



Summary & PowerPoint

Efficiency, Food Safety and Sanitation Through Sustainability

Sustainability is a way of doing business and built through company culture. Ingredients and chemicals, when not efficiently used burden our water source and wastewater treatment plants, increase carbon footprint with excess usage, require more chemicals for cleaning, and at times can inhibit the safety of our work environment. Many of these ingredients and chemicals are managed in a fluid state where we are challenged with applying them to our products or cleaning in our process. Advances in technology with precision coatings and even chemistry are changing landscape.

Advancements in technology continue to assist our efforts in becoming more efficient and sustainable. One such technology is Electro-Chemical Activation (ECA), which provides food processing facilities such as bakeries the ability to produce cleaning and sanitizing chemicals on site. The process uses only salt, water and electricity to produce skin and eye safe Sodium Hydroxide cleaner and Hypochlorous Acid sanitizer. The traditional method of obtaining chemicals is to constantly ship in highly concentrated chemicals and dilute them down as needed. While this method has served the industry well it does present obvious disadvantages from an economic, environmental as well as safety stand point. The advancements in ECA technology provides an alternative which eliminates the need to ship in new barrels of chemistry, dispose of old barrels, as well as handle and mix dangerous chemistry. This can all be eliminated while still maintaining high levels of food safety with ECA technology. Cleaners produced with ECA work great with dough, organics, fats, food grade oils and other ingredients found in the bakery industry. Additionally, the sanitizers are proven to kill pathogens such as E-Coli, Salmonella and Listeria.

Coating application equipment use Pulse Width Modulation (PWM) technology can be used across the bakery. Traditional methods cannot match the speed, flexibility, and efficiency. Lines are faster, product portfolios are growing, and ingredients are more expensive. Conventional nozzles need 4 times the pressure to obtain double the flow. When doing so, the pattern changes and complete coverage is sacrificed. Flow rates and spray patterns of many coatings can be swayed 20% or more with temperature changes. Temperature controlled systems further enhance the ability to control coating applications when paired with PWM coating technology. PWM coating technology has shown to

use 50% less release agent or glazes. In addition, you can take advantage of advanced label friendly mold inhibitor technologies that require efficient topical application. PWM coating technology has resulted in reduction of air pollutants in the work environment, cleaner processing environment, and improved product quality.

Learn how precision coatings and ECA technology are shaping the future of sustainability. New methods and technology combat consumption, usage, waste, health and safety. Understand how to manage your water, release agents, lubricants, glaze, mold inhibitors, and cleaning & sanitizing chemistry throughout your facility.

Learning Objectives

- Understand advancements in sustainability related to fluids used in their process
- Assess their current processes to identify areas for improvement
- Find resources to help optimize the application of liquid ingredients and chemicals

Presenter

Anthony Wood, Spraying Systems
Josh DeVoll, Spraying Systems

Presentation Time

Tuesday, February 26, 2019
1:25 pm - 2:00 pm

Session

Breakout 6



Efficiency, Food Safety and Sanitation Through Sustainability

Anthony Wood, Klarion
Josh DeVoll, Spraying Systems Co.



Sustainability

- Usage –
 - Energy and utilities required for production
- Consumption –
 - amount of ingredients, cleaners, and sanitizers needed to do the job
- Waste –
 - efficiency in using just what is needed
- Safety –
 - safe fluids and safe application in your process

Fluids Management

- Ingredients – used in product or process
 - How much are you using for each product
 - What is required for each product to be produced
 - The affects of waste?
- Chemicals – cleaning/ sanitizing
 - Safety, PPE requirements
 - Effectiveness, usage
 - Wastewater treatment impact

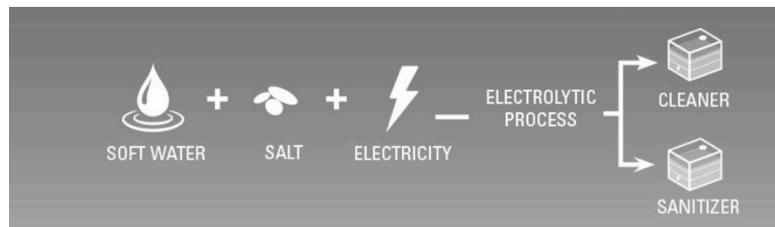


Electro-Chemical Activation ECA

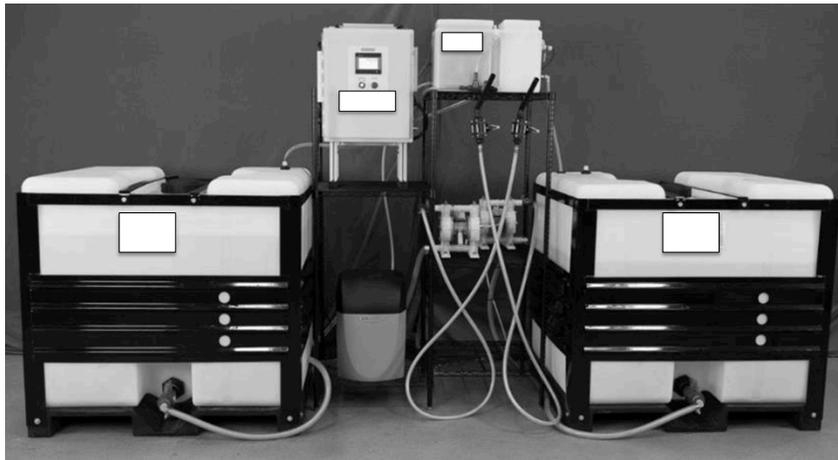


What is ECA?

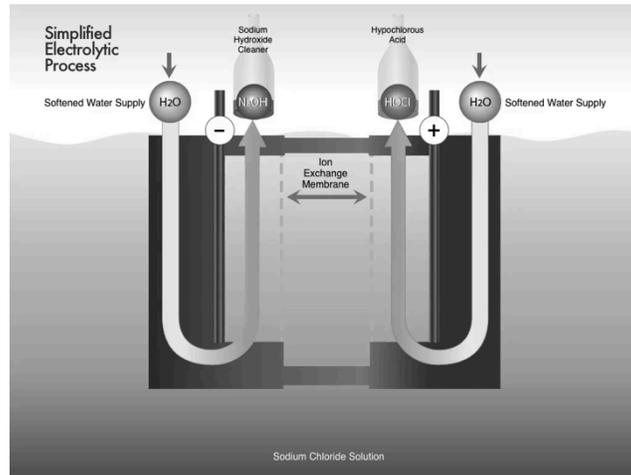
- **Electro-Chemical Activation**
 - Electrolytic system for onsite generation of cleaning and sanitizing chemicals.
 - 3 Inputs (Salt, Water & Electricity)



ECA



How ECA works



What ECA Produces

- 2 Outputs
 - Cleaner
 - Sodium Hydroxide
 - Sanitizer
 - Hypochlorous Acid
- Ready To Use
 - No Mixing



Effectiveness of ECA

■ Cleaner - Sodium Hydroxide (NaOH)

- ✓ Dough
- ✓ Flour
- ✓ Food Grade Oils
- ✓ Lecithin
- ✓ Eggs

■ Sanitizer - Hypochlorous Acid (HOCl)

- ✓ Listeria
- ✓ Salmonella
- ✓ E. Coli

Applications

- Manual CIP
 - Conveyors
 - Ovens
 - Mixers
- C.O.P. Room
 - Three Compartment Sinks
 - Utensils, bowls, bins
 - Foaming Carts
 - Mixing equipment
 - Removable conveyor sections
- Basket Washer
- C.I.P.
 - Cream Yeast Tanks



Benefits of ECA

- Sustainability
 - Reduced Carbon Footprint
 - Eliminate chemical shipments
 - Make chemicals on site
 - No Container Disposal
 - Reduce Chemicals to Drain
 - Improve work environment
 - No PPE
 - Skin and eye safe chemicals
 - Effective at low concentrations
 - Less turnover



Does it Fit?

- Is ECA right for you
 - Worker Safety Concerns
 - Chemical Burns
 - Inhalation/Respiratory Issues
 - Sustainability Initiative
 - Waste Treatment
 - Pathogen Issues
 - Inventory Control improvements
 - Reduce total number of chemicals needed

PWM ?

- What is PWM?
 - Pulse Width Modulation
 - Utilized in various industries
- Used in spray technology
 - Consistent application
 - Precise volumes
 - Extremely flexible

PWM Spray Technology

- Applications
 - Pan release
 - Dough ball oiling
 - Glaze or egg wash
 - Seed adhesion
 - Mold inhibitor



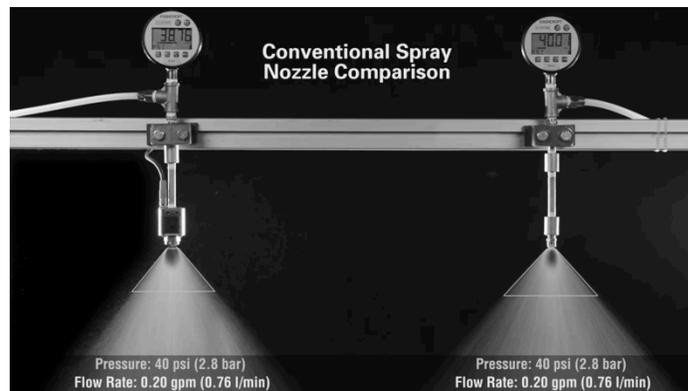
PWM Spray Technology

- Challenges
 - Turn down affects coverage
 - Low volumes without air atomizing
 - On/off between products
 - 180cycle per minute
 - Difficult to spray



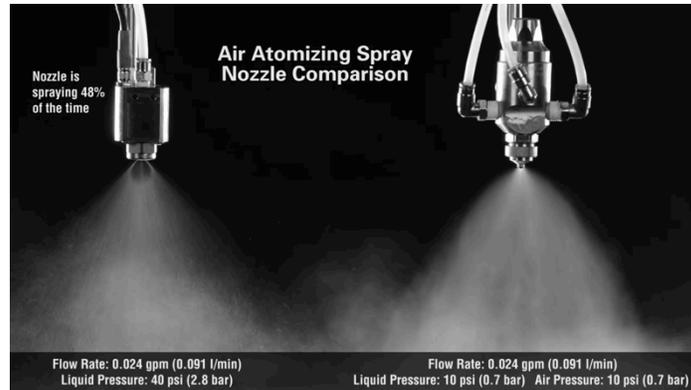
PWM Spray Technology

- Conventional Hydraulic Nozzles



PWM Spray Technology

- Air Atomizing Comparison



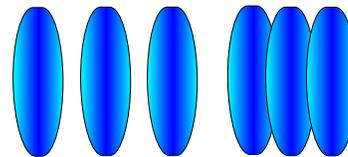
PWM Spray Technology

- Two Main Concepts

– Duty cycle controls flow rate



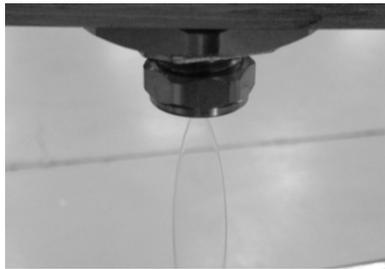
– Frequency controls coverage



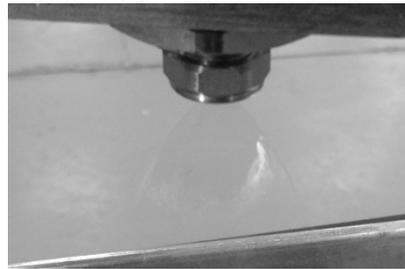
PWM Spray Technology

- Coverage and pattern affected by temperature

75F at 40psi



120F at 40psi



PWM Spray Technology

- Fogging and misting
 - Can be 50% of total use
 - Affect air quality
 - Increase cleaning time
- Overspray
 - Hinder product quality
 - Incur maintenance
 - Harbor bacteria

PWM Spray Technology

- Benefits
 - Fluid savings 50% typical
 - Reduction in airborne mist
 - Increased product quality
 - 50% less maintenance
 - More up time
 - On/off between products
 - Over 10,000 cycle/min
 - Reduce BOD and FOG



Additional Resources

- PWM Spray Control
 - Spray nozzle provider
 - Web search technology
- ECA Technology
 - Current ingredient/chemical provider