

# A profoundly green solution

Radical Waters is a global leader in electrochemically activated water technology – a revolutionary hygiene system that's leading the way in replacing chemicals and processes that are steadily destroying the environment.

For years, industry has been indiscriminately using corrosive chemicals to clean up a number of undesirable situations. But this is now becoming increasingly problematic as the chemicals themselves are causing even bigger environmental problems. Some chemical compounds are now impacting directly on environmental pollution – and have been shown to cause biocidal and antimicrobial tolerance and resistance within bacteria, viruses and fungi.

One company that's addressing this problem very successfully is Radical Waters, a global innovator in perfecting electrochemically activated water technology.

## What is ECA?

Electro Chemical Activation (ECA) is a scientific process that mimics the body's

own natural process in fighting invading bacteria and viruses. *Hypochlorous acid* (HOCl), the oxidant the white blood cells produce, is acknowledged to be amongst the most potent natural disinfectants. Radical Waters reproduces HOCl under highly specific electrochemical conditions using a combination of water, salt (NaCl) and electricity. HOCl is extremely effective at eliminating all pathogens and food spoilage microbes including spores. By utilising the specially designed and highly controlled production systems, the company is able to consistently and repeatedly produce HOCl of the highest quality and efficacy, litre after litre. ECA is non-toxic and safe for the treatment of water used in food and beverage plants; free-rinsing (no post-application rinsing is required); produced onsite on demand; and is residue and taint-free. Two distinct solutions are used by the company,

namely anolyte (a natural disinfectant liquid solution) and catholyte (a natural mild liquid detergent). Radical Waters ECA solutions are extremely favourable in the oxidation and removal of residues during product change-overs.

Cleaning in place (CIP) is frequently regarded as a grudge activity that interrupts the continuity of the production process; which is an essential process in the food and beverage industry. Without diligent application of the fundamental principles of CIP, product quality will suffer through flavour and colour inconsistency. More importantly, without a strictly controlled and monitored CIP system, contamination can occur on a large scale, and reputations destroyed.

## Forging a trend

Radical Waters is the pioneer of ECA and has spent 17 years focussing on developing and commercialising its patented green ECA technology and today holds 26 patents covering food and beverage CIP, starch and grain, meat processing, animal husbandry, agricultural yield enhancement, dentistry, medicine, borehole rehabilitation and microbial resistance management.

Additional patents are pending in the beverage industry. To date, Radical Waters has installed operating ECA devices on six continents and in 26 countries.

The first sector to benefit from the technology were live animal producers like pig and chickens farmers where Anolyte was dosed into the drinking water to reduce diseases and eliminate antibiotics with a consequent reduction of mortalities and improved feed conversion ratios.

Applications in fish and meat processing followed, as well as applications in red and white meat abattoirs. For example, fogging Anolyte into a chicken hatchery will destroy airborne and egg surface



Clockwise from top left Philip Nel, VP Technical and R&D, Anton Louw, Zahida Dhansay and Nikki Wilson, VP of Operations and Marketing

pathogens which will improve hatchability up to 3 per cent, also decreasing the need for harmful chemicals like formalin.

The company then explored ECA as an ingredient in sauce manufacture, as well as its uses in the medical field and finally looked into agricultural environments, producing an application for washing fruit and vegetables.

'We knew the power of the technology, and it's potential in numerous industries,' comments Anton Louw, VP of Sector Sales (Africa, Asia, Australasia, Europe and Middle East) for Radical Waters. 'The challenge was to commercialise the new technology and change mind-sets across the various industries.'

In 2007, the company's ECA technology was adopted by Coca-Cola for CIP and applied in many of its plants worldwide. Previously, beverage plants would use traditional chemicals, such as caustic soda – which is highly toxic and needs to be handled with care – acids and water at high temperatures, to clean and sanitise and achieve effective results. However, heat requires energy (costly for beverage producers), chemicals (again, costly) and huge volumes of water (that requires heating) that, in some countries, is a scarce commodity.

One of the most appealing aspects of the technology is that it's a green technology, and through its application it can significantly reduce water usage and eliminate the reliance on harmful chemical detergents and sanitisers. What once may have been a distant strategic goal for an environmentally conscious food or beverage producer has now become a cost saving reality. Other advantages of Radical Waters' green technology is shelf-life extension of products when used as an ingredient or surface disinfectant, as well as substantially reduced time for cleaning resulting in additional production time and increased profits for the users.

Other prominent clients to realise this and implement the technology include Valpre, Enterprise Foods Polokwane, Pepsi Cola, SAB Miller, Tiger Foods, Famous Brands and AFGRI/Pride Milling (using Anolyte ECA during conditioning to soften grains for processing which adds moisture and decontaminates them at the same time).

Commercialising this innovative technology has involved partnerships with suppliers and services providers, and Radical Waters relies on companies like the

SABS, Controllec, Direct Logic, Siemens, Germ Africa, ATI Systems, and many others to supply it with high quality, market accepted equipment and technologies.

Having made an impressive mark on all major markets worldwide, Radical Waters is turning its attention back to South Africa. 'We have gone back to the drawing board to make ECA more accessible to the South African and African markets. It would seem we've gone full circle, from developing many applications and building our IP originally for the local market, to then being particularly focussed on the international beverage market. Part of our strategy now, is to offer solutions better commercially suited and designed for the South African, as well as other small to medium food and beverage markets,' comments Nikki Wilson, VP of Operations and Marketing. 'The consequences of chemical over-use are very real. There are definitely opportunities for us locally. Multinationals are eager and looking to use our technology in their plants to address hygiene concerns and meet sustainability requirements, and we look forward to assisting them.'

After many years of trials and assessments, ECA's Anolyte and Catholyte products are used in a wide range of markets around the world formerly dependent on chemicals for controlling contamination and bacterial infection. The technology is widely applicable to the beverage, meat, seafood, sauce, processed and fresh foods, grain and wheat milling and starch sectors.

### New models

Wilson also reports the company is revisiting different market segments, and has spent the past six months developing a smaller system that utilises the same technology, but is more affordable. 'We expect to launch this new model soon,' she states.

Another new development is the Low Chloride ECA Generator that was first launched in 2014. 'We changed the specs to comply with the maximum allowed chloride levels,' explains Louw. 'Now, our new challenge is to come up with a suitable application for the dairy industry,' says Louw, explaining that the fat and proteins found in dairy products makes thorough cleaning fairly tricky.

Locally, the company's headquarters in Kyalami, Johannesburg, is the main hub

for sales, marketing, service and technical support, as well as the factory base for R&D and manufacturing of the ECA hygiene devices.

Radical Waters' (Pty) Ltd sales team, along with its affiliate in the UK, Radical Waters International (UK) LLP, is responsible for global sales and servicing. Currently, the Group has distributors in Spain, Kenya, Egypt, Russia, Chile, the USA and the Philippines. As part of its international growth strategy, the Group continues to actively seek reliable distributors and integration partners worldwide.

### ECA consortium

Radical Waters has joined 10 ECA companies from around Europe and Russia to form a consortium in a bid to secure EU Biocidal certification under the impending EU regulation cut-off date of 2015. As the filing date draws closer, those who don't comply with the Act stand to be regulated and prohibited from supplying in the EU. The purpose of the European Biocidal Product Regulation E 528/2012 is 'to improve the free movement of biocidal products within the Union while ensuring a high level of protection of both human and animal health and the environment'.

With numerous applications for the use of ECA technology, thanks to the fact that it's safe for use in all food and beverage environments, the way forward for the Radical Waters Group looks extremely positive. The company has been accredited by the SABS, and the solutions are Kosher and Halaal approved and the devices are CE certified.

The company will be exhibiting at the Sustainable Food Expo, Birmingham, UK on 23 October ([www.sustainablefoodexpo.com](http://www.sustainablefoodexpo.com)) as well as exhibiting for a third time at the well-known upcoming Brau Beviiale 2014, to be held in Nuremberg, Germany from 11-13 November. □



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