

On the Mixing Performance Simulation of Oscillating Mixer in Rectangular Anaerobic Treatments Tanks

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1)

NKK

A propeller type underwater mixer with the oscillating mechanism is newly developed for the efficient mixing of large size wastewater treatment plants, which has already reported and named NKK Swing Mixer. It has the characteristics of low energy consumption, light weighted, easy maintenance and low running costs. This report deals with the numerical simulation method to obtain the unsteady flow field of the rectangular reaction tank using FLUENT-5 CFD code and user defined functions. Moreover the simulation of prevention from the sedimentation of sludge in the anaerobic reaction tanks by a NKK Swing Mixer are tested using algebraic slip mixing model using solid particles which has the similar diameter and specific gravity to the activated

2.2

0

Wall

Velocity inlet
Symmetry

0

Outflow

Volume

Fan

Fig.1

2.3

2

2

ASM 2)

2

Fig.1

P

V

2

Fig.2

2

standard ϵ

3)

3.

A

Fig.2 Characteristic curve of fan model

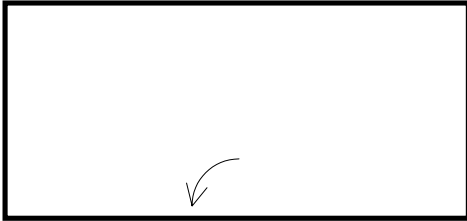
Fig.3

Table 2

Table 1

Fig.4 No.3, 4, 5
100mm

No.6



Inflow of
sludge

3.1

3

Fig.3

No.5

0

3

A/D

PC

3.2

Fig.3

MLSS

Table 3 Fig.3

3

MLSS

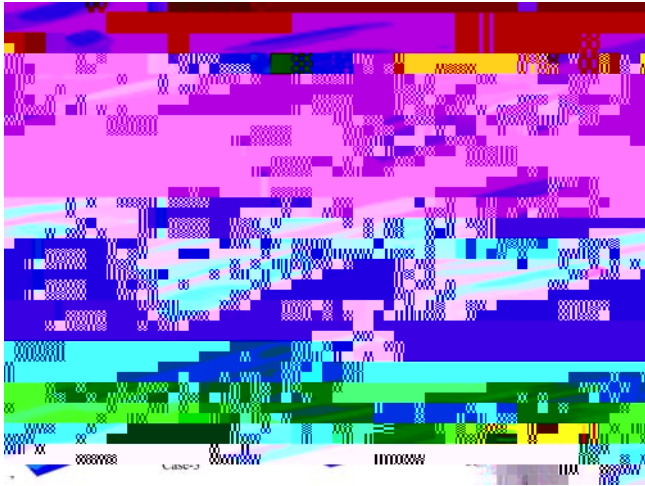
MLSS

4.

4.1

3

Fig.4



7.

6.

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(1)

(2)

(3)

(4)