

Aluminium Salt Slag Treatment **STE[®] Process**

Title: The Engitec System for Treatment of Salt Slag from Secondary Aluminium Smelters

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Abstract: The secondary aluminium industry involves the recovery of a wide range of aluminium scrap both in form and in composition. The scrap is sorted, prepared, blended, melted and refined into a variety of alloys with a controlled specifications. In Europe, the rotary furnace is commonly used for the melting of aluminium scrap. During the melting process, fluxes consisting primarily in NaCl or KCl are used over the molten bath to reduce metal oxidation and to remove impurities from the charge. The salt slag formed contains salt fluxes, some aluminium metallics, aluminium oxide fines, and water reactive aluminium compounds.

The salt slag from a rotary furnace contains three or five percent metallic aluminium and is usually disposed by landfilling. Certain rotary furnace operators crush the rotary furnace slag to recover the metallic aluminium content.

Salt slag present its own set of problems concerning land disposal. The slag is very prone to leaching chlorides when in contact with rainfall or groundwater. Also, salt slag in contact with water evolves gases, including mainly hydrogen, ammonia and methane. Smaller amounts of hydrogen sulphide and phosphine may also be evolved. Over the past one to two years, increased regulatory scrutiny has occurred in many states concerning the land disposal of salt slag.

For the above reasons the secondary aluminium industry is under increased pressure from state solid waste authorities to greatly reduce or eliminate the land disposal of its salt slag. Engitec Impianti has designed and constructed salt slag recovery system in Carisio, Italy, Cacapava, Brazil and Borgofranco, Italy.

This paper describes the plant built in Borgofranco for Alcan Alluminio, at present under commissioning, which uses a flash evaporator.

The flash evaporation technology is easy to operate, provides flexibility, and can be coupled with evaporation/crystallization for larger size systems.

This system represents the latest in developing technology to address salts recovery, elimination of noxious gases, and production of an oxide fraction low in chlorides which enables reuse for addition to cement.