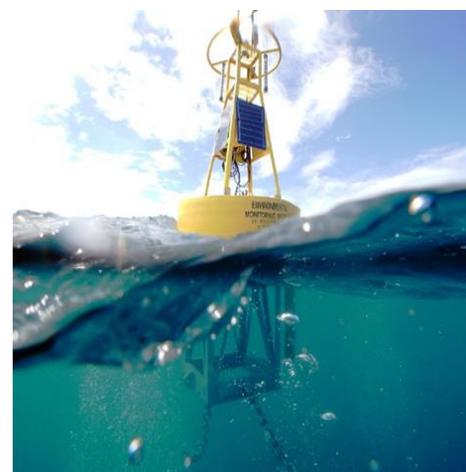


# Bio Marine Monitoring System Abstract

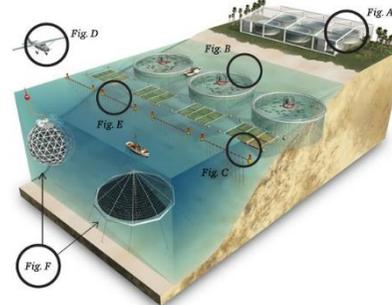
*Ensymm abstract for Bio Marine Monitoring system and services*



# INTRODUCTION

Today, the coastal and marine environment has become the focus of a wide variety of industrial, commercial, cultural and recreational urbanization and infrastructural expansion proceeding at a fast pace in association with a dramatic increase in the human population. Therefore in order to provide a high quality environmental monitoring companies have to improve and modernize their marine service. To do so modern, high quality and high-tech equipment provided by experienced companies is necessary. Those purchases will help to gain material and quality advantages and to compete within the environmental service market. Urbanization has a huge impact on the environment. New construction

will affect the environment and will lead to environment preserving actions like monitoring and relocation of, for example, mangrove, seagrass and corals. Furthermore since all human activities have an impact on the environment, there exist a huge variety of possible clients for companies participating within the marine sector. Those clients could be in the heavy industry, construction work sector, tourism, food security sector and agencies. Environmental monitoring describes



the processes and activities that need to take place to characterize and monitor the quality of the environment. Environmental monitoring is used in the preparation of environmental impact assessments, as well as in many circumstances in which human activities carry a risk of harmful effects on the natural environment. All monitoring strategies and programs have reasons and justifications which are often designed to establish the current status of an environment or trends in environmental parameters. In all cases the results of monitoring will be reviewed, analyzed statistically and published. The design of a monitoring program must therefore consider the final use of the data before monitoring starts.

# TECHNOLOGY

Nowadays there are full automatic monitoring stations, which can sample and examine the probe at site and submit the results in real time to the responsible person without any human interaction besides the station`s maintains service. Those automatic solutions can be integrated in buoy or even in satellites to measure the currents, temperature, salinity and biochemistry as well as bathymetry. The following part quotes the general equipment needed to perform marine monitoring and gives some examples of possible devices:

## MONITORING EQUIPMENT

- ProDSS Multiparameter Sampling Instrument (pH measuring)

- Extech Refractometer (measures the refractive index)
- HOBO (weather station, records over a period of time)
- Trimble (collects data faster and at a glance)
- Small Field Buoy (monitors sediments in the water; real-time monitoring)
- Remotely operated vehicle (to monitor marine environment underwater; less disturbance)

## ECOSOUNDER (GARMIN 551DV)

- Used to calculate the depth/ocean bed

## DIVING EQUIPMENT

- Such as wetsuits, masks, air-cylinders, cameras etc)

## INFORMATION AND TECHNOLOGY (ICT) EQUIPMENT

- Such as monitors, computers, software, printer, etc.

## LABORATORY AND SCIENTIFIC EQUIPMENT

- To test, analyze and evaluate the collected samples

## VEHICLES

- Such as a boat (to reach the marine area of interest), cars or transporters (to carry the equipment)



# MARKET

## MARKET DEVELOPMENT

The environmental monitoring services are part of the environmental goods and services market which were estimated at USD 866bn in 2011 according to Environmental Business International (EBI). Some analysts expect the market to rise to USD 1.9 trillion by 2020. Furthermore, the value of the global environmental consultancy market reached USD 28.7bn in 2013. (*Environment Analyst, 2015*)

## FUTURE TRENDS

In the future the environmental consultancy market (including environmental services like monitoring) will rise to around USD 32.6bn in 2018 with a growth rate of 2.6 %. Furthermore it is expected that small specialty companies will

be growing due to the fact that the environmental consulting activities of large companies account for less than 50 %. Furthermore, large companies concentrate mainly on contracts which are worth more than ten million dollar. Whereas in this sector smaller volume orders are more common. This creates a huge opportunity for smaller specialized companies to get orders. The three main clients which need environmental consultancy are Mining, Manufacturing and Process Industries (30 %), Energy and Utilities (including waste) (27 %) and Governments and Regulators (27 %). (*Environment Analyst, 2015*)

## DEMAND/SUPPLY ANALYSIS

There is a growth in demand and willingness to pay for

environmental services due to several stimulating forces. Information on the issues of environmental services is becoming widely available since public awareness of their value grows. A further aspect of the global growing expenses for ecosystem services is the fact that companies and industry groups may promote payments for environmental services to demonstrate commitment to the environment in order to preempt and influence the shape of future environmental regulations.



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