

# FLOCCULATION

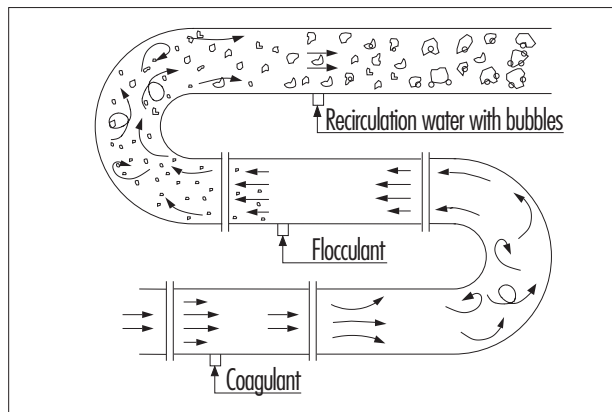
## with Planotex Pipe Flocculator

Flocculation serves to separate solids suspended in processor wastewater in the form of flocs. Subsequently, such flocs are removed from the water by means of flotation or sedimentation. This is a highly efficient and economical method for treating wastewater. Flocculation with subsequent separation in a flotation or settling plant is adapted to ensure a high wastewater cleaning efficiency. Upstream flocculation is employed to remove completely suspended solids which would otherwise remain in the wastewater after sole treatment by flotation or sedimentation. This method offers a substantially broader range of applications of flotation and settling plants.



### Type PPF Planotex Pipe Flocculator

The pipe flocculator is a flow reactor built from high-quality plastic material. It is designed such that diameter and length permit an optimum treatment of the wastewater to be cleaned. The flocculator is equipped with all connections for a controlled feed of the flocculants as well as chemicals which may be necessary for adjusting the pH value, and a connection for the recirculating water mixed with microbubbles of the following flotation. At these metering points a high turbulence is created in the reactor to ensure direct homogeneous mixing of the fed agent(s) with the water. Reaction time is governed by the length of reactor and the flowrate. Water is fed into the flocculator by means of a feed pump. The front end of the flocculator is equipped with the metering connections for the flocculants. They depend on the kind of wastewater to be cleaned.



*Schematic of the flocculation process in the PPF Pipe Flocculator*

In general they comprise a coagulant which serves to form microflocs first. Afterwards, a flocculant is metered in to form macroflocs. If required, provision is made for pH measuring and control. At the final stage of floc formation pre-cleaned recirculating water with dispersed microbubbles is admitted.

This enables air bubbles already present in the flocculator to be absorbed in, or adsorbed to the resultant floc, leading to a rapid rise of the flocs during subsequent flotation and thus, providing optimum cleaning of the water to be treated.

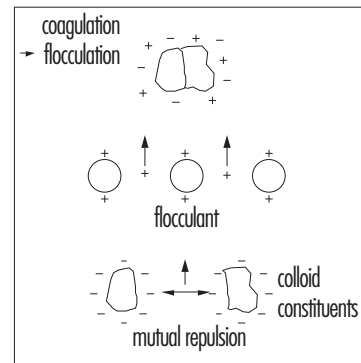
## The Flocculation Process

The colloid-disperse wastewater constituents are hydrophilic and negatively charged, thus mutually repelling. Addition of a flocculant leads to a change in charge and, consequently, to coagulation and flocculation.

The physical variable which governs flocculation is the energy input required for rapid mixing of the flocculant in wastewater and an optimum reaction with the col-

loid-disperse particles. This process may be supported by agitating in a tank or whilst the wastewater passes through a pipe flocculator which is even more efficient.

*Simplified schematic of the flocculation process*



### Advantages of the Planotex Pipe Flocculator:

- Extremely low floor space requirements due to compact design.
- High-quality plastic material.
- No rotating parts; no additional mixing energy required.
- Homogeneous mixing by precisely matched cross-sections.

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

