

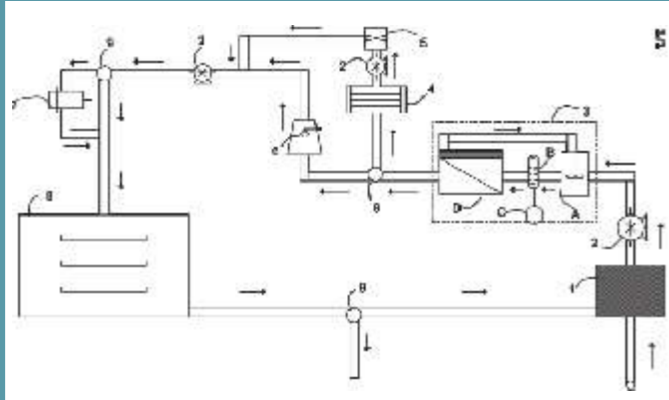


## 1. Research activities

NEARHUS G.P. Company aims at investing in applied research and innovation and has therefore already established a Research & Development (R&D) department. Some indicative projects are:

### Heavy metals removal system

NEARHUS has developed a recirculation system for heavy metals removal from shellfish. The system is protected at a National and International level (PCT patent WO 2009/083742 A1) and is a technological application with the ability to remove heavy metals from shellfish, using biological (including algae) and physicochemical methods.



### HAB early warning telemetric system

In collaboration with the Technical University of Crete, NEARHUS is funded by the General Secretariat for Research & Technology of Greece for a project titled: "Development and evaluation of a telemetric system for the recording and the early warning of harmful algal bloom events in coastal ecosystems".



The main objective of the project is the development of an automated recording system for real-time detection and enumeration of harmful algae. The system will provide 1) complete

real-time follow-up and transmission of measurements, 2) complete, valid and reliable data and 3) the potential of HAB prediction, through the development of a mathematical model.

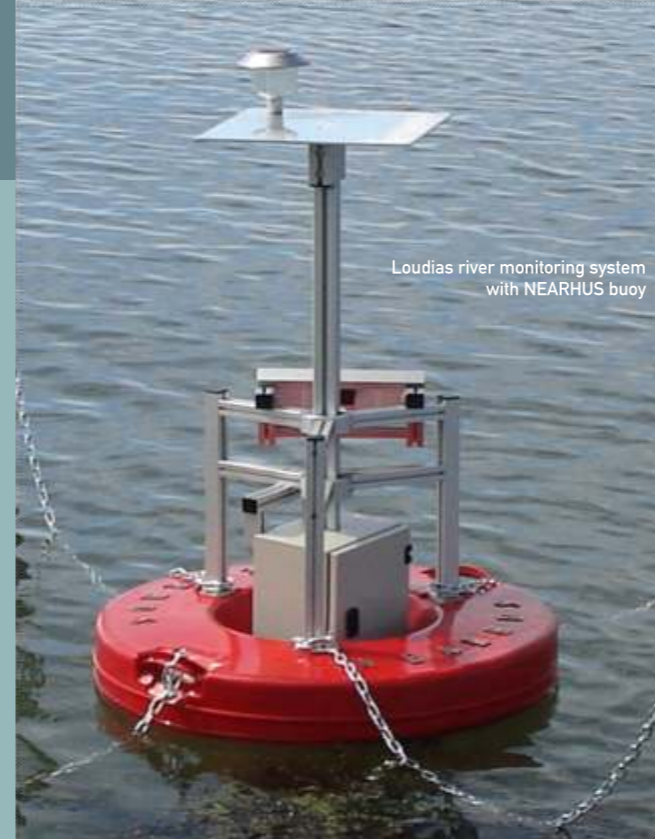
### Climate change effects in aquaculture species

In collaboration with Aristotle University of Thessaloniki (Department of Biology), NEARHUS has studied the effects of climate changes in aquaculture species (Shellfish and fish). Field research for such studies has been carried out in mussels farms in Thermaikos gulf and fish farms in N. Aegean.

## 2. Water Monitoring

Under National and European legislation network (e.g. Directives 2008/56/EC, 2000/60/EC) governing environmental monitoring policy, NEARHUS provides advanced services for

- 1) environmental status analysis of aquatic ecosystems and
- 2) water monitoring systems for aquaculture farms.



Current measurements in fish farm

Sediment sample from shell fish farm

NEARHUS is in position to provide monitoring of environmental parameters, such as:

- ✓ physicochemical parameters,
- ✓ harmful algal blooms,
- ✓ phytoplankton, zooplankton,
- ✓ chlorophyll concentration,
- ✓ bacteria abundance,
- ✓ inorganic nutrients, heavy metals,
- ✓ sea currents,
- ✓ sediment composition.

Indicative project is:

### HAB alert system in Maliakos gulf

Harmful algal blooms in Hellenic sea waters constitute a common phenomenon with irregular temporal frequency. In this framework and on behalf of the prefecture of Sterea Ellada, NEARHUS establishes a harmful microalgae alert system in Maliakos gulf (central Greece), after a massive fish kills episode which took place during March-April 2009 in Maliakos gulf.



## 3. Pilot applications - Innovative initiatives

Active participation in pilot applications and innovative initiatives constitutes NEARHUS' main business target.

### Pilot applications

NEARHUS NEARHUS is a scientific consultant:

- I. of the Greek Ministry of Environment, Energy & Climate Change, in collaboration with Alpha MENTOR Ltd, for the Spatial Framework for Aquaculture in Greece. This framework regulates the spatial organization, management, control and development of aquaculture, in both fresh and marine waters.
- II. of the Organized Aquaculture Development Area in Thermaikos gulf.

### Innovative initiatives

NEARHUS is responsible for the development and operation of the environmental park "Tithys", located in Pieria (prefecture of Central Macedonia). Tithys park is part of the wetland system of Papapouli channel and constitutes an interesting complex ecosystem. Up to a few years ago, no management of any kind has been practiced in the area, which has been incriminated by the local society as the cause of dangerous natural phenomena (e.g. floods).

NEARHUS is responsible for the development of an integrated environmental management plan for this area:

- with environmentally friendly technologies which will connect water quality monitoring with high quality extensive aquaculture production,
- for the protection of the natural environment and biodiversity,
- for environmental education and information, as an establishment for recreational ecotourism,
- for research activities, in collaboration with academic and research institutes.

