KITAZAWA LAB.

[Marine Food / Energy Utilization and Ecosystem Preservation]

Center for Integrated Underwater Observation Technology

**Marine Ecosystem Engineering**

Dept. of Systems Innovation, Graduate School of Engineering

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

Utilize Marine Food / Energy and Preserve Ecosystem

Based on hydrodynamics, we study the following subjects by means of numerical simulation, water tank model testing, and field investigation in collaboration with many research organizations and private companies.

1. Marine Food Production System mainly for Set Net Fishery and Aquaculture
2. Utilization and Environmental Impact Assessment of Marine Renewable Energy Development
3. Prediction of Lake and Coastal Ecosystem by Hydrodynamic and Ecosystem Coupled Model and Treatment of Wastewater by Electrochemical Method
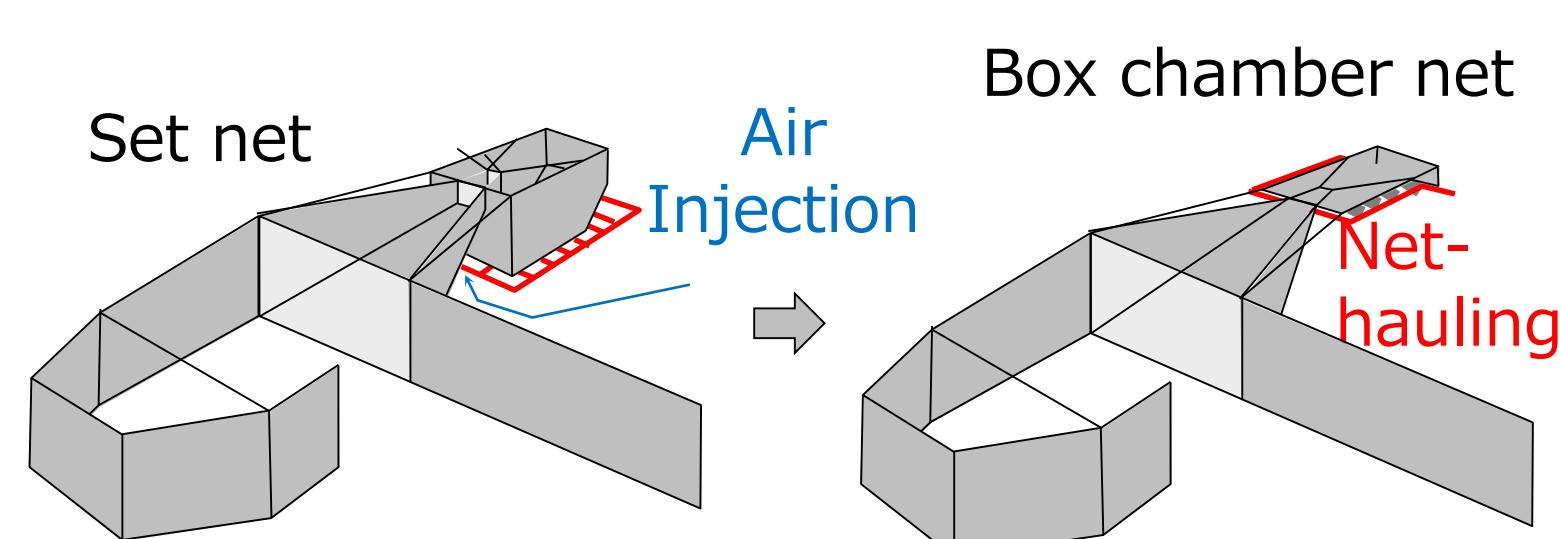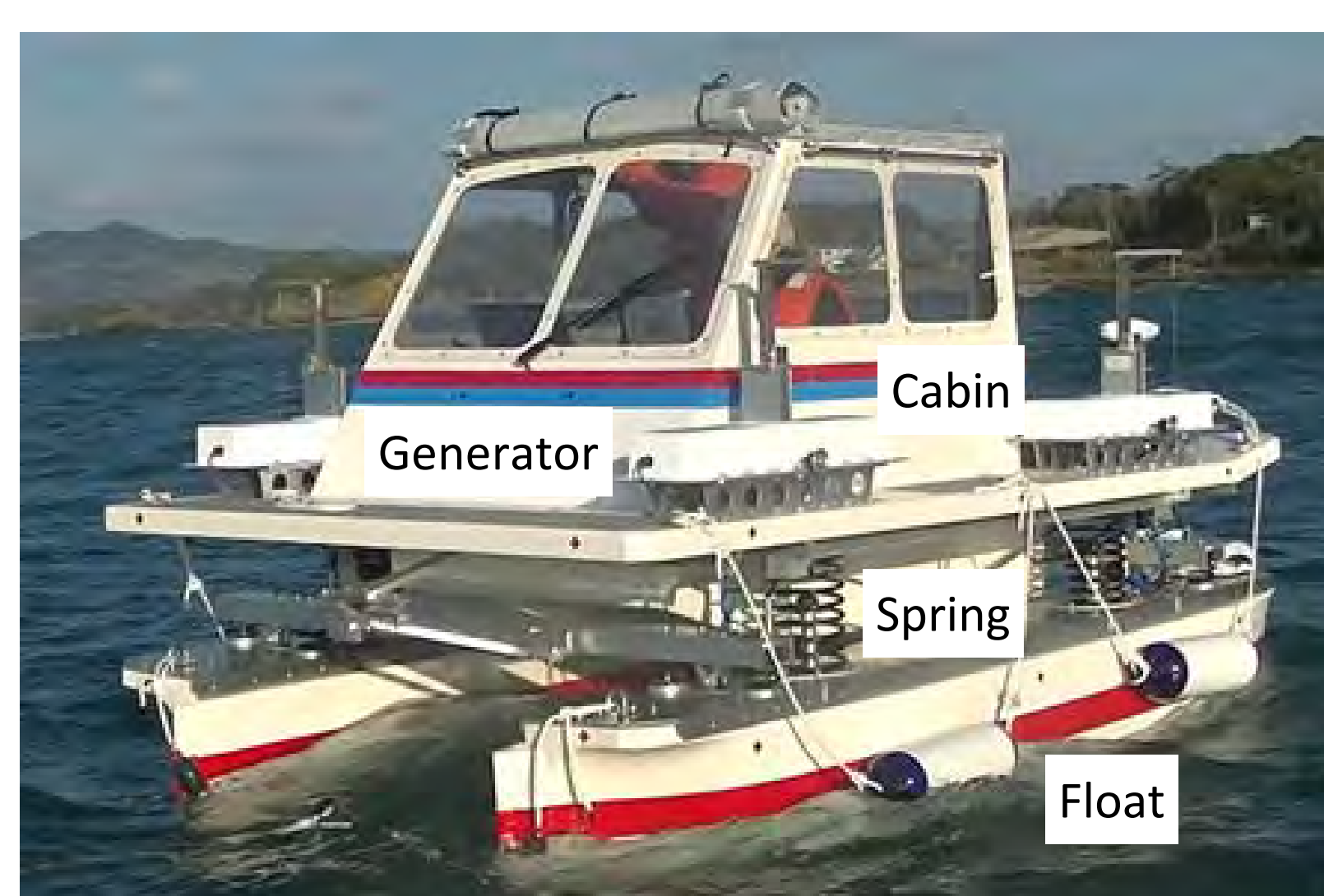

Automated Net-hauling System

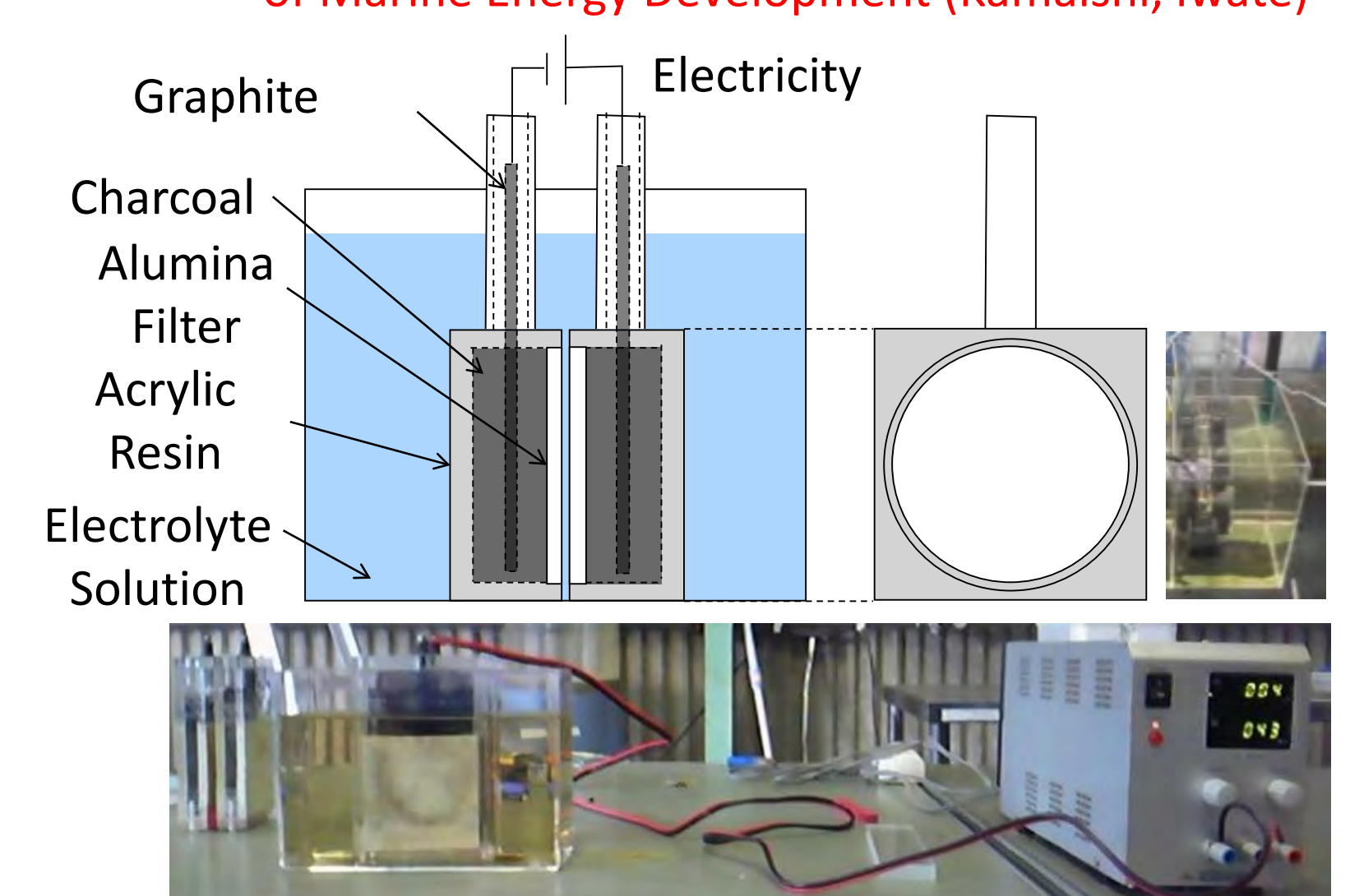Adjusting Shipment of Silver Salmon by a Submergible Cage (Onagawa, Miyagi)
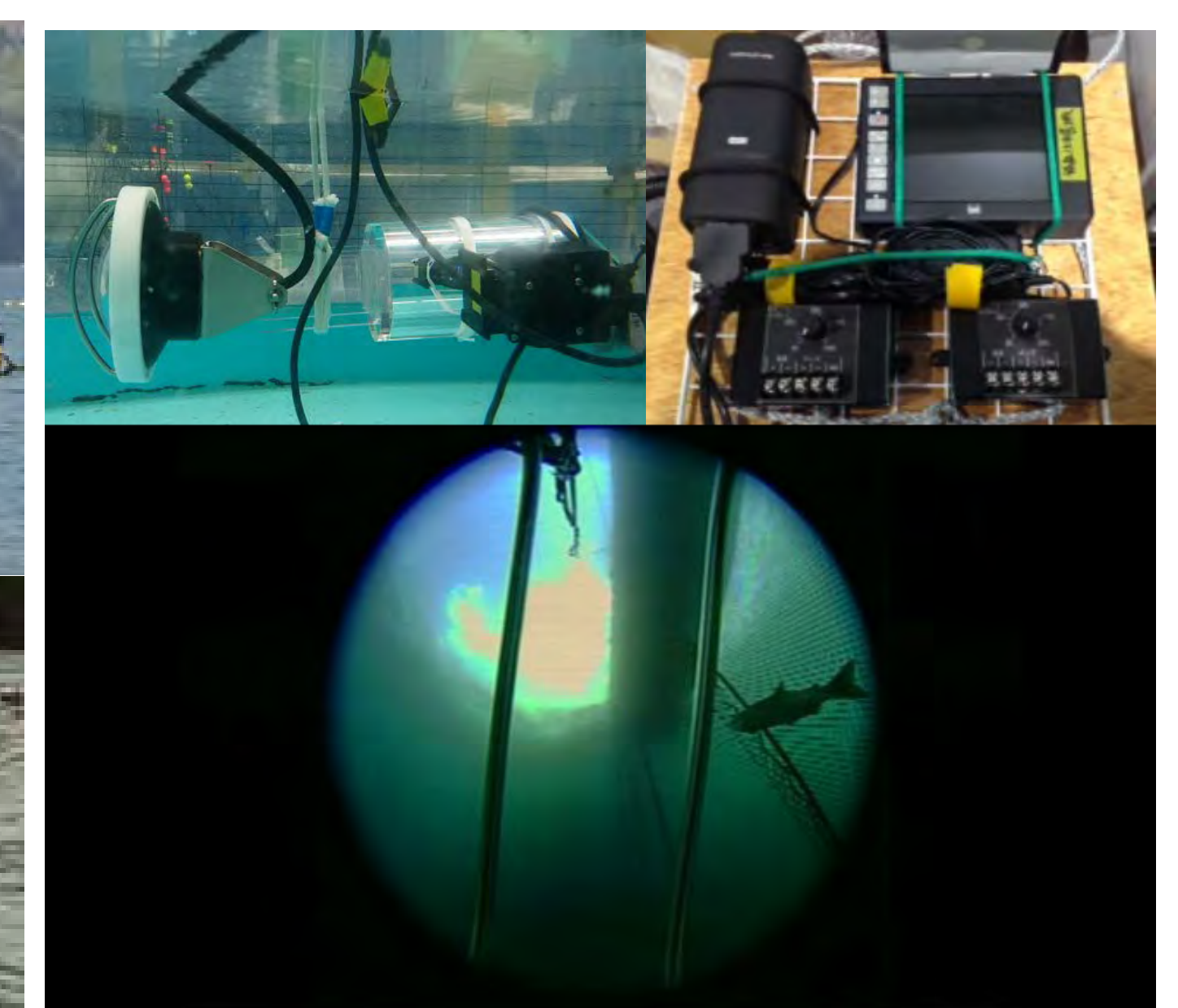
Investigation of Fishery in the Demonstration Field of Marine Energy Development (Kamaishi, Iwate)

Motion-Controlled Ship with Wave Energy Harvester

Collision Risk of Fishes to Tidal Turbines

Wastewater Treatment by Electrochemical Method

Major Subjects

- **Marine Food Production System:** Automation of fishery; High productivity; Automated net-hauling system in set net fishery; Automated feeding system in aquaculture; Automated flotation/submersion system of fish cage; Seafood self-sufficiency; Employment of new or young workers.
- **Marine Renewable Energy Development:** Motion-controlled ship with wave energy harvester; Innovative wave energy converter; Investigation of fishery and environmental impacts in the demonstration field of marine energy development; Collision risk assessment of fishes to tidal or oceanic turbines.
- **Prediction of Lake and Coastal Ecosystem and Treatment of Wastewater:** Hydrodynamic and ecosystem coupled model; Tokyo Bay; Lake Biwa; Lake Kasumigaura; Lake Suwa; Caspian Sea; Gokasho Bay; Ariake Sea; Oxygen supply; Hydrogen use for energy; Decomposition of nitrogen; Bio-fouling prevention; Charcoal electrode; Dielectric electrode; Titanium woven net.