Project for efficient industrial wastewater treatment at industrial park in Indonesia by using aerator

Ministry of the Environment
Government of Japan

Project developer

Environmental Management and Technology Center (EMATEC)
Mitsubishi UFJ Research and Consulting (MURC)
Suzuki Sangyo Co., Ltd.

Location

South Sumatra province

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Background

- In 2014, planning of the first special economic zone of Tanjung Api-Api (TAA) in the South Sumatra province was launched. In 2016, some factories started their construction and will start operation in 2016 - 2017.
- In the masterplan of TAA, industrial wastewater from factories in TAA will be collected in wastewater treatment facility at TAA and treated by using diffuser.
- However, wastewater treatment capacity of diffuser is less than aerator because strength of aeration of aerator is stronger than diffuser. Also, diffuser needs yearly maintenance and its cost, but aerator needs no maintenance for lifetime.

Masterplan of TAA (by BAPPEDA)

Project Outline

- This project will install aerator instead of diffuser and aims to increase efficiency of wastewater treatment as well as reduce cost, electricity consumption and CO_2 emissions.
- This project will be co-hosted by BAPPEDA (Badan Perencanaan Pembangunan Daerah) in the South Sumatra province.
- Through the project, effectiveness of aerator for wastewater treatment in public industrial park will be shared and this business model is expected to be expanded in Indonesia.

Outline of Technology

- Aerator increases concentration of dissolved oxygen (DO) in aeration tank by forming strong vertical wastewater and air flow. By this function, BOD and TN concentration in wastewater will be decreased compared with diffuser.
- Since pressure loss of aerator is much smaller than diffuser, aerator can reduce electricity consumption of blower by 30 to 50%.
- Since aerator needs no maintenance (e.g., yearly change of diffuser), aerator can reduce maintenance cost and time compared with diffuser.
- In this project, semi-continuous running of blower will be installed because aerator has enough aeration capacity for meeting national regulation of effluent in Indonesia and 24 hour running is not necessary. This means aerator can reduce electricity consumption, cost for buying electricity and CO_2 emissions from electricity use.

Aerator

Expected output

- By strong aeration capacity, not only pollutants in industrial wastewater such as BOD, COD and TN, but also odor, scum, excess sludge, electricity consumption and its CO_2 emissions, and CH_4 emissions (which will be produced in anaerobic area in aeration tank) will be reduced.
- JCM (Joint Crediting Mechanism) scheme may be applicable if this project can meet necessary criteria for applying JCM (e.g., developing methodology for calculating CO_2 reduction, developing monitoring methodology and organizing project team).
- Effectiveness of aerator for wastewater treatment in public industrial park is expected to be shared and will be applied to similar industrial wastewater such as food, dying and rubber industry.