

Salt Partners

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MD Recycling salt recovery plant goes on stream

A new flux salt recovery plant was commissioned at MD Recycling, Inc. in Midway, Tennessee, USA.

MD Recycling operates a secondary aluminium smelting facility with one reverberatory and two rotary natural gas fired furnaces that recover aluminium from scrap and waste. Molten flux salts, mainly sodium chloride (NaCl) and potassium chloride (KCl), float on molten aluminium, protecting the metal from oxidation and collecting impurities. After the aluminium is poured off, the salt cake is discharged.

Previously, fresh flux salt mixtures were used and the salt cake was sent for landfill. Recently, the price of flux salts and the cost of landfill disposal have multiplied. Besides natural gas and electric power, flux salts and landfill disposal account for a significant percentage of the cost of running rotary furnaces. Substantial savings can be achieved by cutting the cost of flux salts and salt cake disposal. In addition, land filling of salt cake became an environmental issue and the industry is facing landfill closures.

Responding to this challenge, MD Recycling built a flux salt recovery plant. In the new plant, hot salt cake is cooled, crushed and screened to recover aluminium and iron. Crushed salt cake is desalted with recycled condensate and flux salts are recrystallized by thermal evaporation. Recovered aluminium metal and flux salts are returned to smelting.

HYDROSAL[®] hydroextraction process was selected for desalting. This counter-current process achieves high desalting efficiency and high brine concentration, minimizing energy consumption for evaporation and crystallization. The fully desalted slag is used as cement additive. It is virtually a “zero discharge” process.

L. Haberny Co., Inc., Chagrin Falls, Ohio, USA, built the plant. Salt Partners provided the proprietary technology and basic design, optimized the plant operation and tested the process performance. The tests proved that all performance criteria, such as production capacity, quality and consumption figures, fulfil expectations.



Salt Partners HYDREX-4 hydroextractor for slag desalting co-invented by Vladimir M. Sedivy, CH Patent No. 690840

Salt Partners are an independent firm of consultants and engineers, active in the field of salt production, processing and hypersaline biotechnology. Salt Partners' reputation is based on almost 4 decades of experience with projects implemented worldwide.

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Left to right: Don Johnson, President, MD Recycling; Dr. Vlad Vanek, Salt Partners Representative; Mike Gill, General Manager, MD Recycling; Vladimir M. Sedivy, President, Salt Partners; Dale Haberny, President, L. Haberny Co. In the background: Evaporation, crystallization, hydroextraction and salt cake processing units.