

COUGAR COATINGS Estd. 1988

WASTEWATER DIVISION

Supplying unique solutions for the water and waste water industry



BIO-BLOK® INTELLIGENT FIXED FILM BIOLOGICAL FILTER MEDIA

2.6.2. Improvement of Final Sedimentation Basins

. General

All wastewater treatment plant are equipped with some kind of final sedimentation basins. Common to these treatment plants is that the basins have to hold back as much sludge as possible so that the treated water that runs over the spillway crest contains as little suspended solids as possible.

The final sedimentation basins can have the following problems caused by the varied loads which arise in all wastewater treatment plants:

- A too big hydraulic surface load.
- A too big load of sludge which can result in big quantities of floating sludge due to gas occurrence in the sludge.
- Occurrence of light sludge etc.
- Heterogeneous flow conditions in the final sedimentation basins.

These problems can be solved by constructing new and bigger final sedimentation basins. Unfortunately, this is a very expensive solution.

A cheaper solution is to use lamella separation. Thus existing final sedimentation basins become effective so that above mentioned problems are completely avoided.

The expensive solution of constructing new final sedimentation plants can then be postponed or even avoided.

2. Lamella separation

With regards to sedimentation basins, it is a decisive factor that the sludge particles have time enough to settle before the waste water leaves the sedimentation basin. By using the lamella separation method, the way to settlement has been shortened as the water travels among the plates or net tubes. When the sludge particles has reached the plate or net tubes, the sludge has settled and it thereafter slips down towards the bottom of the final sedimentation basin.

Traditional lamella separators are normally expensive to get and to install.

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The same qualities can be achieved by installing vertically placed BIO-BLOK® 80 HD G in smooth version as mentioned below.

In this way it is possible to break the sludge flocks or the sludge maps which sometimes occur in final sedimentation basins and thus sludge flights are avoided in the wastewater treatment plant.

3. Installation

When it is a matter of lamella separation, BIO-BLOK® 80 HD G is normally installed vertically. In big plants, minimum two BIO-BLOK® 80 HD G are used as shown on the principle drawing. The uttermost BIO-BLOK® 80 HD G is 65cm high, and the innermost BIO-BLOK®, which is closest to the spillway crest, is 55cm high. This combination makes it possible to keep back floating sludge, if any.

Depending on the volume of floating sludge, the outermost BIO-BLOK® 80 HD G is placed approx. 5cm over the water surface in the final sedimentation basin.

It is possible to establish the BIO-BLOK® on a square polyethylene net (type EXPO-1531) which is mounted on stainless bearings bolted into the concrete wall, or the BIO-BLOK® can be installed with fittings hanging on the spillway crest.

4. Mode of operation

BIO-BLOK® 80 HD G in smooth version is constructed of net tubes with a diameter of approx. 70mm. These tubes are welded together in the tube ends so that they form a block which has a base of approx. 54cm x 54cm. The holes in the net tubes are shaped as an equilateral trapezium with side lengths of approx. 10mm.

Above mentioned construction will result in the movements of the water being damped down considerably.

The same construction also results in the fact that sludge flakes, which are normally impossible to precipitate, are being caught by the biological film that will form on the net tubes. Thus the sludge flakes are converted into biological film which easily settles.

Furthermore, the same construction will prevent a high-lying sludge mat which sometimes occurs in final sedimentation basins.

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If there is periodic rising of sludge lumps due to occurrences of gas which develops in the settled sludge, the gas will be liberated when the sludge lumps hit the BIO-BLOK® products. Thereafter the degassed sludge sinks in stead of passing over the spillway crest in the final sedimentation basin.

When using BIO-BLOK® 80 HD G as lamella separator, the efficiency in existing as well as in new sedimentation basins is improved considerably.

Depending on the quality of the discharge water, it might be necessary to wash down the BIO-BLOK® products. The easiest way to do this is to lower the water level in the final sedimentation basin so that the BIO-BLOK® products are clear of the water.

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