

# “Swim-bed Biofringe”, A Contact Material for Water Treatment

Active return to nature through the innovative effects of Biofringe → Great potential for the future The Best One in the World

## Features

Made possible through the advanced technology of the textile industry, Biofringe is a contact material that performs beyond expectations.

Biofringe’s unique structure makes it possible to process waste water containing high amounts of suspended solids (SS)

Biofringe was approved and applied in the restoration of the Minami-Gamo Water Treatment Center (Emergency project for the Great East Japan Earthquake). (Fig. 1)

## Overview (Technical principle & performance, etc.)

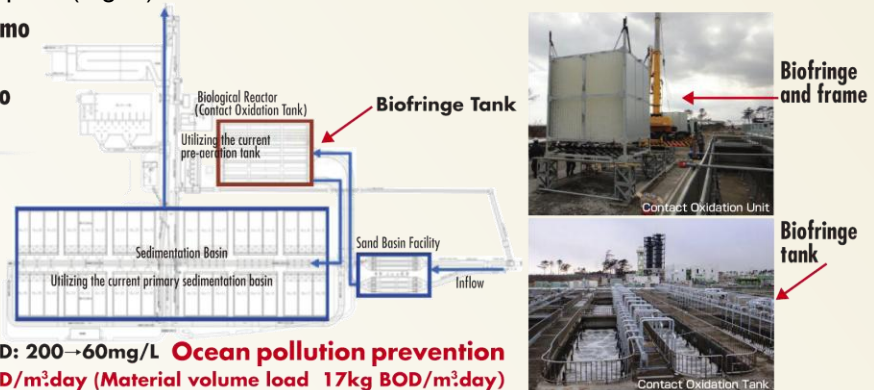
Biofringe combines warp and wool in the frame shown in Fig. 1.

The unique characteristic of Biofringe is the oscillation of the wool as the water flows through it. As a result, sludge on the surface is gradually separated and the high level of activation is maintained while a partial amount penetrates into the wool, enabling the majority of the sludge to be retained over an extended period. This, in the end, contributes to the creation of a long food chain and a significant reduction in the production of sludge.

The sludge retention effect is high, which serves to heighten nitrification capability, and both nitrification and denitrification performance.

Compared with other processing methods, BF makes it possible to reduce both initial and operation costs, and BF requires less space (Fig. 2).

**Quick response to the Minami-Gamo Water Treatment Center (300,000m<sup>3</sup>/day, which is equal to 70% of the sewage in Sendai)**



**High-intensity SQ processing BOD: 200 → 60mg/L Ocean pollution prevention**  
**BOD tank volume load 13kg BOD/m<sup>3</sup>·day (Material volume load 17kg BOD/m<sup>3</sup>·day)**

Fig. 1 Emergency Plan for Great East Japan Earthquake/Tsunami Restoration (Minami-Gamo Water Treatment Center in Sendai)



Fig. 2 Comparison of cost and space requirements

## Future potential

1. Biofringe's high retention capacity makes it possible to treat low-strength wastewater in a short period of time. It is applied to advanced water treatment.
2. Applying the results achieved at the Minami-Gamo Water Treatment Center, this disaster-prevention type wastewater treatment plant applies both standard activated sludge treatment equipment and Biofringe method during normal operations, while employing the Biofringe method only in emergencies (Fig.3).

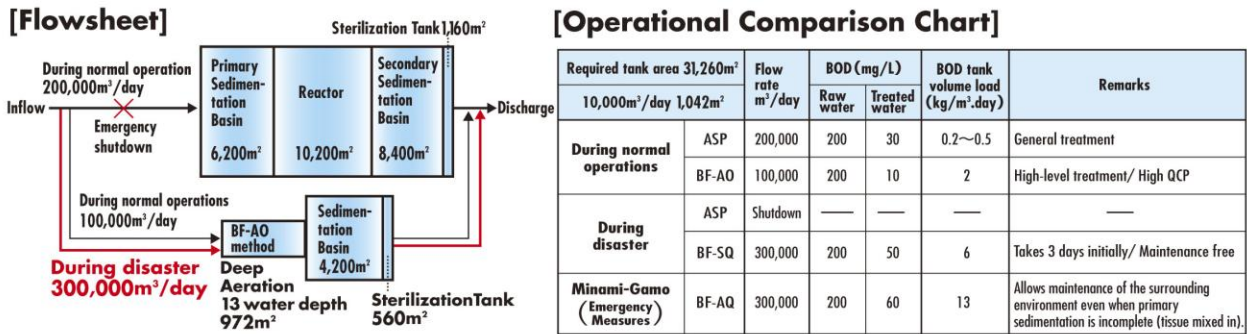


Fig. 3 Disaster-Prevention Type Water Treatment Plant

## Delivery record by category

1. Four hundred deliveries inside Japan in the past 18 years. Installation by Industry is shown in Fig. 4.
2. Overseas delivery to China, Taiwan, Malaysia, India, and the U.S.→ Global Development
3. BOD concentration is 2-20,000mg/L, Water volume 2-300,000m<sup>3</sup>/day

**400 projects in 18 years Greatly increase the possibility of biological treatment→Active Return to the Nature**

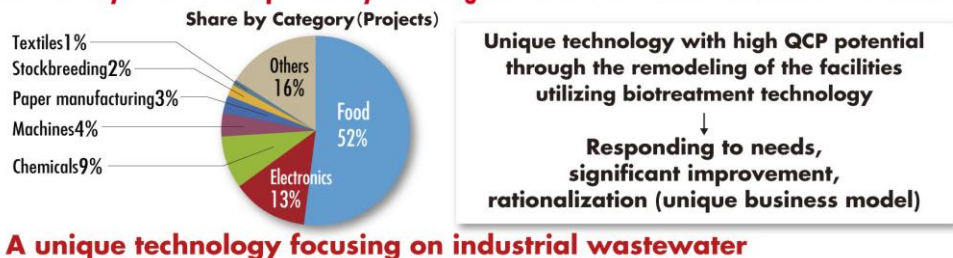


Fig. 4 Installation by Industry

## Usage

Wastewater – New, Remodel, Source Decentralized treatment (maintenance free), Garbage, Recycled wastewater, Reuse  
 Industrial wastewater – Industrial park, Large food production operations (beer, starch, meat, pig farming), Paper manufacturing, Chemical, Automobile, Electronics, Lake, River purification, Food production on land

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