nöz by ArcAqua

Ozone Spray Nozzle System

ArcAqua NOZ is a revolutionary ozone-based sanitizer. Immensely effective in killing bacteria, it is also 'green', chemical-free, safe and economical. Now available for the 1st time to restaurants, fast food and other food outlets, NOZ combats the challenges of increasing levels of bacteria in fresh produce, which chemical cleaning solutions are struggling to address.

Bacteria in the Food Value Chain

FOOD POISONING

Increased demand for fresh unprocessed food globally has resulted in the dramatic escalation of food poisoning incidents. Fresh produce is difficult to sanitize effectively. The US Centres for Disease Control and Prevention (CDC) estimates that approximately 80 million Americans contract food poisoning or food borne illness annually. Food borne illness is caused by harmful bacteria, viruses, parasites or toxic chemicals.

FRESH FOOD SHELF LIFE

Microbial spoilage, which can be prevented, directly reduces the shelf-life of fresh produce. The US Department of Agriculture estimates losses of fresh produce, attributable to microbial spoilage in the food value chain, to be as high as 30% of global harvest. The food services sector carries the brunt of this, with some restaurants recording waste in excess of 5% of turnover.

REPUTATIONAL DAMAGE

Your food outlet's reputation is a key asset. Food poisoning cases have caused food outlets to close and even face liability, such as these reported cases:

- KFC in Australia were fined over $8 million when *Salmonella* poisoning caused a family's daughter severe brain damage
- Heston Blumenthal's world renowned The Fat Duck restaurant had to be temporarily closed due to a food poisoning scare and suffered an estimated £ 100,000 loss in revenue, not to mention the reputational damage.

Food Trends

Demand for fresh, unprocessed products is booming globally. Consumers prefer fresh produce, preferably organic, without preservatives or other additives as part of a healthier lifestyle. Accentuated awareness of health issues, including obesity, heart disease and diabetes, adds to this, especially in developed nations.

The global drive to reduce the use of pesticides and chemical fertilizers naturally results in more microbes present on fresh produce - leading to increased risk of more rapid food spoilage and food borne illnesses. This was illustrated by the *E. coli* outbreak in mid 2011 in Germany with infected bean sprouts causing the death of 29 people and nearly 3,000 falling ill. The global move towards 'green' or chemical free food packing and preparation methods compounds the above risks.

Conventional Cleaning

Fresh fruit, vegetables and uncooked meat, fish and poultry have traditionally been treated with chemical sanitizers such as chlorine-based solutions and quaternary ammonium compounds (QAC), to remove harmful microbes.

Chlorine produces toxic by-products (e.g. chloramines and trihalomethanes/THM's). This has led the European Union to impose a ban on the use of chlorine compounds for disinfecting food produce (EU Directive 2092/91) due to the adverse health affects. These toxic by-products also have a negative environmental impact on flora, fauna and natural decomposition processes when released into water systems.

Conventional cleaning methods are increasingly ineffective against pathogens as many harmful strains of bacteria are developing resistance to these chemical compounds. Consequently, new technologies to decontaminate fresh food and produce effectively are needed - which led to ArcAqua's development of NOZ.

What will NOZ do for You?

Efficacy

Ozone is nature's sanitizer and is 3 times more effective at destroying unwanted bacteria and pathogens, than chlorine.

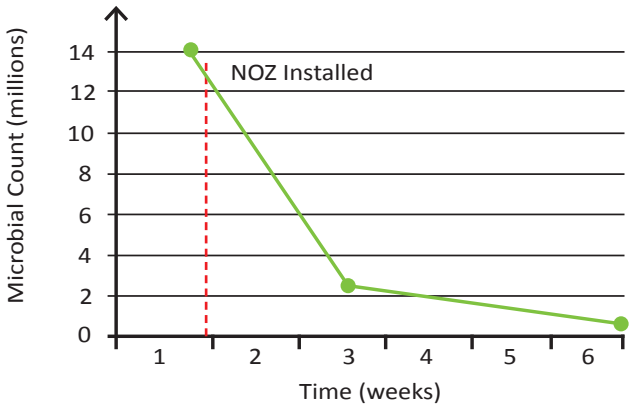
ArcAqua's ozone sanitizer, the NOZ, incorporates a unique process using water droplets to carry ozone directly on to the item being washed and sanitized. This maximises the ozone's effectiveness. Furthermore, the NOZ has been designed and engineered to be a robust, cost effective and safe device that is much more effective than competing products.

In Field Testing

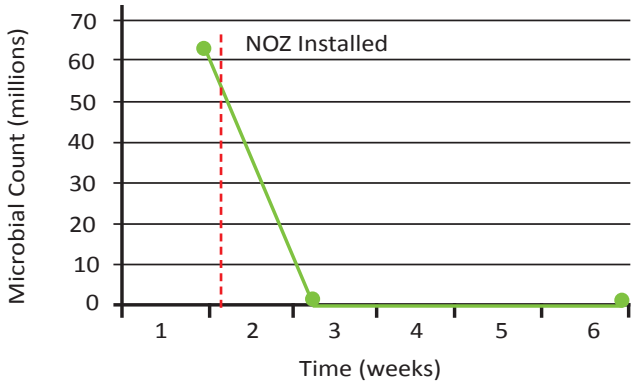
Mid 2012, 13 kitchens from three different types of restaurants and two hospital kitchens were formally monitored over a 7 week period. 4 of those were used as "control sites" to validate NOZ's efficacy.

A SANAS accredited laboratory was used to analyse the 307 swab tests during the 6 weeks.

Produce microbial analysis measured over 6 weeks



Kitchen equipment analysis measured over 6 weeks



The Field Test results clearly show NOZ's extreme effectiveness.

Quantitive and Qualitative Observations from the Field Trials

Quantitive

ECONOMICS:

– Food waste reduction
– Water savings
– Chemical savings
– Minimal electricity usage

SUMMARY:

– Combined savings were over twice as much as the rental cost
– Increased margins due to less food waste
– Fewer produce deliveries needed

Qualitative

EASY

– Ease of use
– Simple and quick to install
– Minimal training of users
– Uncomplicated operation
– Low maintenance

Safety

During in field testing, the level of free ozone gas in the air was tested with an Eco Sensor A-22 across 90 reference points. No additional ozone was detected in the ambient air. This safety feature is due to the NOZ system's effective design, including the patented nozzle technology.

NOZ'S EFFICACY WAS TESTED ON THE HIGH VOLUMES OF PATHOGENIC BACTERIA BELOW.
NOTE: ONLY A 10 SEC WASH WAS USED TO OBTAIN THE ≈ 100% KILL RATE

Efficacy Lab Testing

CUTTING BOARD	*E. coli*	*S. aureus*	*Salmonella*	*Pseudomonas*	*L. monocytogenes*	*E. coli 0157:H7*	*C. albicans*
BEFORE WASHING	92 000 000	20 000 000	190 000 000	16 000 000	280 000	20 000 000	150 000
AFTER NOZ WASH (10 sec)	<1	<1	<1	<1	<1	<1	<1
% KILL RATE (10 sec)	=99.99%	=99.99%	=99.99%	=99.99%	=99.99%	=99.99%	=99.99%

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