Multiple-effect Salt Crystallizer Expansion
Chemical / Salt Industry | Case Study

Dominion Salt
Mount Maunganui, NZ - Dominion Salt, New Zealand’s only salt producer, manufactures products for a wide variety of industries including food processing, agriculture, fishing, meat and pulp and paper.

Dominion Salt also manufactures specialty products including a range of premium organic sea salts for gourmet and specialty applications and Pharmaceutical Grade Sodium Chloride for making Intravenous and Dialysis solutions.

Project Background
Demand for Dominion Salt’s high-purity, sodium chloride products for their rapidly growing markets was pushing production at full capacity around the clock, only stopping for planned maintenance shutdowns.

A driving factor for this increased production is the growing demand for pure, pharmaceutical-grade salt in the Pacific Rim, Southeast Asia, and South America.

The applications for this salt include saline drips for injection, haemodialysis, eyewashes, and contact lens solutions.

The Client’s Needs
Production of pharmaceutical salt requires certifications according to strict manufacturing processes and quality guidelines to European, British and United States Pharmacopoeia.

The capacity of Dominion Salt’s existing HPD® vacuum evaporation system used to produce purified salt was reaching its limit. This system was originally installed in 1972 by Veolia Water Technologies and was rated at approximately five tonnes per hour of production. In order for Dominion Salt to expand the overall production of their certified pharmaceutical salt production while maintaining supply to their other core markets, a capacity expansion would be required.
Expansion & Process Integration
Upon deciding that a capacity expansion was necessary to satisfy customer demand, Dominion Salt once again contracted Veolia to upgrade the salt plant. Dominion Salt would increase capacity from 5.2 tonnes per hour to 9.6 tonnes per hour production using the latest available HPD® salt crystallization technology.

The process and design objectives for the new crystallization system included:
• Reliable production of high-quality salt using the existing system to the extent possible
• Integration of a new salt crystallization section of the plant while maintaining integrity of the established, certified, pharmaceutical grade production processes
• Increase total salt production without increasing steam consumption

A difficult aspect of the new crystallization equipment design was the integration of the expanded system with the original plant. The certified process for producing pharmaceutical salt must be strictly maintained while increasing total capacity.

Another challenging element of the project was the limitation of steam consumption. Due to constraints of steam generation on site, the increased plant capacity had to rely on existing steam volumes.

Quote from the Client
“When it was clear that expansion of our plant was necessary, we again called for HPD crystallization technology. Based on the continuous, reliable operation of the original system they supplied, we wanted the level of expertise Veolia provides that is crucial to our production and quality requirements.”

- Robin Goldsack
Chief Executive
Dominion Salt

The Results
The two, new salt crystallizers were successfully installed at Dominion Salt. The HPD Vacuum Salt plant was completed and started up in 2010.

The design maintained the certified pharmaceutical process for the current production line originally started up in 1973.

Including the capacity expansion, steam consumption efficiency at the plant improved by 60% for each tonne of salt produced.

The original system, after nearly four decades of service, continues to operate well. The original plant operator at Dominion Salt and the Process Designer at Veolia also worked on the expansion.