Seawater desalination off the Chilean coast for water supply to the mining industry

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**ABSTRACT**

Water is an important component in the mining industry. With mines often located in remote and dry areas, a sustainable supply of water is crucial. The development of seawater desalination, reduced membrane costs, and reduced energy consumption have made seawater a viable source of water supply for mining. Reliability of the desalination plant, quality of the water, and the availability of sufficient water supplies are the most important requirements to be fulfilled for the mining industry. Therefore, the best available and proven technologies meeting the above-mentioned criteria should be used. The key for successfully operating a seawater desalination process based on reverse osmosis membranes (SWRO) is the pretreatment. Several tests conducted by researchers all over the world have proven that ultrafiltration (UF) provides an optimum pretreatment for the SWRO. The UF removes all the suspended solids and provides a substantial reduction in the microbiological activity. The plugging in of SWRO spacers is completely eliminated and the SWRO cleaning frequency can be drastically reduced. This paper presents the experience of using the UF as a pretreatment to the SWRO in Chile. Two desalination plants are described. Both the plants are of the desalination type dual membrane: ultrafiltration followed by reverse osmosis. One plant (GasAtacama) was commissioned in June 2011 and has since been successfully in operation. The second plant (Minera Candelaria) is currently under construction.

**Keywords:** Ultrafiltration; Seawater desalination; Reverse osmosis