperion Lime Injection system assembly includes a Spheri Valve to control vessel filling, a batch vessel (ASME Pressure Vessel) appropriate for the required Lime batch each heat, with an airlock at the discharge to control injection rate coupled with valves/instruments to control gas flow and pressure.

The airlock is a volumetric device driven by an electric motor/gearbox. Using a variable frequency drive, the rotational speed of the airlock can be varied to maximize the injection rate. Injection line pressure monitoring speeds/slows the throughput to maintain the safe maximum line loading at all times.

Coperion Lime Injection system is not effected by the typical operational events that can cause:

- Change in material head pressure above the feed control device
- Change in injection port back pressure
- Changes in material size, all fines, all lumps, mixture
- Material segregation in handling and in the injection vessel

The Coperion Lime Injection system gas flow is fixed, using orifice plates (to avoid tampering) at the level needed to support reliable lime transport at the maximum injection rate. Competitors who may use pressure differential to control flow must vary the gas flow rate with material flow change. This may result in choking due to a lack of gas flow. Using characterized valves may get no flow at all or high flushing flow as a result of the lime's variable size analysis.

Features
Airlock body is wear protected with industrial hard chrome internal bore.

Temperature range from -20 °F to 225 °F
(-29 °C to 107 °C)

The Coperion Lime Injection system assemblies that can be shipped in one piece are fully assembled and functionally tested prior to shipping, for faster installation and start-up.

Pneumatic controls and instrumentation are included on the vessel frame with all connections complete. The Coperion Lime Injection system may be retrofitted to existing injection vessels, providing much improved control and reliability at lower cost than complete system replacement.

Coperion
7901 NW 107th Terrace
Kansas City, MO 64153
816-891-9300
info@coperion.com
www.coperion.com/fpm