

Powering Production & Profit in **Non-Ferrous Metals**



Non-ferrous metals are defined simply as metals that do not contain iron, and in recent years the demand for these materials has grown at an astonishing rate.

The requirement for non-ferrous metals such as copper, nickel, aluminium and zinc has surged dramatically due to the growing infrastructures of developing economies in China and India, as well as the continuing demand for these materials in countries across Europe, Asia and the Americas, where they are used in the construction, telecommunication, utility and transport industries.

As a result of these factors, producers of non-ferrous metals are under increasing pressure to maintain high levels of output in an effort to cope with demand. Non-ferrous metal operators are seeking to source and implement technologies and solutions that can support them with expanding their production capacities within new and existing facilities.

At the heart of these production facilities lie the smelting technologies which are used to melt and purify non-ferrous metal concentrates. Clyde Materials Handling has developed a series of pneumatic conveying and injections solutions which have been utilised to transform smelting performance by accurately, reliably and continually feeding material into process.

Clyde Materials Handling conveying and injection solutions are used across the non-ferrous arena - copper, nickel, zinc, tin, lead, aluminium, and platinum; regardless of process employed including Flash, TSL, Mitsubishi, bath converter, Anode furnaces, aluminium pot lines and carbon houses.

Transforming Processes

Clyde Materials Handling is an established customer-driven solutions provider, which utilises its knowledge, expertise and technologies to transform the production processes of its

customers who operate within the non-ferrous metals industry. Clyde Materials Handling offer Pneumatic Conveying Solutions where it matters at the heart of continuous processes.

Clyde Materials Handling has helped their global non-ferrous customer base transform the way in which they operate their processes, which has enabled them to generate sustainable economic benefits and maintain their positions as leaders in their market.

Clyde Materials Handling's pneumatic conveying solutions have been able to transport various materials in an unrestricted, controlled and continuous manner at low velocity, consuming low volumes of compressed air.

Clyde's pneumatic injection solutions have been used to inject an array of materials such as concentrates, ores, mattes, white metal, silica, coal, dusts, reverts, other additives, alumina, fluorides, cryolite and recycled scraps including electronic materials into the heart of non-ferrous metal production processes. It is vitally important to the performance of a process that a consistent stable and smooth feed of material is accomplished so that processes can be stabilised allowing superior levels of production returns to be attained.

Non-ferrous metals producers are striving to accomplish higher returns from incumbent equipment and to utilise the process to its highest level of production. To do this, many have found that exemplary injection accuracy and a stable, pulseless feed allows much higher material injection rates. Clyde is unique in its ability to provide injection rates of over 150tph and an injection accuracy of $\pm 1\%$ on short time frames, which eliminate furnace surging, and inefficiency.

All of Clyde Materials Handling's conveying and injection solutions are enhanced through the use of the Clyde Dome Valve, widely regarded as the best material handling valve in the world. The Clyde Dome Valve has the ability to cut through static or moving columns of material through the use of its innovative



inflatable seal mechanism, ensuring that a consistent pressure tight seal is created when the valve is in the closed position, but in the open position, it provides an unrestricted full bore opening for the best product flow possible.

Clyde has developed pneumatic conveying and injection solutions for non ferrous producers that have the ability to:

- Convey and inject metal concentrates, ores, mattes, white metal, silica, coal, dusts, reverts, other additives, alumina, fluorides, cryolite and recycled scraps including aluminium process arisings and electronic materials – the key materials used in the production of non-ferrous metals
- Provide solutions for copper, nickel, zinc, tin, lead, aluminium, and platinum producers
- Provide solutions, regardless of process employed, including Flash, TSL, Mitsubishi, Teniente or Noranda Converters, Anode furnaces, aluminium pot lines, carbon houses
- Submerged stable pulseless lance injection for bath processes
- Stable and pulseless burner feed for flash type processes
- Stable and pulseless tuyere injection to fumers
- Stable and pulseless tuyere injection to Pierce Smith and Anode Furnaces
- Transport an array of aluminium refining materials

Clyde Materials Handling solutions are designed to use minimal energy, have low wear on system components and pipelines. Clyde's solutions offer reduced maintenance costs and high system availability, reliability and production stability compared to current processes used in the industry.

No Limits. Infinite Possibilities

By placing the customer at the heart of their business, Clyde Materials Handling has developed a global, extensive and diverse set of references, who have become lifetime customers. They continually seek Clyde's guidance in areas of process improvement and material handling.

Clyde Materials Handling takes pride in the return on investment it has generated for its customers, which include:

- Significant increases in productivity
- Environmental sustainability
- High system availability, reliability and performance
- Low operating costs and maintenance
- Greater process control
- Cost savings through process efficiencies
- Flexibility to integrate with existing and emerging technologies

More specifically, Clyde Materials Handling has generated the following, typical returns for organisations who operate in the non-ferrous metals market:

- Greater accuracy of material feed into copper smelting processes
- 50% increase in bath smelter handling capacity per day by offering process stability
- Improved efficiency of smelting process – generating millions of dollars in additional revenue
- 3% increase in overall bath smelter system availability
- 6% increase in injection system availability on bath smelters
- Dramatic reduction in system downtime - 15 days of additional production generated
- Recovery of high value materials from process and recycled materials added to process through environmentally sound injection

Clyde Materials Handling is driven by an energy and passion which enables them to make the impossible happen – there are no limits to their capabilities. Together, with their customers, the possibilities are infinite.



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