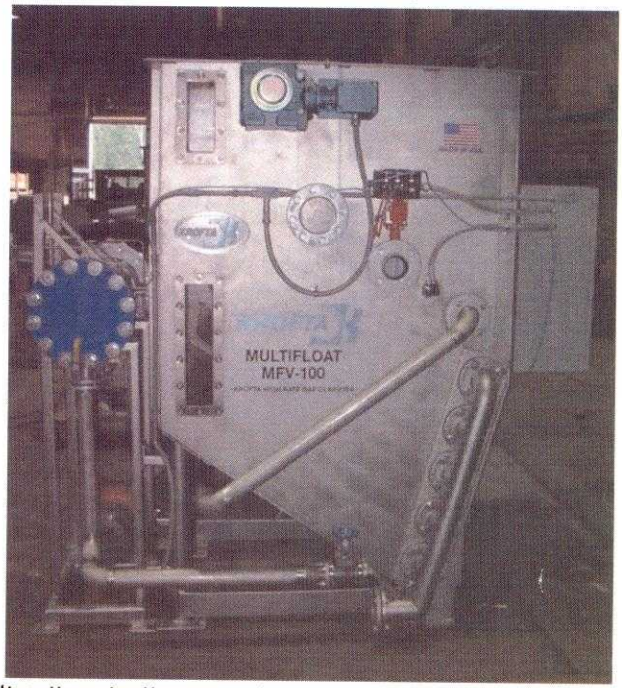
MULTIFLOAT (MF) GENERAL DESCRIPTION

The Krofta Technologies Corporation MULTIFLOAT (MF) is a rectangular DAF unit (vertical or horizontal arrangement available) engineered to be installed in a wide variety of industrial or municipal applications. The design is of a modular configuration, which allows additional Flotation Enhancement Cells (FECs) to be added or subtracted from the flotation cell to accommodate different flow capacities. The all stainless steel rectangular units are offered in 50-3000 gpm capacity standard designs. However, should space be a critical factor, the MULTIFLOAT can be customized to fit any situation by changing the surface area of the FECs within the unit. This will allow the dimensions of the unit to vary in the X, Y, and Z-axis to fit any situation.

1. PROCESS DESCRIPTION

A mix of raw wastewater and aerated recycle flow are introduced at the bottom side of the unit. A header pipe is affixed to the outside of the unit that will distribute the flow to the individual FECs within the flotation tank. This arrangement also allows the unit to be customized so that the unit can be installed tight against a wall on either side of a room by swapping the influent / effluent piping to either side of the unit. FEC design allows for even distribution of the flow across the unit. Retention time within the unit will vary with the amount of raw water being processed but it is generally a minimum of 3-4 minutes. Flocculated particles attach to the aerated water and rise to the surface close to the plate inside the FEC. The plates assist in the rise rate by reducing the hydraulic head over the particle allowing it to rise at an increased rate. Clarified water is drawn back down between the FECs to a collection area below the bottom of the FECs. The clarified water flows up over a divider plate at the top of the tank, into a clearwell reservoir and is then discharged by gravity out of the unit. The Krofta automatic level control system maintains a constant level. A portion of the flow is captured and "recycled" back to the Air Dissolving Tube (ADT) through a separate connection below the effluent connection. Should flow be shut-off to the unit, this ensures the flow to the recycle pump will not stop and cause damage to the pump. Floated materials are collected at the top of the FECs and directed towards the sludge collection rake assembly. The rake pushes the floated material over a simple beach design and deposits the material into a small sludge collection trough that is discharged by gravity.



Grit or other debris which do not float are collected in the v-bottom of the unit. Because of the small footprint of the unit a scraping mechanism is not required. The bottom sediment sump is intermittently purged automatically. One or more (depending on the size of the unit) butterfly valves for the purge are controlled by a simple timing mechanism in the control panel or PLC.

AIR DISSOLVING SYSTEM: A portion of the clarified water (typically 15% - 30% depending on the application) is recycled to feed the air dissolving system. The water is drawn from the clarified water source and pumped through a standard centrifugal pump at ~180 ft./hd. It then enters the ADT where it has an 8-12 second retention time. A globe valve located on the discharge line controls the flow. The pressurized flow is connected to the inlet header where it is mixed with raw water flow prior to entering the unit. The ADT has been used on thousands of Krofta style DAF units since the late 1970s. A specially designed influent nozzle causes the flow from the recycle pump to enter the ADT in a spiraling pattern.

MULTIFLOAT UNIT DESCRIPTION

TANK COMPONENTS

MULTIFLOAT tank parts are standard in stainless steel. Customer pipe connections are at flanges located under the unit. A sump well in the tank floor is provided to collect sediment. Sediment is released through a purge valve located at the bottom of the sump well. A window located on the tank wall is provided for visual verification of floated sludge thickness and proper flotation of solids.

AIR DISSOLVING SYSTEM

The **KROFTA** Air Dissolving System aerates and pressurizes the flow required to provide flotation. The Air Dissolving System consists of the Air Dissolving Tube (ADT), an air meter, pressure gauges, a sample valve, a pressure release valve, and an ADT flow pump.

The ADT is standard in stainless steel and is designed to dissolve air into a pressurized water flow. The ADT requires minimum flows and pressures in order to function properly. Excess air and water is removed through the bleed off located at the center line of the tube. A pressure gauge is provided with connections to the inlet piping of the ADT and to the ADT itself. Isolation valves allow for a pressure differential between the inlet and the tube to be determined. The pressure gauge at the outlet monitors the system pressure when the pressure release valve is adjusted.

LEVEL CONTROL

The water level in the MULTIFLOAT unit is kept constant through the use of the automatic level control system. The automatic level control system consists of a flange mounted transmitter located on the outer tank wall, a control unit to process the transmitter signal, and an actuated butterfly valve located on the effluent line. The actuated butterfly valve opens or closes in order to maintain a constant water level, required to hold a constant level with a changing feed flow rate.