

On Site Hypochlorite Generation Without Salt

By: Alan Lewis*

Australian Innovative Systems (AIS) after years of research have now brought to the world market a product which can in fact successfully disinfect pool water by electrolysis of tap water; and do that with a TDS (Total Dissolved Solids) level of 200 - 500 mg/l. This level allows for proper balancing of water at normal Calcium Hardness (no softeners required); Alkalinity levels; and appropriate Langelier Saturation Index (LSI) water balance. Thus this process avoids corrosive or scaling water in the metal heat exchanges used in heating of pools. More importantly the low TDS allows recycling of the water for irrigation of the gardens and lawns which are usually found in close proximity to the pool.

Needless to say, any system which refrains from buying water that totals roughly \$10 per kilolitre at the consumer's tap (though only \$1-2 to the consumer personally), and then "salinating" it beyond suitability for irrigation, should be encouraged and supported. The AIS Ecoline Chlorine Generation System achieves just that. A recent analysis has shown that at current prices (which of course may fluctuate), an investment in such equipment for a swimming pool should round out at a cost of about \$200 per year for the eight - yearly electrode replacement, expected by the manufacturer. That would easily beat the annual running cost of chlorine needed to similarly disinfect a pool.

For those who need to maintain well disinfected water in remote areas, island resorts; or outback country areas, where safe cartage of chemical disinfectants add to their cost and present logistical impediments to the supply; an Ecoline Electrolyser will avoid OH&S considerations linked to handling and storage of chemicals. Research has shown that the special, Iridium and Ruthenium oxide electrodes, developed by AIS for the Ecoline systems are far superior than other well known materials or metals used in typical electrolytic cells such as Carbon; Boron Doped Diamond; Platinum; Titanium; or high grade Stainless Steel.

Research has shown Ecoline electrolysis of Brisbane tap water contributed just 44% of Free Chlorine to the total of oxidants found in the water, while 56% was contributed by the mixture of other oxidants created in the electrolytic process. These convincing findings prove the presence of considerable oxidising

power, which is certainly adequate in destroying pathogens, yet the DBPs are benign to bathers, children, competitive swimmers or swimming teachers. Parallel microbiological testing has brought excellent and ultimate proof of the efficacy of this disinfection.

The Ecoline electrodes are clearly capable of breaking down most of the undesirable chemical disinfectant by-products. AIS have not stopped at applications for swimming pools. There are now Ecoline units which are being used in agricultural, recreational and industrial situations.

Here are some examples:

Irrigation of Queensland golf course

- Effluent (overflow from septic tanks) collected from 20 nearby households held in two 20,000 litre tanks after in line treatment by Ecoline.
- This water is brought to "Class C" for sub-surface irrigation of a golf course.
- Capacity: 23 cub metres / day; TDS: 384mg/l; Chlorides : 70 mg/l; pH 7.4
- Ecoline Capacity: 18 g/hr @ 384mg/l with 18% chlorides.

Canadian plant processing extracts from raw eggs

- 170,000 litres of wastewater / day @ 750 L/min
- TDS ~ 2000 mg/l; reduction of turbidity; BOD; COD; Odour; removal of pathogens prior to disposal in municipal sewer.
- Ecoline Capacity : 50 gr/hr (Chlorine gas equivalent) @500 mg/L TDS with 38% chlorides or 109 gr/hr @2000 mg/L TDS with 38% chlorides.
- Treatment of raw dairy manure waste water in Colorado
- Holding dam: 4,500,000 L treated @ flow rate: 380L/min
- Reduction of BOD; COD; Odour;



The Ecoline unit in the plant room

removal of pathogens
Water treatment to potable standard in Western Australian mine

- Population: 1200 TDS: 700mg/L; chlorides: 150 mg/L (21%)
- pH 8.0 ; chlorine dosing requirement 2.0 mg/L; FAC 1 mg/L
- Ecoline capacity: 64g/hr.

AIS has proven beyond a shadow of doubt, that with improved technology it is possible to use electrolysis in a variety of ways without the need to add salt to achieve satisfactory disinfection. It now remains for other Australian electrochemical industrialists to rise to the occasion and join the effort to reduce the need for heavy salt residuals for purposes of electrolysis, to minimise DBPs, and improve the health of our water treatment, whether it be in private or public pools, treatment of ground water for potable water supply, recreational, agricultural or industrial (bottled drinks) applications. Research in the last five years or so has opened up electrochemistry as a viable avenue for better answers in water treatment in a plethora of applications. ■

Source:

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بعد أعوام من الأبحاث، تقدم شركة Australian Innovative Systems للسوق العالمية منتجاً قادراً على تطهير مياه حوض السباحة عبر كهرة مياه الصنبور وهو يقوم بذلك مع مستوى إجمالي المواد الصلبة الذائبة يتراوح ما بين ٢٠٠ و ٥٠٠ ملغ/ليتر. ويسمح هذا المستوى بموازنة مناسبة للماء بوجود صلابة كالسيوم طبيعية (من دون اللجوء إلى المنقيات) ومستويات قلبية مختلفة وتوازن مائي مناسب لمؤشر Langelier للتشبع (TDS). وبالتالي تتجنب هذه العملية المياه المسببة للتآكل أو للتحجيم في تبادل المعادن الحراري المستعمل في عملية تسخين أحواض السباحة. والأهم من ذلك أن مستوى TDS المنخفض يسمح بإعادة تدوير المياه لري الحدائق والمروج الخضراء الموجودة عادة على مقربة من أحواض السباحة.