KITAZAWA LAB.

Water Tank Model Testing!

[Seafood Production in Ocean]

Underwater Technology Research Center

http://mefe.iis.u-tokyo.ac.jp/index_e.html

Marine Ecosystem Engineering

Dept. of Systems Innovation,
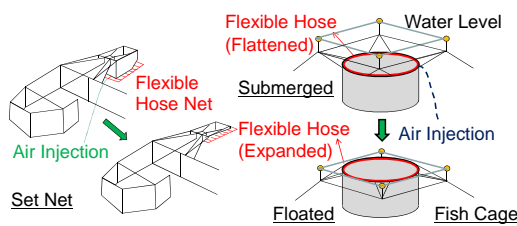Graduate School of Engineering

Environment and Marine Food Production

Toward Sustainable and Effective Marine Food Production System

Based on hydrodynamics, we study the following subjects by means of numerical simulation, water tank model test, and field investigation in collaboration with many research organizations and private companies.
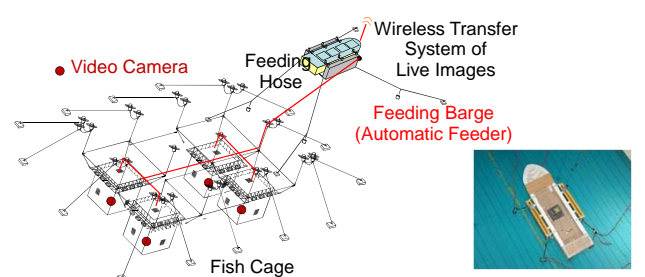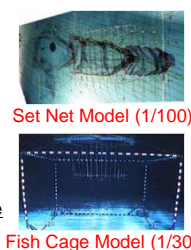
1. Sustainable and effective marine food production system
2. Future prediction of the ecosystem of lakes and coastal seas by hydrodynamic and ecosystem coupled model
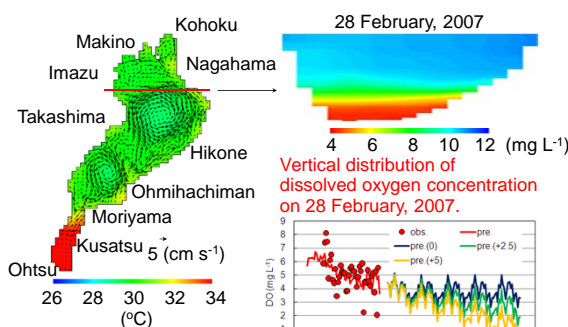3. Treatment of wastewater by electrolysis

Key words

- Sustainable and effective marine food production system: automation of fishery/high productivity/automated net-hauling system in set net fishery/fisheries resource conservation/automated feeding system in aquaculture/automated flotation-submersion system/increasing rate of seafood self-sufficiency/employment of young workers
- Future prediction of the ecosystem of lakes and coastal seas: eutrophication/climate change/hydrodynamic and ecosystem coupled model/Tokyo Bay/Lake Biwa/Lake Kasumigaura/Lake Ikeda/Caspian Sea/future prediction
- Treatment of wastewater by electrolysis: oxygen supply/hydrogen supply/decomposition of dissolved inorganic nitrogen/charcoal electrode/dielectric electrode


Automated flotation/submersion system.

Set Net Model (1/100)

Fish Cage Model (1/30)

Offshore submergible aquaculture system.

Barge Model (1/25)

Feeding Barge (Automatic Feeder)

28 February, 2007

4 6 8 10 12 (mg L^{-1})

Vertical distribution of dissolved oxygen concentration on 28 February, 2007.
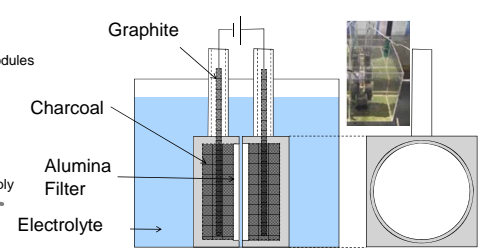
5 (cm s^{-1})

26 28 30 32 34 (°C)

Water current and temperature at the surface during stratified seasons.

Future prediction of bottom dissolved oxygen concentration.
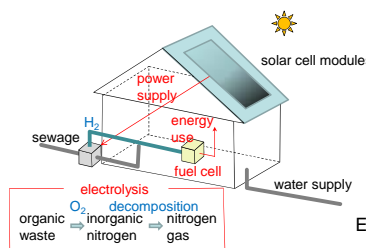
Concept of energy supply and treatment of waste water by electrolysis

electrolysis
organic waste $\Rightarrow$ O$_2$ inorganic nitrogen $\Rightarrow$ decomposition nitrogen gas

New electrodes: charcoal is enclosed by acrylic boards and alumina filter.