



Waste Water Treatment in the Industry with `Complete Mix Fixed Film CMFF®

Is it required to extend your existing wastewater treatment plant and or to improve the water quality of the effluent? The CMFF® biological process is the solution reaching your goals, whether it is an green field plant or a retrofit of your current wastewater treatment plant. The technology has been developed in Norway in the late 80'ties and early 90'ties. At the moment there are ample of references in food and feed, paper and pulp and municipal markets.

CMFF® can be used in several configurations.

- As a pre-treatment step.
- As a complementary treatment step.
- As the only biological treatment step.
- In combination with an activated sludge process in the same reactor. This is called a IFAS = Integrated Fixed Film Activated Sludge..

The process

The CMFF® biological process is based on the MBBR (Moving Bed Bio Reactor) concept where moving plastic carriers with fixed biofilm remove organic and inorganic substances in the water. The carriers are kept in suspension by aeration or mixing.

The proposed CMFF® design includes the biofilm carrier elements which are freely mixing around in the reactor and are specially designed for biofilm growth.

The bacteria will grow and develop a solid biofilm on the large protected surface area. The moving pattern of the carriers in the reactors will also provide a natural removal of excess biofilm, due to the shear forces between the carriers and the water in the reactor.

The biofilm can handle extremely high loading conditions without any problems with clogging or shock.



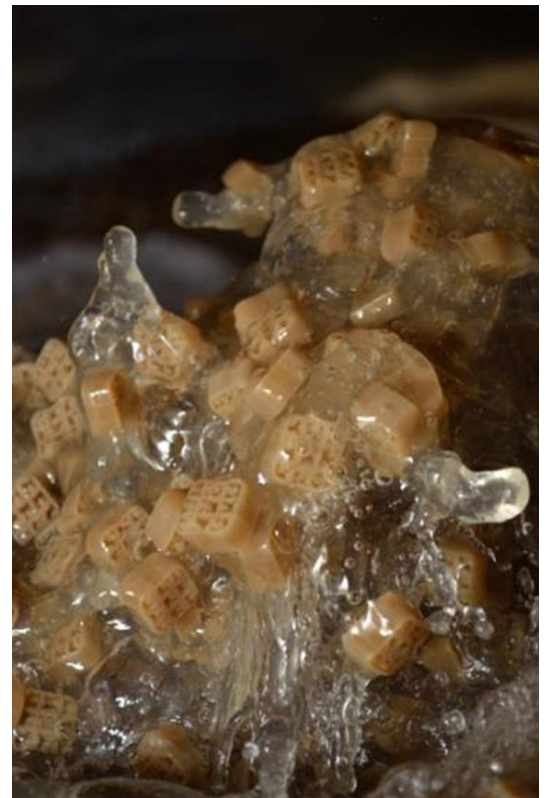
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PROCESS BENEFITS

- **Compact** – The amount of biomass within a given volume can be doubled.
- **Ease of Operation** – Virtually maintenance free. Essentially nutrient levels and DO levels are the only controls needed for this system.
- **Flexible and easy upgrade** – BOD and Nitrogen removal can be included. For retrofits existing tanks can be used.
- **Stable** – Self regulating biofilm ensures stable treatment under variable loads.
- **Sludge Production** – Efficient particle separation and sludge treatment. No sludge return and no clogging.
- **Low capital costs**
- **Complete System Supply** – We offer systems complete with the biofilm carriers, aeration, retention sieves, mixing, tanks as well as any tertiary treatment or additional equipment to suit the design.



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