Project for studying the applicability of HARNET water treatment equipment in Kingdom of Thailand

Ministry of the Environment
Government of Japan

Implementation Systems

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International Center for Environmental Technology Transfer (ICETT)

Background

- Areas close to the Chao Phraya River and the Gulf of Thailand, such as Bangpoo Industrial Estate in Samut Prakarn Province, are concerned as one of the most important river basin and especially significant area in order to resolve the water contamination problem in Thailand.
- Because the small-sized factories may not have enough knowledge about wastewater treatment and they may have technical issues, they may not have full capacity of wastewater treatment. It is required to have easy-to-maintain and efficient wastewater treatment.

Project outline

- Survey and analysis of existing wastewater treatment method, water quality , sludge generated condition, etc. in food factories, etc.
- Information collection of regulations and policies, related to industrial wastewater management, and water quality management in discharged water area, etc.
- Survey on local technology needs, etc.
- To consider the demonstration experiment and the business model of “HARNET” wastewater treatment equipment based on the above.

Location

Bangpoo Industrial Estate and the surrounding area in Thailand

Samut Prakarn Province
(source: freemap.jp)

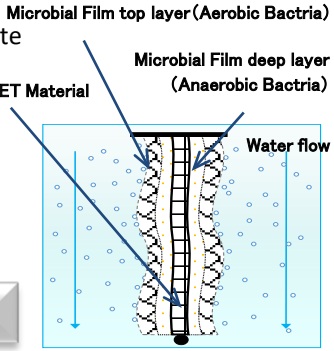
Bangpoo Industrial Estate (shown in the red frame) and the surrounding area
(source: Google map)

Outline of technology

- Wastewater treatment by microbial films formed on the net surfaces of HARNET which contains carbon and is made of PE.
- Based on organic pollutant concentration in influent, HARNET is placed and hung at equal intervals in multiple aeration tanks. HARNET is shaking by rotational flow with air diffused fine bubble in aeration tank. Thus, microbial films become active.

[Feature]

- In the top layer of a microbial film, aerobic bacteria oxidatively decompose and digest organic pollutants. On the other hand, in the deep layer, anaerobic bacteria digest excess sludge and denitrification occurs.
- HARNET has a large specific surface area and porosity, and adhesion of lots of microorganisms.
- There is no blockage at the filter bed HARNET and as they are equally spaced, so the water flow is constant, and a stable state is kept for microorganisms to adhere to the filter media.
- Peeling off the film by shaking with water flow, promoting metabolism of microorganism and self-digest.
- As the result of less generating amount of excess sludge, reducing sludge disposal cost.



Expected results and business prospects

- Based on the results of verification through demonstration experiments, introducing new HARNET water treatment plants and proposing positively renovation of existing activated sludge process plants as well.
- Improvement of wastewater treatment capacity by the installation of the HARNET system in food factories contributes to the improvement of water quality in discharged rivers and the Gulf of Thailand.
- After spreading the technology to the food industry, gradually expanding the business in other industries.