



TATA Chemicals Ltd

Use of Soda ash Effluent & Power Plant Rejects for Cement Manufacturing

CASE STUDY



Figure 1 Effluent Solids Filtration Plant

Summary

Tata Chemicals Limited (TCL), world's second largest manufacturer of Soda Ash located at Mithapur, (in Gujarat state on the West coast of India), uses the waste generated from the 'Soda Ash plant & Captive Power Plant to manufacture Cement.' TCL developed an innovative process that has a treatment and filtration plant where Soda Ash Reject Solids are used for making cement clinker. The process has enabled Tata Chemicals to actually produce wealth from waste.

TCL process is innovative because:

- Wealth (cement) is created from waste (effluent)
- Most of the equipment used in the filtration plant are deployed for the first time in the Soda ash industry though they have been in use in mining and allied industries
- A part of the high quality water used to treat the effluent is generated from seawater using low grade waste heat from the effluent itself
- TCL Mithapur is the only Synthetic Soda ash producer in the world to have such high level of integration of Cement and Soda ash manufacture. This integration is a great way to safeguard the environment and conserve resources



Objective of Intervention

Use of Soda ash Effluent & Power Plant Rejects for Cement Manufacturing

Description of Intervention

The World Synthetic Soda ash industry is about 140 years old. Though born out of the need to reduce usage of raw materials and pollution the new Solvay process also suffers from its own pollution issues. Chief among these is the liquid waste that needs to be discharged to nearby water bodies – the waste contains Limestone and associated inert. Its treatment and recovery of the limestone faces major hurdles like the difficulty of filtering the ultrafine particles, the need to reduce chlorides in the finally recovered wastes, and the large quantity of high quality water to reduce chlorides. TCL Mithapur site is located in one of the most arid regions of the country thus compounding the problems.

TCL worked very closely with suppliers of Cement machinery and technology, Filters and Desalination technology, conducted in-house research to come up with the process of conditioning and filtration of the waste to produce a material suitable as cement raw material. Since it was not possible to use this material in the existing cement plant, TCL took the step of expanding the plant to accommodate the effluent solids. The high quality water became available when a Desalination plant supplier's technology could use very low grade heat to desalinate once used sea water to produce the water

Intangible or Tangible Benefit

- Conservation of Natural Resource – Limestone
- Minimisation of disposal of Effluent quantity Generated from Soda Ash Plant since 2000
- Promotion of 'Reduce, Recycle & Re Use concept'
- Improving the Sustainability of the of the site
- Usage of Power Plant Waste –Fly Ash to Produce Cement
- Usage of intermediate by Product of Salt Works like Gypsum in Manufacturing of Cement.



About TATA Chemicals

Tata Chemicals Limited is a global company with interests in businesses that focus on LIFE: Living, Industry and Farm Essentials. The story of the company is about harnessing the fruits of science for goals that go beyond business & serving society through science. This story began in Mithapur, Gujarat in western India with the creation of a plant that would raise a wealth of marine chemicals from the ocean, with the potential to touch human lives in many ways.