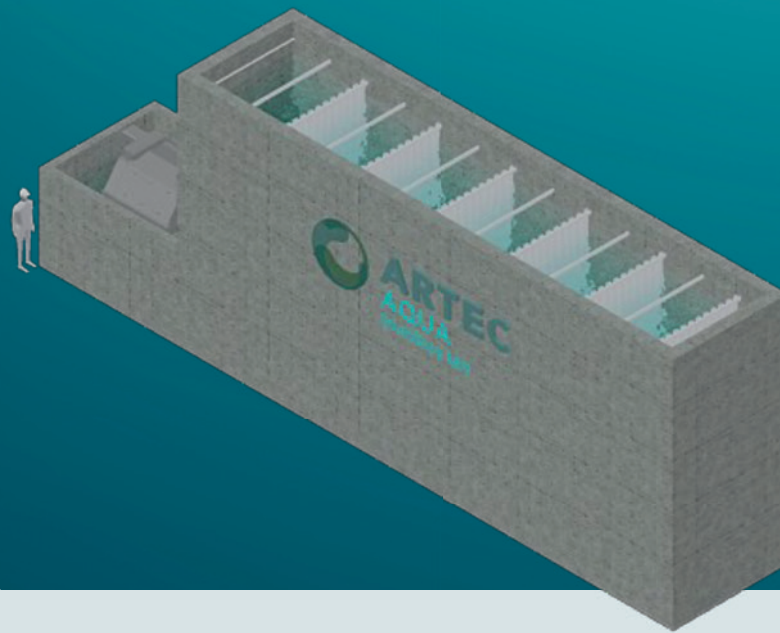


# MultiStep MB

*Biofilter based on the Moving Bed reactor, developed by Artec Aqua*



## **FUNCTIONS AND BENEFITS:**

- Robust design, no moveable parts
- The biofilm is usually thin
- Low energy consumption
- High efficiency
- Prevalence of desired bacteria
- Suppression of undesired bacteria
- Documented by Norwegian Institute for Water Research (NIVA) and the University of Nordland (UiN)
- Uses air as agitator
- Allows for use of multiple types of biomedica
- The biomedica can be replaced using a fish pump
- Enables complete disinfection
- Multiple steps facilitate better monitoring
- Only one pump stage

# MultiStep MB

## SELF-DEVELOPED BIOFILTER WITH BIOFILM CARRIERS.

'Moving Bed' reactors are robust biofilters for removal of waste products from discharged water, either for the purpose of reducing the impact on the recipient or in order to be able to reuse the water.

Artec Aqua's 'MultiStep MB' is a multiple-step reactor consisting of a series of chambers filled with biofilm carriers. The biofilm carriers create a large surface that provides a good basis for cultivating desirable bacteria.

The bacteria degrade and convert the waste products in the water to more desirable components.

In the first part of the reactor, the dominant process is the conversion of organic matter by heterophile antigens. In the middle part, TAN is converted to nitrate. The process of converting nitrite to nitrate takes place before the water leaves the reactor.

Biofilter: 6-step MB made of concrete										
Product	Max feeding*1 kg/d			Height m	Width m	Length m	Space needed m <sup>2</sup>	Net volume m <sup>3</sup>	Recommen- ded output kW	Max flow l/min
	10 °C	12 °C	15 °C							
MB-06-025	255	320	445	6	2.5	12	30	110	8.5	8,500
MB-06-050	630	785	1,090		5		60	270	11.5	17,000
MB-06-075	1,000	1,250	1,730		7.5		90	430	20	25,000
MB-06-100	1,360	1,685	2,340		10		120	580	23	34,000
MB-06-125	1,520	1,890	2,620		12.5		132	650	31.5	42,000
MB-06-150	2,100	2,620	3,630		15		180	900	40	51,000
MB-06-200	2,830	3,520	4,880		20		240	1,210	57	68,000

Steady State, Steady Flow, < 5 ppt seawater

## TESTS BY NIVA AND UIN SHOW SOME OF THE BEST VALUES EVER RECORDED.

### R&D Manager Viktor Fiveland

Artec Aqua

*'The report shows some fantastic results, almost better than expected. In this case, our concept has been proven. Products and processes can always be improved, however, and we will continue to focus on possible improvements and further development.'*

### Researcher Ole-Kristian Hess-Erga,

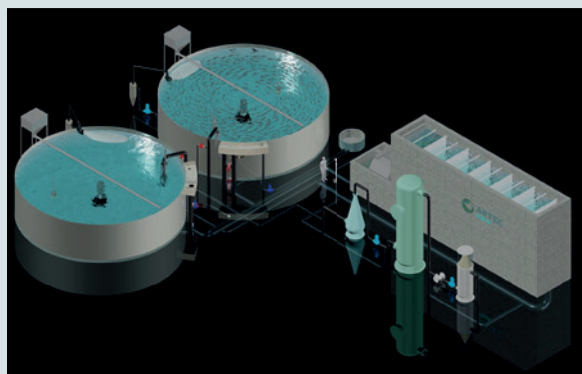
the Norwegian Institute for Water Research (NIVA)

*'Artec Aqua has done a thorough job of documenting its concept. The tests show good results, and the recirculation concept can be used in commercial smolt production on the same terms as a conventional flow-through system.'*

### Operations Manager Einar Jakobsen

MainStream Norway, Leines branch

*'It has been easy and straightforward to operate the recirculation section during the project. It has been as simple as operating the conventional flow-through tanks, which have served as references.'*



Example of recirculation system with part stream technology.

Read more about the reports on our website.