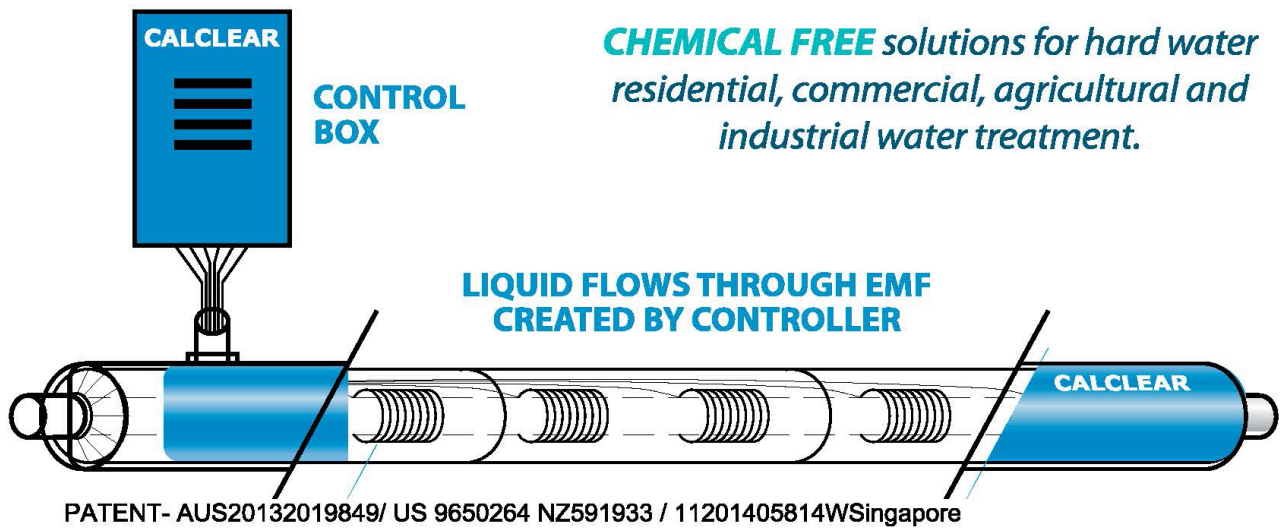


CALCLEAR WATER

DESCALING WATER PROCESS SYSTEMS



The **CALCLEAR** unit eliminates:

~~✗~~ **Birm Filter** ~~✗~~ **Cation Exchange** ~~✗~~ **Acid Dosing** ~~✗~~ **Anti-Scale Dosing**

Mining Sites and Water Plants

INDUSTRIAL AND RECYCLING - CEMEX CEMENT AUSTRALIA

The Manager from Cemex trucks, is more than happy with the use of CALCLEAR in treating the water to clean the trucks on two sites.

Latest feedback : More importantly Blair said they are excited about the use of CALCLEAR on their recycled water and the huge reduction of CALCIUM build up in their storage tanks. Their highly mineralised incoming water is used to wash trucks, for cement production, around the cement plant and then the overflow goes into an 80,000 litre recycled waterpit where they would recycle 40,00 litres day and night. (Total 80,000) The pit is 10 years old and had a large build up of at least 2" Calcium. They emptied the tank



over January to clean it and discovered since the CALCLEAR had been installed 3 months ago the scale had at least halved – a great result. Blair Eaton

Southwest Operations Supervisor:
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CEMEX Australia
Dodson Rd, Bunbury,
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**Reverse Osmosis
CALCLEAR treatment**



**CALCLEAR Pre
Treatment RO**



**CALCLEAR Treatment for RO
and showers for 600 Workers**

Pilbara WA Case Study

Mining Camp Trials: Water Services Engineers Report April

The scale affecting RO membranes at camp Fortescues Metals Group (FMG) Solomon Rail Project was extreme. Silica content was high and combined with calcium carbonate had scaled up the RO membranes within 2 weeks of running. This caused a panic as RO water production was down to 10 litres per minute and dropping. No spare membranes were at site and it cost a huge sum of money for express freight 24 hrs from SA to Port Hedland. Lucky we just received a consignment of RO membranes – otherwise 500 people would have to be flown out and the camp closed until water supply was restored. A huge financial cost to project and work progress for FMG.

"Silica forms a glass hard scale and is proven to be a major issue with RO membranes and pre-treatment."

New membranes were fitted in late November 2011 along with a **CALCLEAR** Hydro 200 system and 100 mm pre wired treatment pipe. The cation exchange water softener, birm media filter (for iron removal) and chemical metered dosing anti-scalant system were by passed and shut down.

Since installation of the **CALCLEAR** there has been no decrease at all in recorded pressure or flow rates. Important to note if the trial failed and there were no spare set of membranes – there would be not enough potable water to sustain this camp. The whole camp water supply is desalinated bore water through 3 RO systems pre-treated by **CALCLEAR** system and media filter for particle removal prior to the RO.

The filter pump that is not connected to the **CALCLEAR** is showing extreme scale build up – and so is the pipe fitting on untreated bore water entrance of the **CALCLEAR**. The pump set downstream of the **CALCLEAR** is completely free of scale deposits.

Pilbara WA Case Study

Mining Camp Trials: Findings and Results

The flow rate of permeate (product water) from the RO with birm filter, water softener by passed is now **85% increased in productivity** due to less filter media beds to go through. There are savings in salt, not needed for water softener regeneration, saving a pallet of salt per month and the anti-scalant no longer needed **saves around \$460.00 per month**.

All new potable water plants will be designed to have **CALCLEAR** pre treat the RO water. Drinking, cooking, ice machine water, camp showers and wash basins will be treated only with media filter and **CALCLEAR**. Bore water consumption will be reduced by 150,000 litres per day (around 55 million litres per year). Ground water resources in the Pilbara region are finite – the increased consumption of ground water in this hugely expanded population of mining and construction is unsustainable.

"CALCLEAR technology has outstanding water conservation benefits."

Capex savings in a potable water plant with RO producing up to 100,000 litres per day without the Birm media filter, water softener and anti-scalant metered dosing equipment associated plumbing and electrical – and the addition of a Hydro 200 **CALCLEAR** are around **\$20,000 to \$25,000** including savings in labour and pipe fittings .

Opex in terms of RO replacement membranes, electricity, chemicals, salt and maintenance labour in a remote site are around **\$35,000 per year**. We are yet to determine how long the membranes will last with the **CALCLEAR** treatment – there is no sign of wear so far.

Mark Lobban

Water Division Manager APC (© 2012)

CALCLEAR WATER
DESCALING WATER PROCESS SYSTEMS

www.CALCLEAR.com.au
100% Australian Made and Owned

Shipping - water treatment 1

RESULTS OF USE OF CALCLEAR INSTALLATION.

1. Make up line or steam plant cascade tank.

- Auxiliary boiler is a vertical watertube type, of 2000Kg capacity @ 6Kg/cm²
- Object was to reduce chemical consumption.
- Result was a decrease in the TDS to a value outside the measuring range of onboard test equipment.



- This result was immediate even though the system makeup is typically less than 2m³ /day
- Said reduction in TDS enabled a reduction in blowdown frequency, with accompanying reduction in chemical makeup. Blowdown is now carried out as a housekeeping exercise. Previously it was carried out to control TDS values.

- Object was to eliminate the formation of salt scale on the tube surfaces and, therefore eliminate the necessity to periodically chemical clean the tubes.
- Frequency of chemical clean was typically 3 months.
- Result was an absolute absence of scale at the routine inspection following the installation of the unit.

Engineer and 1 assistant to other maintenance. The condition of the condenser is an absolute priority.

- The CALCLEAR has given some flexibility to the maintenance schedule.

2. Cooling sea water inlet to steam plant condenser / drains cooler

- Condenser is a tube type steam & condensate / sea water heat exchanger.
- The need for periodic chemical descaling has been eliminated.
- Cost savings are mainly in the area of being able to direct labour, typically 1

Shipping - water treatment 2

GRAEME DUDGEON

Dear Robbie,

As a Chief Engineer on a 140,000 tonne sized ship I am happy to report the findings following the trial using CALCLEAR Water Conditioners on our water supplies on the vessel.

The Calclear units were fitted on the supply line before both the Cuno filters, for the domestic fresh water and the drinking water systems.

The units proved to be very successful treating the bank of eighteen filters which we would normally change every 3 months. After fitting the Calclear units we have now more than doubled the length of time between the service and replacement of the filters cartridges. We will add a backflushing system to add further life to the filters to clear any fine suspended scale which has been removed, probably by the Calclear units, and not passed through the filter. This will be a great saving in time and money to the operations of the ship.

We look forward to further trials on other areas of the ship, particularly in the Auxiliary Boiler feed system and the Main and Auxiliary Diesel engine Jacket water cooling circuits.



Yours sincerely,

Graeme Dudgeon
Chief Engineer (Marine)

CALCLEAR POWER & WATER



the
outbackloop

BIRDSVILLE AND INNAMINCKA HOTELS

the results having now obtained a supply of clean potable water throughout the hotels. No longer was dirty, turbid, unpleasant water being supplied but rather a clean refreshing clear water supply from every tap. She remarked that **“The outcome was the most surprising – there were no problems only positive results”**.

Jo was also impressed with the Calclear technology which provided an efficient water processing system that delivered a proportionately high level of process water due to the efficiency of the Calclear water conditioning process combined with the RO facility. She remarked that Calclear Plant is very cost efficient and commented that **“Operations costs are minimal compared to the cost of purchasing water – after the initial investment the operational costs are not significant”**

Jo also commented that **“Our staff and guests drink water of pristine quality from a desert river system. The water is soft and clean and pleasant to drink”** Because of the Calclear Water Treatment Plant, Jo no longer has to import bottled water for the guests and now has a continuous

supply of clear, clean water.

The Calclear Water Treatment plant was delivered to Innamincka and installed behind the hotel, connected to the supply water and linked into the water reticulation system. Jo Fort commented on the efficiency of the Calclear delivery and installation team. Jo's staff were trained on site by the Calclear team on the on going operation of the plant and the maintenance which is greatly reduced by the in-line Calclear technology in conjunction with the RO systems and membranes. Jo commented **“Operation of plant -There is a process but it is not complicated and our staff were well briefed by Calclear technicians – the operation of the Plant is cost effective and efficient”**

The cost of the Calclear Water Treatment Plant for the Innamincka Hotel totalled AUD \$87,000 and Jo Fort has assessed the ROI to be achieved in 12 months. A superb outcome for the Hotel.

In summary we refer to Jo Forts recent comments**“The Innamincka Hotel now has the BEST water in Australia !”** Whenever going to drive to their other hotel, The Birdsville, Jo says : **“I always take bottles of our Innamincka water for drinking at Birdsville !! It's great. Thanks for the CALCLEAR plant. ”**

INNAMINCKA HOTEL
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