EcoMicrobials™

EcoGrease and EcoFlush to treat effluents in a chicken processing facility

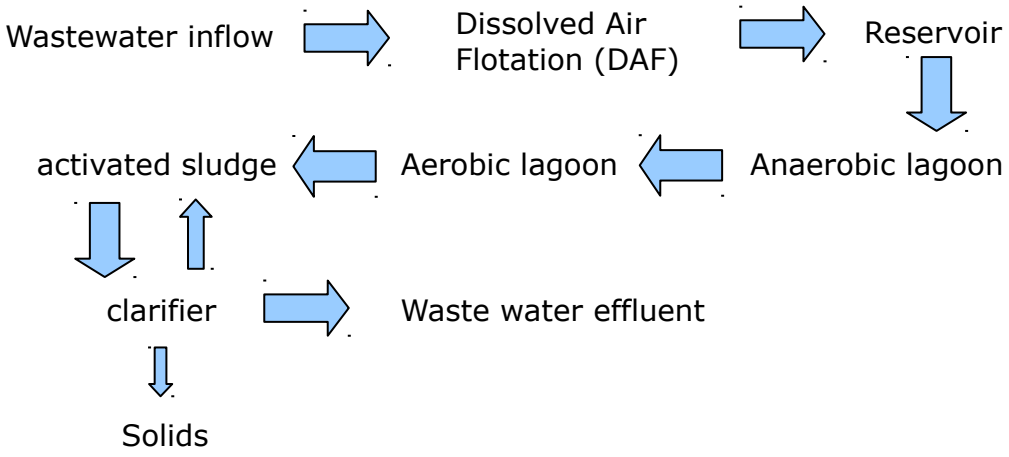
Products: **EcoGrease and EcoFlush** **Type of trial:** **Commercial processing plant**
Location: **Ebensburg, Pennsylvania**

Objective

Wastewater from poultry processing plants contains very high organic loads (BOD) and fat and oil concentrations (FOG). These conditions create a processing difficulty that often requires a combination of aerobic and anaerobic biological systems. Due to environmental constraints, waste treatment plants must be particularly designed to reduce grease and oil, build up of solids, and control odors.

For three years, a chicken processing plant in Ebensburg, Pennsylvania had problems discharging wastewater with too high organic load, as well as receiving complaints about the odors emitted. The plant produced approximately 1 million gallons of wastewater per day (3,785 m3 per day). Despite using large amounts of enzymatic / bacterial products (7 kilograms per day, or 204 kilograms per month) and several drums of aerosol deodorants each week, the control of bad odors was minimal.

Water treatment system configuration diagram



Methods

The strategy used to solve the problems consisted of the combination of EcoMicrobials products: EcoGrease and EcoFlush. The objective was to stimulate the degradation of organic matter, fats and oils in the aerobic and anaerobic treatment lagoons to prevent the formation of hydrogen sulfide. The doses used were 1 gram of EcoGrease and 1 gram of EcoFlush per cubic meter during days 1 and 2, then the dose of both products was reduced to 0.6 grams of each product per cubic meter during days 3 to 7, and finally the daily doses stabilized at a rate of 0.18 grams of each product per cubic meter.

For the entire system 33.23 kilograms of EcoGrease and 33.23 kilograms of EcoFlush were applied during the first month. Then, the monthly dose of each of the products was 20.4 kilograms. It was not required to increase the dose despite experiencing temperatures almost two degrees Celsius higher during the year of treatment (step from 16.8 to 18.7° C).

The process efficiency was calculated as:

100 x (Influent concentration - Effluent concentration) / Influent concentration

Results

- 72 hours after the start of the treatment, a superficial layer was formed in the anaerobic lagoon, which had never been formed before.

- The removal efficiency of organic matter increased despite increases in flow and organic load experienced in the last year.

The removal efficiency of BOD, suspended solids (TSS), fats and oils (FOG) increased by more than 97%, levels never reached in the plant (Table 1).

- The solids production efficiency of the belt filter press increased from 20-25% to 30% with the bio-augmentation process.

- Hydrogen sulfide production decreased and odor complaints ceased.

Table 1. Characteristics of the influent water, effluent and removal efficiencies of the parameters in the anaerobic lagoon, activated sludge lagoon and throughout the system.

Complete system	Inflow	Outflow	Removal efficiency throughout the system
BOD (mg/ L)	1926	12	99.38%
TSS (mg/ L)	763	8	98.95%
FOG (mg/ L)	103	2.36	97.70%

Removal efficiency	Anaerobic lagoon	Activated sludge lagoon
DBO (mg/ L)	94.50%	98.60%
TSS (mg/ L)	91.50%	90.60%