The Advantages
of a

Puriflo
Dissolved Air Flotation Plant

Prepared by

Puriflo

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Introduction

Puriflo Dissolved Air Flotation plants come in a number of standard sizes.

For example with a flotation area of 4.0m by 1.0m, 4.0m by 2.0m, 6.0m by 2.0m etc.

They are all packaged units which are piped, wired and tested in the *Puriflo* works prior to delivery to site.

They only require a feed pipe, a discharge pipe, a sludge pipe, connection to chemical tanks and a power supply.

Consequently where they are replacing an existing unit it is often possible to carry out the changeover over a long weekend.

Full commissioning and instruction of plant operators is carried out. Operation and maintenance manuals are comprehensive and contain daily and weekly check lists.

Advantages of the Puriflo System

There are two main advantages to the *Puriflo* system: -

Open Topped Reaction Tanks are used. The whole of the chemical treatment process is visible at all times and if for any reason performance falls off it is immediately obvious to the operator. See Appendix A - Before, in process and final effluent.

This is a distinct contrast to the competitors systems which use what is known as a "coil pipe flocculator" where nothing whatsoever can be seen. If the chemical process fails for any reason it is not apparent until about 30 to 40 minutes later when the quality of final discharge falls off.

The Whitewater System of the *Puriflo* Dissolved Air Flotation Unit *has nothing for the operator to adjust.* This is a key feature of the design.

This is in distinct contrast to many competitive systems especially those of the "coil pipe flocculator" type which employ a multiplicity of needle valves to inject whitewater at various points in the pipe coil.

Puriflo do not say that such systems do not work but that they require far more work to keep them working.

The Puriflo Whitewater System

As already mentioned there is nothing for the operator to adjust. All valves on the circuit are wide open.

The rate of recycle is controlled entirely by the orifice(s) in the unique *Puriflo* microbubble generators. These orifices are of the order of 10 – 12mm in diameter and they are therefore only in the rarest case likely to block as compared to a needle valve. The very name needle denotes a very small opening.

If the flow diagram (Appendix C) is studied it will be seen that the recycle pump handles only clarified water and this is injected into the pressure vessel where it dissolves air. As the air is used up and water takes its place the level control signals a need and air is injected.

This gives true dissolved air as compared to competitive systems where air is sucked in through a venturi or on the suction side of a pump. That type of system gives a mixture of dispersed air with some dissolved. The *Puriflo* system is all dissolved.

The unique microbubble generators where the pressure is released produce true microbubbles of micron size.

Scrapers

A further point is that the scraper mechanism on the *Puriflo* DAF is fully guarded and complies with CE and Health and Safety regulations. See Appendix B, Typical plant.

The CE marking is a self certification process. Some European equipment, although partially guarded, bears the CE certification but does not fully comply.

The *Puriflo* guards have a section which can be opened but this immediately stops the scraper by means of an interlocking switch. In order to restart, a reset button on the control panel has to be pressed after the guard has been replaced.

The above comments relate in general to rectangular units. However, there are alternative designs which use circular tanks. The disadvantage with circular tanks is that there is not complete removal of floated sludge. There is always a dead spot at the centre. Whereas with rectangular units especially those of *Puriflo* design, full width blades are fitted to the scraper, which travel the full length of the tank, thus there are no dead spots.

In addition it is much more difficult to completely guard the scraper of circular tanks whereas there is no problem in fully guarding on *Puriflo* units.