

A Fine Separation Solution for a Fine Powder

Russell Finex supply Finex Separators to Atomising Systems Ltd which are installed as part of an atomising system for a major tin producer and exporter in China.

Atomising Systems Ltd specialises in the technology of powder or granule production by the atomisation of melts. Established in 1992, the company and its founder have 35 years experience of the technology and have delivered more than 130 plants for metal powder atomisation in 35 countries in six continents.

Atomisation is the break-up of a liquid into droplets. Atomising Systems Ltd specialises in atomising melts with temperatures from 150°C – 2000°C to make powders from 10µm – 1mm. As well as metals, they also process non-metals such as oxides, sulphides, halides (chlorides), silicates and borates. Although the most common method for producing powders is to use water atomisers, there are a number of different techniques all with their own unique characteristics to suit specific applications.

A major tin producer and exporter in China had previously purchased an ultrasonic atomiser from Atomising Systems Ltd for their solder alloys (lead/tin) processing plant. However, due to increased demand, the need to maintain profitability and a change in legislation which facilitated a switch to lead free alloys, a new atomising system was required that could increase productivity while also reducing product wastage. Therefore, after careful consideration an Atomising Systems centrifugal atomiser was chosen due to its efficient design, providing much higher throughput rates at very narrow particle size distributions.

In order to comply with international standards, the resultant atomised solder powder requires a particle size of less than 45 micron. Therefore, as part of the atomising system, the atomised solder is screened to remove any oversize before being processed any further. In addition, to prevent introducing a bottleneck into the production process, the system needed to maintain throughput rates of 110Kg/hr to match upstream processes. Hence, Atomising Systems needed to install a screening solution that would meet both of these requirements. Having already been supplied sieving equipment on a number of occasions, Atomising Systems returned to Russell Finex for assistance in overcoming these tough challenges. "We know we are in good hands with Russell Finex, they have well equipped test facilities and knowledgeable staff to ensure we get the high quality service we require." explains Dr Paul Rose, Technical Sales Manager for Atomising Systems Ltd. He adds, "Because of this, we have always relied on Russell sieving equipment, we even have one installed in our in-house solder system as well as having three operating in our production facility".



- Production capacity increased more than 4-fold
- Improved sieving efficiency increases product quality
- Provides integrated solution to suit atomising system

After some careful consideration along with some product trials, two 48" Finex Separators™ were selected. Compared to spring mounted units, these high performance separators employ a standard drive motor with a separate vibrator housing mounted on a rubber suspension. This allows for a significant increase in sieving efficiency, providing both higher throughputs and greater accuracy of separation. To compliment the sieves, Russell Vibrasonic® Deblinding Systems were installed onto the meshes to prevent the solder from blocking the mesh. Also known as mesh blinding, this characteristic is commonly encountered when screening fine powders, resulting in reduced throughputs, increased product wastage and costly downtime. And, unlike conventional mechanical deblinding systems such as discs or balls that can contaminate or damage the screen mesh, these systems energize the wires by applying an ultrasonic vibration, reducing the friction between the product and the screen keeping the mesh clean continuously.

“The sieving solution proposed by Russell compliments our centrifugal atomising system by ensuring its overall efficiency is maintained. This gives us peace of mind that the system we supply to our customer meets all of their expectations” says Rose.

The Finex Separators™ are also purged with nitrogen to prevent the powders from being oxidized. This is done by delivering nitrogen via an internal pipeline into a fully sealed container where the solder is deposited once atomised. These containers are then inverted and the solder is fed into the nitrogen purged Finex Separators™. To ensure successful purging of the Finex Separators™, Russell Finex modified the sieve connections to ensure installation of the separators would be as smooth as possible.

“The atomising package along with the Russell Finex machines have dramatically increased the company’s production levels more than 4-fold,” says Rose. “The sieving units have allowed them to streamline their operational efficiency by preventing bottlenecks and increasing productivity,” Rose concludes.

For over 75 years Russell Finex have manufactured and supplied filters, sieves and separators to improve product quality, enhance productivity, safeguard worker health, and ensure liquids and powders are contamination-free. Throughout the world, Russell Finex serve a variety of industries with applications including food, pharmaceuticals, chemicals, adhesives, plastisols, paint, coatings, metal powders and ceramics.