



PMO

Food &
BeveragesJezreel Valley,
Israel

Pasteurized Equivalent Water Treatment at Tnuva Ba'Emek, Israel

Background

Ba'emek Advanced Technologies Ltd. is part of the Tnuva Group – the largest dairy cooperative in Israel. Their state-of-the-art production facility, built in 2001, is located in Jezreel Valley – Israel's dairy and agricultural heartland. The Ba'emek plant specializes in the production of Whey Protein Hydrolysates (WPH), Whey Protein Concentrates (WPC 34%–80%), and Edible & Refined Lactose, as well as powder blends. Their products are used as ingredients in high-quality end-products including baby formula, ice cream and other dairy products, confectioneries, sports nutrition, and protein bars & shakes.

The plant, designed to process whey, collects fresh dairy whey from all over Israel, derived primarily from Israeli Edam and Cottage cheeses. 75% of the incoming whey volume ends up as COW water. Since Israel is a dry country, water is an expensive and precious commodity, and water reuse is a core value. Pasteurizing COW water for reuse in plant processes makes perfect sense.

Ba'emek sought a more sustainable solution than energy-guzzling, labor-intensive heat pasteurization – one that would meet their commitment to safe water and not compromise end-product quality, safety, and shelf-life.

Pasteurized dairy whey is either piped or delivered to the facility in specially designed tankers and is then passed through membranes that remove useful products from the water. These membranes remove the valuable molecules, fats, and microbes for processing into products, and the water that would otherwise be wasted is instead recycled through HOD™ (Hydro-Optic Disinfection) UV.

First, the whey is processed through ultra-filtration (UF) membranes which separate the fat & protein fractions of the whey from the remaining lactose, minerals, and water. The fat & protein fractions are then evaporated, spray-dried, and processed to make products, while the permeate stream is passed through Reverse Osmosis (RO) membranes.



The Solution

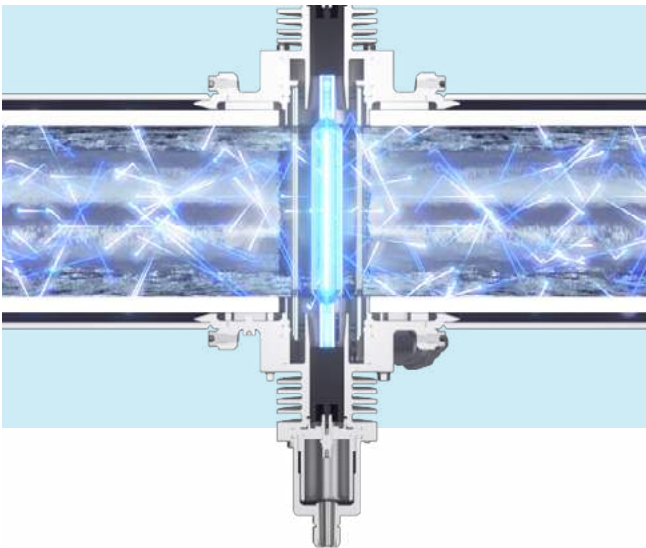
Ba'emek opted for Atlantium's HOD UV solution, validated to meet stringent pasteurized water rules as defined by the US FDA Pasteurized Milk Ordinance (PMO), which regulates the dairy industry in the US.

Atlantium HOD UV systems effectively eliminate pathogens and bacteria. This is achieved by combining ultraviolet water disinfection technology with hydraulic and optic principles. The HOD UV system features the unique Total Internal Reflection (TIR) technology that recycles UV light energy, ensures homogenous UV dose distribution, provides superior power (kW) efficiency compared to traditional UV, and achieves unprecedented micro-organism inactivation.

Ba'emek installed two Atlantium RZ Series UV systems in 2012 when microbial challenges were at their highest during the summer heat.

The RO permeate is fed to two Atlantium units in parallel. With permeate UVT (UV transmittance) of 80%, the Atlantium units, continuously provide a disinfection dose of at least 120 mJ/cm², which is the UV dose compliant with US FDA Pasteurized Milk Ordinance (PMO) regulations.

After Atlantium HOD UV treatment, the pasteurized equivalent water is safe to reuse as processing and cleaning water for the facility.



Two parallel Atlantium units treat 85 m³/hr of RO permeate

Results

Atlantium guarantees microbial integrity and meets expectations. This saved them a huge amount in energy costs, dramatically improved their water microbiology results, and streamlined production. The recycled COW water meets all their process needs.

Microbial data was collected by the plant's personnel using aseptic methods. System maintenance included periodical CIP based on performance measures and Atlantium's recommendations.

The results show the superior disinfection reliability of the Atlantium units. Despite variable counts at the inlet stream (up to 3-log total count), the units eliminate all microbes and produce consistent, high-quality water to be used in the plant's CIP and other rinsing purposes.

Since replacing thermal pasteurization with Atlantium HOD UV systems, Ba'emek has reduced energy consumption, saving \$162,000 per annum.



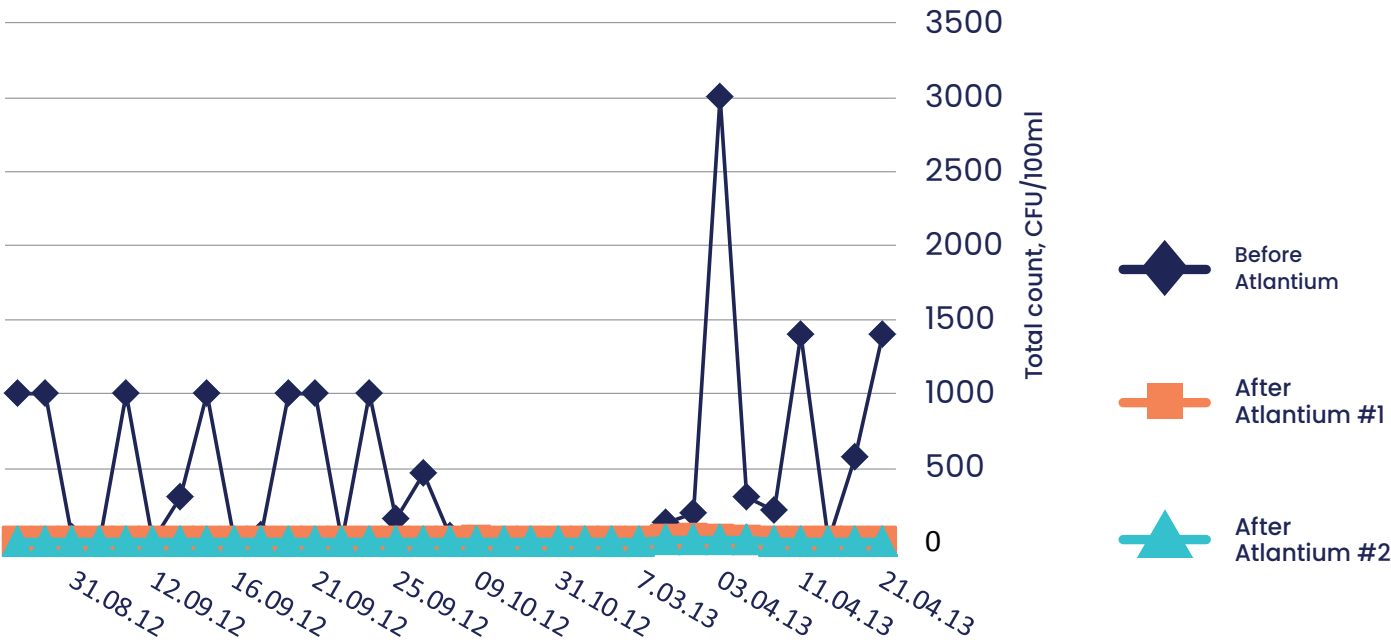
With our products used as ingredients for high quality products including baby & sports foods, we have to be sure that our process water is 100% safe and will not compromise the quality, taste or shelf life of our customers' end-products.

Atlantium is a reliable system that we can depend on to provide us with the water quality we need, and by replacing heat pasteurization, also enables us to save energy.



Mr. Alex Rubin, VP Engineering
Ba'Emek Advanced Technologies Ltd..

Atlantium performance, "Baemek Technologies" 2012-13



Graph of Atlantium HOD UV performance in microbial testing carried out by Ba’Emek Technologies during 2012/2013

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About us

For more than two decades, Atlantium Technologies has helped to ensure water safety with its innovative HOD™ (Hydro-Optic Disinfection) UV technology and novel approach to performance, monitoring, and control. Atlantium's superior, environmentally friendly water treatment solutions ensure stable, efficient, and dependable production.

With thousands of full-scale installations for leading brands in various industries globally, we're committed to consistently meeting our customers' water quality needs, ensuring pure results.



Pure Performance