

NEW WASTEWATER TECHNOLOGY

SUITABLE FOR POLAR BEAR WEATHER CONDITIONS



Cold weather can impact how wastewater treatment removal efficiencies are at removing critical components of BOD, TSS and nutrients. Biowater Technology's new MBBR technology CFIC has a benefit in Polar Bear Weather conditions because of the robust biofilm. The technology was developed in Norway and has significant benefits regarding traditional wastewater treatment facilities using active sludge or lagoons.

The changing climate has resulted in new temperature and weather pattern extremes and results in temperature changes or hydraulic flooding. All new conditions will have impact on how good performance a wastewater treatment system has.

As wastewater temperatures drop in winter (Polar Bear weather) and early spring snow melt the bacteria tend to slow down. In more recent years the frequency and impact of these extreme weather changes has led to lower water temperatures in some parts while an increase in others. Additionally the higher precipitation has resulted in increased flows in older plants that struggle with I/I. This reduces the treatment capacity of conventional wastewater plants, and they typically struggle to overcome mixed liquor washout conditions (high fluctuations in wastewater loads and temperature). For every twelve degree Celcius (21°F) change in the weather, the bacteria loose 50% of its growth of activity. If outside weather drops 10 to 20 degrees in one day (normal in parts of the world), that can significantly impact the activity in any system, if the plant does not have a high temperature influent consistently.

BIOWATER SOLUTIONS:

- *CFIC® Continuous Flow Intermittent Cleaning (next generation MBBR)*
- *Combined Fixed-Film Activated Sludge (CFAS™ IFAS) systems*
- *CMFF® Complete Mix Fixed Film (MBBR)*

WASTEWATER TREATMENT FOR POLAR BEAR WEATHER CONDITIONS:

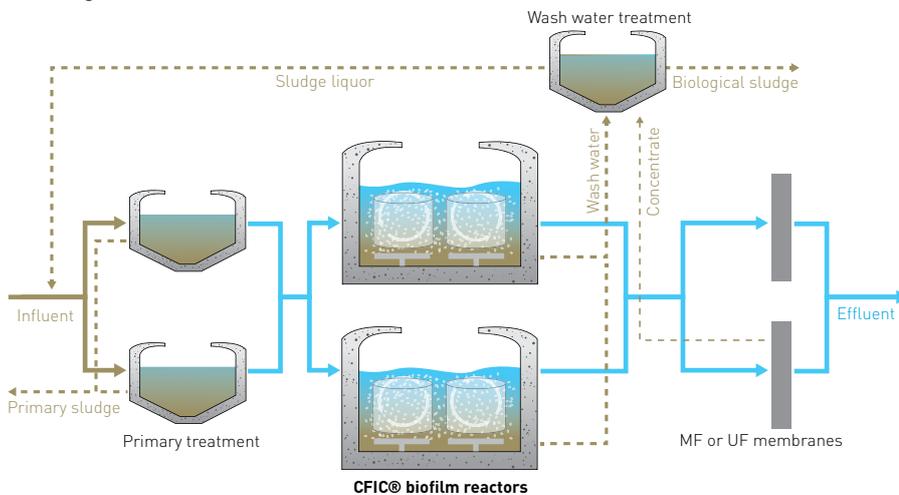
- *Next generation MBBR*
- *Suitable for both in- and outdoor conditions*
- *CFIC's® robust biofilm suitable for cold weather*
- *CFIC® capture solids*
- *Compact design (75% less than active sludge)*
- *50% energy saving*

Biowater's new biofilm process known as Continuous Flow Intermittent Cleaning (CFIC®) in cold wastewater applications has a major advantage over suspended growth systems such as active sludge plants and lagoons in that bacterial population is maintained in the treatment vessel with extremely high sludge age; therefore, the biofilm is not susceptible to washout like suspended growth processes.

- The new CFIC biofilm technology is the next generation MBBR system. This can be designed very compact making it possible for outdoor facilities to move indoor to even more overcome the seasonal diffractions, says Laura Marcolini at Biowater Technology/USA. - We have experienced acceptable results down to 4°C (39°F) for nitrification using biofilm technology.

Biowater's CFIC® process acts like a packed bed system, providing the advantages of much higher substrate (ammonia for nitrification) and dissolved oxygen transport into the biofilm over other biofilm systems like trickling filters and moving bed biofilm reactors. The CFIC® process also captures solids, making secondary clarification smaller and more effective than for suspended growth and other biofilm processes.

Biowater's CFIC® technology will reduce energy consumption when compared to MBBR plants by up to 50% and even more for conventional activated sludge plants. The CFIC® process has proven to be an effective and well documented solution for treatment of wastewater and a cost effective way to generate effluent quality fit for reuse applications. Typical wastewater sources with value for water reuse are: Storm water, industry, agriculture and dilution water, among others.



CFIC® vs MBBR AND ACTIVATED SLUDGE

Biowater's proprietary CFIC® technology offers industry-leading performance when compared with widely used activated sludge and MBBR solutions. The low footprint, combined with Biowater's approach to process design makes this far more versatile than existing solutions, making it very suitable for a wide range of existing WWTP.

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Biowater Technology is an innovative company with over forty years of experience in the Biological treatment field. Our focus is on saving energy and resource recovery, with water as our major resource.