

Solar technology purifies water on a grand scale

Quality water supply is always an issue for mineral extractors and processors – new technology provides a potential alternative.

Access to water is one of the many challenges facing South Australian resource companies operating in remote locations. Companies must identify and source their own water resources, typically from aquifer systems, and treat to a suitable standard for potable and mineral processing requirements.

Desalination of aquifer water for mining operations in Australia generally involves reverse osmosis technology, which is both power-intensive and expensive. However with our abundance of sun as a renewable energy alternative, solar desalination plants with diesel back up are becoming an option, but this is still an expensive method with current technology.

Australian company F Cubed have designed a new system that relies entirely on the sun for power, using no chemicals, filters, or backup power and is capable of producing millions of litres of distilled water each day. Their direct solar desalination method enhances the natural process of evaporation and condensation, to produce distilled water from impure supplies, removing all chemicals, heavy metals, bacteria and pathogens. The idea is not new – but the technology is.

The system uses Carocell™ panels, unique modules that look similar to the solar panels found on rooftops, but with key differences. The materials used in the modular panels increase the temperature of the water on the solar collector, dramatically enhancing the evaporation process. The panels are also lightweight yet robust, enabling efficiency in production costs and transportation.

The potential to convert 100% of the supply water to potable standard with no waste brine discharge – leaving only fractionalised salts – provides efficiency, environmental and economic advantages.

At the other end of the mine process, wastewater streams provide an additional water management issue. The technology also appears able to treat contaminated wastewater in an environmentally sound (and economical) manner on site, which has obvious benefits.



F Cubed's unique Carocell panels

The capability to treat aquifer water and contaminated wastewater has potential for the mining industry that is twofold. First, to supply sufficient potable and process water from aquifers and second, the treatment of waste water to a standard that can be either reused through the process plant, used as a dust suppressant, or potentially re-injected into the aquifer.

The first commercially significant application of the process is about to begin in South Australia, with F Cubed signing a landmark Memorandum of Understanding recently with the District Council of Ceduna to supply drinking water to the town. Commencement of the project is planned towards the end of this year.

"The Ceduna farm will be the first of its kind in Australia, supplying approximately 200 million litres of drinking water per year to farms, residents and Aboriginal communities west of Ceduna," said Peter Johnston, Chief Executive Officer and founder of F Cubed. The company is also in discussions with several companies in Queensland, interested in a cost effective solution to the management of coal seam gas water.



An artists impression of an installed system – the Ceduna farm will be similar in size

Mr Johnston believes their system is the most efficient solar desalination product in the world and is confident of its applications in many other markets including urban,

humanitarian and agricultural. It has already sparked interest in 20 countries, including the United Nations Office of Project Services and the World Bank.