

## Dairy Processing Wastewater Treatment



# Aeration and Mixing Technologies Well-Designed for Maximum Results



## Process Wastewater High in Contaminants

Wastewater from the dairy industry is generated from raw milk receiving stations, bottling plants, cheese factories, butter and casein processing, condensed and dried milk processing, and ice cream facilities.

The wastewater is a mixture of dairy product waste, heating, cooling, and washdown water, and chemicals used in the washing and sanitizing processes. It contains high concentrations of BOD and COD, dissolved and suspended solids, nitrogen and phosphorous compounds, chlorides, fats, oils, and greases.

Dairy wastewater decomposes rapidly and reduces dissolved oxygen in the receiving waters, encouraging fungal growth, odors, and sludge.

## Treating Dairy Wastewaters is Demanding

Plenty of challenges confront the treatment of dairy wastewaters

- Wide swings in wastewater loading and discharge rates require equalization upfront
- Sludge accumulates on equipment and tankage
- Bulking and foaming problems arise
- Low temperatures diminish treatment effectiveness
- High dissolved oxygen demands result in expensive aeration energy charges
- Odors from the treatment process can be overwhelming if not managed properly
- Over-aerating activated sludge reduces settling and increases suspended solids concentrations
- Poor treatment results in clogged sewer pipes and increased biomass growth.

## Fluence Aeration and Mixing Technologies Support Effective Treatment

Fluence offers aeration and mixing technologies ideally suited for dairy process wastewater treatment.

### TORNADO® Family of Surface Aerators

The Tornado aerator provides superior subsurface directional mixing and oxygen dispersion to wastewater bodies. The intense action of the aerator shears wastewater solids to increase treatment performance by enhancing the surface area for oxygen and bacteria contact.

- 2 – 100 HP (1.5 – 75 kW) Models
- 1800 rpm at 60 Hz (1500 rpm at 50 Hz)
- Grease-lubricated sealed bearings are ideal for high concentrations of solids, grit, and sand
- Solid shaft; vibration-free design
- Low maintenance and patented replaceable modular seals
- Tapered roller bearings prevent aerator shaft vibration and absorb propeller thrust loads
- Self-heating bearing design is ideal for cold climate locations
- Available in standard 304 stainless steel and optional 316 stainless steel construction
- Premium efficiency motor is designed to work with soft start VFD controllers to eliminate power surge penalties and reduce energy costs
- Blower-assisted models are available for high oxygen demand applications.

### HURRICANE® Submersible Aspirating Aerator/Mixer

The Hurricane Submersible aerator delivers high oxygen transfer rates with 360-degree radial mixing to depths of up to 24 feet. This equipment is ideal for a wide range of industrial applications including aerobic digesters, equalization basins, activated sludge, and post-aeration basins. The Hurricane is installed at the base of the tank and does not need anchoring to the tank. It can operate as an aerator/mixer or mixer only.

- 14 model sizes ranging from 5 to 100 HP (3.75-75 kW)
- Impeller and stator are manufactured from single pieces of 17-4 stainless steel hardened to Rockwell 45 HRC for superior abrasion resistance
- Impeller is balanced for minimal vibration and maximum chopping action to crush solids
- The base features large extended adjustable legs for stable wide-radius support; vibration-dampening feet help prevent “walking”
- Multiple diffuser tubes adapted to rectangular or circular basins provide uniform air distribution for full-floor coverage
- Mixer or aerator/mixer functionality is created by valving off the air inlet pipe or by changing the water depth in the basin
- Fixed or removable mounting options are available



Check out our full range of aeration and mixing technologies at [www.fluencecorp.com/aerators](http://www.fluencecorp.com/aerators)

Dairy Wastewater Treatment Challenges	Fluence Equipment Advantages
Acidic environment due to organic materials or chemicals causes corrosion	All components are 304 stainless steel construction—no galvanized parts; 316 stainless steel is available as an option. The Tornado features sealed grease-lubricated bearings which are not exposed to wastewater.
High solids, sludge build-up, and fats, oils, and grease (FOG)	Aeration equipment provides intense horizontal mixing action, maintaining solids in suspension and providing deep aeration and mixing action to help dissolve accumulated sludge.
Foul odors	Surface aerators create an air cap at the water's surface and provide aeration and mixing below the surface to avoid splashing or spraying.
Harsh wastewater environments	Fluence aerators are designed for harsh wastewater conditions. Industrial-grade, chemical-duty and explosion-proof motors are available options and are designed to withstand high temperatures associated with some processing applications. Corrosion- and UV-resistant stainless steel construction ensures long-lasting performance.
Energy-intensive treatment	Premium efficiency motors, turn-down capabilities, and smart aerator technologies.
Maintaining treatment equipment	Aerators are easy to install, require little maintenance, and some models are accessible at the surface, requiring no draining or dredging for regular maintenance.



TORNADO® Self Aspirating Aerator



HURRICANE® Submersible Aerator/Mixer





## Fluence has Your Back Every Step of the Way

We offer leasing arrangements to reduce your capital expenditures and to provide you with a low-cost method to evaluate our technology in your application. Our program also includes generous lease-to-purchase terms.

We provide high-quality spare parts for our equipment and products. Buying spare parts from Fluence benefits you by offering:

- Full warranty
- Reduced downtime and maintenance requirements
- The right fit and performance with original equipment
- The opportunity to upgrade equipment with the latest innovations
- Extended equipment life while maintaining equipment value

Contact the parts department at  
+1 (763) 746-9288 or [aerationparts@fluencecorp.com](mailto:aerationparts@fluencecorp.com)

## Our certified field service technicians provide:

- Start-up and commissioning assistance
- Inspection, operation, and maintenance services and training
- Installation, supervision, and project management
- Remote monitoring when employing our Smart Operation software
- Technical, process optimization, and plant upgrading support.

## Applications

- Aerated lagoons
- Aerated tanks
- Digesters
- Equalization basins

## Industries

- Dairies
- Cheese processing
- Ice cream and butter processing
- Milk and whey processing
- Yogurt processing

For more information on how we can help you solve your wastewater treatment challenges, contact us