CASE STUDY

SIMMONS FOODS

SITUATION

- Wastewater from the meat processing facility is treated using a sequence batch reactor and an aerobic lagoon that discharges to surface waters following treatment.
- To enable biological treatment processes, atmospheric oxygen is incorporated into solution using mechanical aeration. Specifically, the wastewater is agitated using four, 100-HP blowers and 15, 75-HP surface aerators—for a total system power usage of 1,525 HP.

COMPLICATION

- Use of mechanical surface aerators in cold weather created low wastewater temperatures – a hostile environment for the beneficial, nitrifying organisms—inhibiting nitrification.
  - Reduced biological function and capacity.
  - Increased risk to business continuity and the brand.

RESOLUTION

- Replaced surface aeration equipment with two, 350-HP the “no-splash,” side-stream SDOX® systems retrofitted to the treatment basin. Eliminating the cooling effect of surface aerators maintained a higher temperature within the treatment lagoon, enhancing biological function and treatment capacity.

BENEFITS

- Increased treatment capacity + better removal rates—10% increase in BOD + total nitrogen removal.
- Lower operating costs per pound of loading—net, annual reduction in operating costs of more than $645,000 after accounting for the cost of oxygen.
  - Reduced annual maintenance costs ~$300,000.
  - Reduced energy costs ~$650,000 (50%).

- Enhanced health and safety by virtually eliminating electrical maintenance activities within the treatment basin and the production of aerosols associated with conventional aeration.

- Conserved 5.4 Gigawatts/year, reducing greenhouse gas emissions by more than 50%.

“WE ARE EXTREMELY PLEASED WITH THE RESULTS OF THE TWO SDOX SYSTEMS. ASIDE FROM MAKING IT EASIER FOR US TO STAY IN COMPLIANCE DURING COLD WEATHER, ONCE FULLY OPTIMIZED, THE ENERGY SAVINGS ALONE ARE EXPECTED TO JUSTIFY THE EQUIPMENT.”

SETH WALTERS
SENIOR DIRECTOR OF ENVIRONMENTAL QUALITY | SIMMONS FOODS

"IN GENERAL, WE'RE TREATING MORE FLOW WITH HIGHER LOADS AND BETTER REMOVAL RATES WHILE SEEING LOWER OPERATING COSTS. OVERALL, OUR BOD AND TOTAL NITROGEN REMOVAL HAVE BOTH INCREASED BY ABOUT 10%."

ANDY BRASHEAR
ENVIRONMENTAL MANAGER | SIMMONS FOODS

ECONOMIC/OPERATIONAL

- Increased capacity
- Improved treatment
- Superior process control
- Reduced maintenance costs
- Reduced energy costs
- Reduced operating- + brand-risk
- Operational continuity
  - Retrofit without interrupting operations
  - Perform most maintenance outside the basin without heavy equipment

SOCIAL/COMMUNITY

- Enhanced worker health + safety
  - Reduce/eliminate electrical maintenance within the basin
  - Eliminate exposure to aerosols generated using conventional aeration

ENVIRONMENTAL

- Improved water quality
- Reduced energy use + greenhouse gas emissions