



## Headworks Bio Brings Two Stage IFAS to Milk Factory in Nigeria

### Background

Oriental food industry limited, a subsidiary company of National Food Industries Co. Ltd.,(NFIC, KSA) established in 1993, is involved in the processing and packaging of a wide variety of canned products such as Foul Medames, Peas & Beans, Evaporated Milk, Milk Powder in cans, Milk Powder in Pouches & Tomato Paste in Cans.

The dairy industry wastewaters are primarily generated from the cleaning and washing operations in the milk processing plants. It is estimated that about 2% of the total milk processed is wasted into drains. The wastewater generated from milk processing can be separated into two groups the first group concerns wastewater having high flow rates and the second concerns the effluents produced in small milk transformation units (cheese production for instance). Dairy wastewater is characterized by high biological-oxygen demand (BOD) and chemical oxygen demand (COD) concentrations, and contains fats, nutrients, lactose. As large amount of water is used to clean processing plants; the resulting waste water contains detergent, sanitizers, base, salts and organic matter. Waste water volume and strength fluctuate widely from day to day due to partly differences in production.

Customer: Oriental Food Industry  
Industry: Dairy



## Process

Due to expansion at the milk production plant, a new wastewater treatment plant was constructed to treat 600 m<sup>3</sup>/d.

With Influent COD levels reaching as high as 10,000 mg/l and BOD 3,200 mg/l respectively. Oriental foods opted for a two-stage Headworks Bio Inc Integrated Fixed-Film Activated sludge (IFAS<sup>®</sup>) process. This two stage IFAS process is followed by lamella clarifiers for solids removal.

One of the key challenges at the plant was to provide a biological treatment process capable of handling fluctuation in flow and load due to the different processing activities. "Its flexible design that allows for increased capacity in the future, when production increases again, and the self-regulating biofilm, coupled with the ability to handle high wastewater temperature of 35 °C, and provide a compact overall footprint made IFAS the ideal choice" explains Bhushan Patil, Process Manager for the Project.

Upstream of the IFAS process, pretreatment is provided by adjusting pH and using strong coagulant chemistry to break any emulsions caused by cleaning agents and sanitizers and to precipitate solids and fats. The chemicals are added to cause deemulsification, precipitation, coagulation, and flocculation, FOG, TSS is removed through a primary DAF.

## Results

The IFAS plant treats 600 m<sup>3</sup>/day and reduces BOD to <30mg/l and COD to <250mg/l respectively, thus producing effluent suitable for safe discharge. The two IFAS reactors have a total footprint of 140 m<sup>2</sup>, a remarkably small size for a plant with such high influent loads.

Along with the process design, Headworks BIO will employ their proprietary media, Active Cell 450, offering over 400 m<sup>2</sup>/m<sup>3</sup> of protected surface area.

Headworks is committed to providing a simple solution to environmental challenges and to helping our customers meet and exceed their treatment standards.

