

MICROBUBBLE FLOTATION

with Planotex Jet System

Flotation is a highly effective and economical method for cleaning wastewater containing suspended matter of a low specific weight. It is based on a reduction of the density of the suspended particles, causing them to rise (float). This effect is reached by adsorption of gas bubbles as small as practical. Another major factor influencing operation is the efficiency of the separator (flotation tank) which is determined by its separation area surface and flowrate.

Flotation has been successfully applied to the treatment of process and wastewater waters in many industries, including:

- **Food industry:**
Cattle, pig and poultry slaughter houses, meat and fish processing, food-canning, dairies, cheese making, edible oil and fat production delicatessen and ready-to-eat dishes
- **Beverage industry:**
Apple juice fining, press houses.



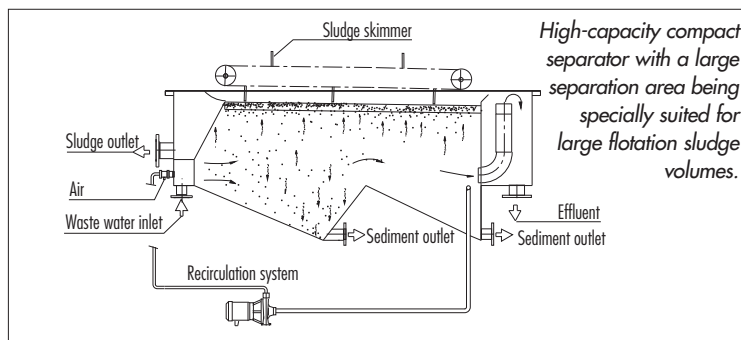
- **Municipal sewage treatment:**
Primary clarifiers, activated sludge separation and thickening.
- **Industrial wastewater treatment:**
Paper and board industry, petroleum industry, animal destructor plants, tank cleaning.
Chemical industry.
Textile industry.
- **Environmental technology:**
Rehabilitation of oil-polluted ground and surface waters, soil rehabilitation.
- **Recycling/Recovery of useful materials:**
Oils and fats in food industry, process water and fibre recovery in paper industry, ore dressing.
- **Water treatment:**
Drinking and industrial water.

Type PFL Planotex Flotation Plant

The PFL Planotex Flotation Plant which is designed with a large surface, is especially suited to treat sewage with a large flotation sludge volume. The sewage to be treated is gravity fed or pumped to the plant. At the inlet it is distributed across the width to achieve a flow. During this process it is mixed with previously treated recirculating water to which microbubbles were added. Bubbles are adsorbed to suspended particles in the sewage, entailing a higher buoyancy to reach the flotation surface. Due to their small diameter the floating rate of the bubbles is low enabling them to support the flotation process also in the rear part of the plant.

The resulting flotation layer is dewatered by gravity and a static mechanical facility and then moved into the integral sludge tank by means of a rake or scraper. The plant is equipped with an inclined bottom to ensure that settling matters can be collected and discharged through valves.

Behind a scum board wall the treated water flows to the outlet. Part of that water is recycled through the Planotex Jet System for adding microbubbles to the inlet of the flotation plant.



The Flotation Process

The following preconditions must be fulfilled to enable particles suspended in wastewater to rise with the help of gas bubbles:

1. The particles must be able to adsorb air bubbles.
2. The air bubbles must be of an appropriate size.
3. The particle-air bubble structure must be lighter than the fluid.

Re 1:

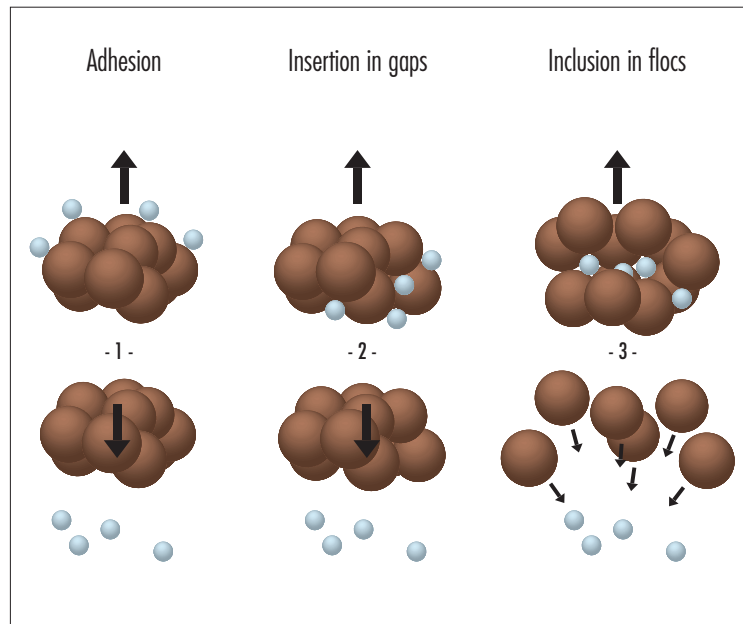
Undersized particles can be joined by flocculation by which they form larger structures and increase the hydrophobic properties required for a stronger bubble bonding.

Re 2:

This is ensured by the Planotex Microbubble Jet System.

Re 3:

The air volume required to ensure a density < 1g/ml is supplied by the Planotex Microbubble Jet System.



Schematic of a possible adhesion or inclusion of air bubbles to suspended particles or flocs.

Advantages of the Type PFL Planotex Microbubble Flotation

- All stainless steel.
- Compact design.
- Large surface for flotation sludge
- Planotex Microbubble System.
- Hopper bottom design for sediment discharge.
- Integrated sludge compartment.
- High solid content of flotation sludge by dewatering unit.
- Optimum flow conditions for solid separation.

Our long-standing experience and the broad product range provide you with the optimum solution to your specific wastewater problem.

