

A TEC

BYPASS DUST TREATMENT SYSTEM



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Introduction

Currently, cement clinker production systems, particularly those using alternative fuels, generate substantial amounts of bypass dust as an intermediate product. However, the high chlorine and alkaline compound content in this dust limits its utilization in cement mills. Additionally, its disposal is costly due to its classification as hazardous waste.

A TEC's patented bypass dust treatment process, known as ReduDust, addresses this challenge by transforming contaminated bypass dust into a valuable resource for producing pure NaCl and KCl salts. The resulting residual dust is free from undesirable components, allowing complete recycling in cement production without enriching unwanted materials. This not only saves disposal costs but also enables the recovery of material lost in the bypass system effectively. With the A TEC ReduDust process, a waste-free solution for bypass systems and therefore for using alternative fuels in cement plants can be realized.

Basic Principle

Typically, bypass dust from cement clinker production is chlorine and alkali-rich (potassium, sodium). These components exist as salts on the dust surface, and the ReduDust process efficiently removes them from particles. The end products include cleaned bypass dust and pure or mixed salt fractions (NaCl, KCl).

The process involves a leaching step, where the dust is mixed with water to create a salt brine and a crystallization step. These steps are further divided into the following four sequential processes:

Process Options

The process is customized to meet the specific requirements of each installation. Given its modular nature, activities like mixing and filtration can be conducted at different locations from crystallization, if the need arises.

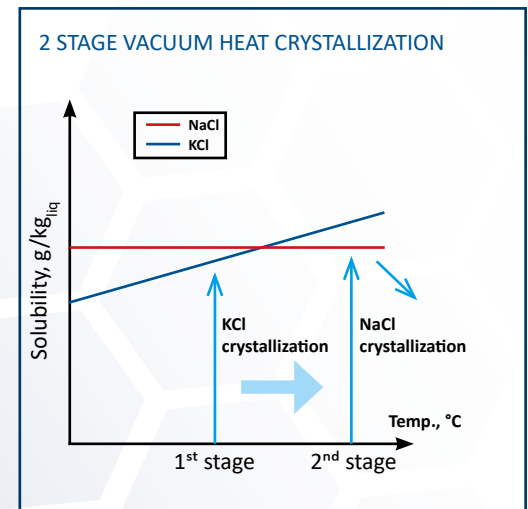
Options for crystallization:

- One-stage vacuum heat crystallization: produces a mix of KCl and NaCl
- Two-stage vacuum heat crystallization: separately produces KCl and NaCl

Development Services and Studies by A TEC

For developing customized plants, A TEC offers Studies and Services for bypass dust samples, which are conducted in A TEC's lab and small-scale pilot plant.

This provides insights into the characteristics of the bypass dust behavior and performance for the ReduDust system, allowing a precise planning of an overall system.



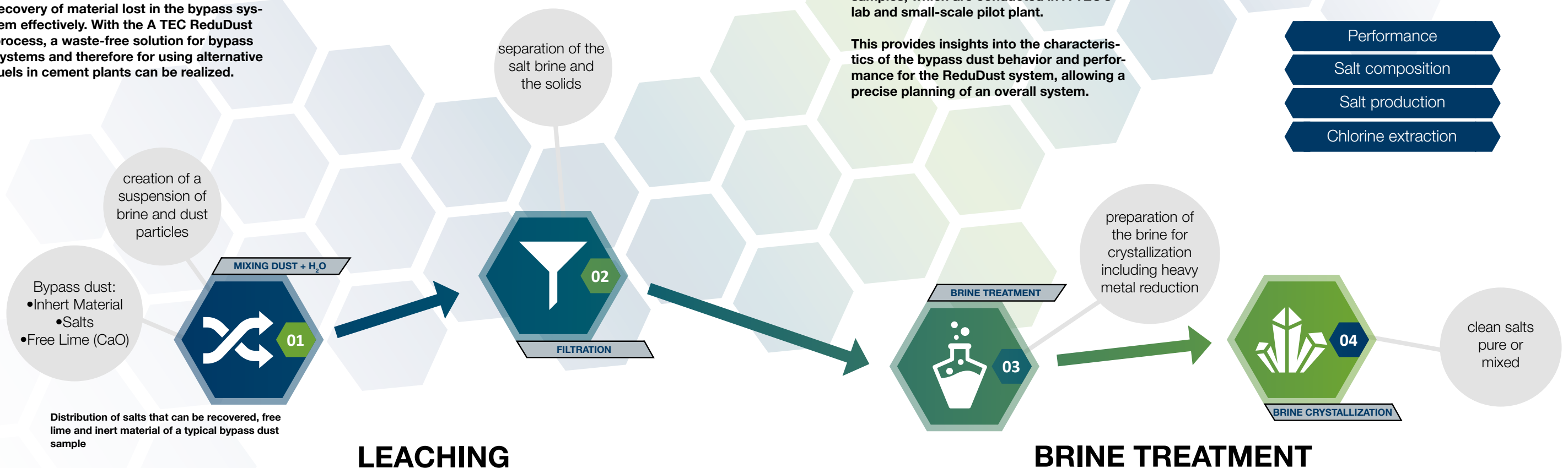
2 stage vacuum heat crystallization and cooling crystallization use the effect of the changing solubility of KCl and almost unchanging solubility of NaCl as shown in the graphs.

Performance

Salt composition

Salt production

Chlorine extraction





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