MATCON®
POWDERS, HANDLED

CASE STUDY

LIME POWDER HANDLING
and dosing in IBCs

THE POWDER HANDLING EXPERTS

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The Goro Nickel plant is located on the South Pacific island of New Caledonia.

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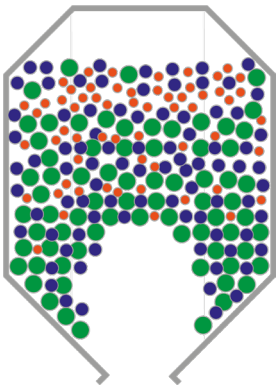
At the site, Outotec GmbH has commissioned one of the largest Sulphuric acid plants in the world.

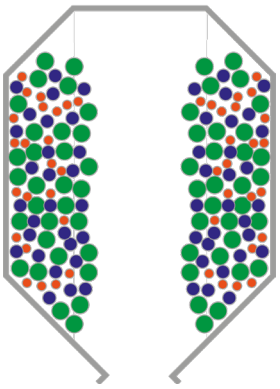
At the time that Matcon was asked by Outotec GmbH to work on the Goro Nickel project, the expected annual capacity was to be 60,000t of nickel and 4,300 to 5,000t of cobalt, which at the time represented around 20% of global production.

At the site, Outotec GmbH commissioned one of the largest sulphuric acid plants in the world. This acid plant, included a sulphur melting and filtration unit, as an integral part of the construction of a fully-integrated commercial nickel-cobalt mining and production facility. This was situated at Goro in the French Overseas Territory of New Caledonia.

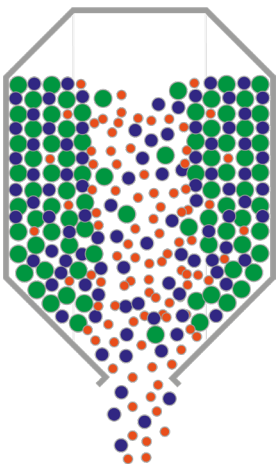
Bridging



Rat-Holing



Segregation



Their Need

Processing sulphur with an addition of cohesive lime powder.

The plant processes sulphur, which is fed in liquid form into a sulphur burner. The sulphur dioxide SO2 generated in the furnace is converted to sulphur trioxide SO3, prior to then being transformed into sulphuric acid. The sulphur is shipped in solid form and is made molten on site.

A crucial step in the treatment of this solid sulphur, prior to melting, is the addition of lime. Due to the biological and chemical reaction during transportation, part of the sulphur becomes transformed into sulphuric acid which requires neutralisation in order to avoid corrosion in the melting and filtration units.

The Goro site operates a limestone plant. Whilst the lime was readily available, the transport and storage of the lime at the sulphur melting area was a challenge. Lime is very cohesive in nature which caused a problem in being able to dose the powder into the process. The bulk density of the lime varied between 800 Kg/m3 and 1200 Kg/m3.

The Solution

Matcon were contacted as it was felt that the Matcon Cone Valve IBC system would prove to be the ideal solution in handling the challenging, cohesive lime powder.

The Cone Valve technology is powered by the Discharge Station which incorporates a lifting probe that engages and locks into the Cone Valve in the outlet of the IBC. On demand the probe raises the Cone Valve causing the lime powder to be discharged into the process through the annular gap that is created at the outlet. This lifting action also promotes mass flow and a vibration at the top of the lift cycle prevents product Bridging or Rat-Holing. The height of discharge is configured to suit the material flow properties of the lime.

The system design located two Lime dosing Discharge Stations in the open-air on site. Both stations were equipped with load cells for weighing which enabled Loss-In-Weight batching. The operator selects the required batch weight and the PLC weigh controller directs the dosing of the lime into the process to the required weight and discharge rate. The initial discharge rate required was 50Kg/Hr with an accuracy of +/-5%.

The system uses 4 stainless steel 1500L Cone Valve IBCs which are moved around the site using a standard forklift truck and then moved into position on the Discharge Station above the acid process using an overhead hoist.

Matcon collaborated with Outotec and Goro to ensure the successful on-site commissioning and installation of the Cone Valve IBC system.

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WHY CHOOSE MATCON

We understand the challenges faced by manufacturers of Chemical products.

YOUR CHALLENGES

No matter what the end product, a common need is for safety, containment, efficient mixing and maintaining blend homogeneity.

The very difficult-flowing nature of many ultra-fine metal powders and friction materials makes them problematic to handle.

HOW WE CAN HELP

A system designed to optimise production flow is what we do. All process steps occur simultaneously for maximum efficiency.

The unique Cone Valve in each IBC protects the blend & provides assured discharge, even on sticky mixes.

In-bin blending reduces downtimes for changeovers, and removes risk of cross-contamination.

IDEX

Material Processing Technologies