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SEA OIL SEPARATORS

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Abstract — *Mixtures of oil and water are found both in nature and as a consequence of man's activities. Very often such mixtures are used to advantage for example, as machine tool lubricants and in liquid/liquid extraction processes. But in the context of oil pollution, oily water mixtures are undesirable. Oil and water have very low mutual solubility and in most cases, oil has lower density than water. Yet the separation of oil and water can present very great difficulties. The extent of this problems is determined not only by the physical properties of the oil, its density, interfacial tension and viscosity, but equally by the physical properties of water, the presence of substance or micro-organisms at the oil, water interface, and the hydrodynamic condition experienced by the oil and water. Already the diversity of the problem can be appreciated.*

Keywords-*[interfacial tension, hydrodynamic conditions, viscosity]*

I. INTRODUCTION [10pt times new roman, Bold, Uppercase]

Oil is one of the precious crude and being used in many routine application of human life. It is not easy to determine the amount of oil spilled into sea every year but according to estimates, it is expected to be around 4 million tons in the whole planet and 600.000 tons only for Mediterranean. Oil spills are very dangerous occurrences. Marine ecosystem is affected and the marine life-forms' existence gets unnecessarily threatened. Since exploration of oil from oceanic resources has become a must and oil spills end up occurring accidently, as a result, it becomes important to employ various oil spill cleanup methods.

II. LITERATURE REVIEW

Mohit Kaushik (2016)

"What is an oil spill at sea?"This article puts light on contamination of sea water due to an oil pour, as a result of an accident or human error is termed as oil spill. Oil is among the most important energy sources in the world and because of its uneven distribution, it is transported by ships across the oceans and by pipelines across the lands. This has resulted in several accidents in the past while transferring the oil to vessels, during transportation, breaking of pipelines, as well as while drilling in the earth's crust. While massive and catastrophic spills receive most of the attention, smaller and chronic ones occur on a regular basis. These spills contaminate the coasts and estuaries and can cause serious health problems to human beings.

Abu Bakar Siddique Dec. (2014)

"The Sundarbans in big trouble" focuses on a major environmental disaster, after a vessel carrying over 350,000 liters of furnace oil capsized in Sela River, as spill particularly jeopardizes a dolphin sanctuary, the local food chain and the entire local ecology. The Sela River is known as a sanctuary for sweet-water Irrawaddy and brackish-water Ganges dolphins. So, these marine creatures will be the first in the line of victims of the oil spill. As of filing of this report around 15 hours after the incident, no sign of a rescue operation was reported in the area.

BBC Dec. (2014)

I. "INDIA ON ALERT AFTER SUNDARBANS OIL SPILL IN BANGLADESH" FOCUSES ON FOLLOWING SUBJECT.

II. ENVIRONMENTAL AUTHORITIES IN INDIA ARE ON ALERT AFTER THOUSANDS OF LITERS OF OIL SPILLED INTO A NATURE RESERVE IN NEIGHBORING BANGLADESH. CONSERVATION CHIEF PRADEEP VYAS SAID "PRECAUTIONS" WERE BEING TAKEN IN WEST BENGAL'S COASTAL REGION. OIL LEAKED INTO WATERWAYS IN THE SUNDARBANS AREA AFTER A COLLISION INVOLVING A TANKER THREE DAYS AGO. OFFICIALS SAY IT IS ALREADY HARMING THE REGION'S WILDLIFE, WHICH INCLUDES TWO ENDANGERED DOLPHIN SPECIES. "WE ARE TAKING ALL PRECAUTIONARY MEASURES," MR. VYAS, ADDITIONAL DIRECTOR OF INDIA'S SUNDARBANS BIOSPHERE RESERVE, TOLD REUTERS ON FRIDAY.

Yogesh Naik Jan (2011) article in TNN titled "Major Oil Spill Off Mumbai's Coast" tells us about The Oil and Natural Gas Commission's (ONGC) Mumbai -Uran Trunk Oil pipeline burst on Friday morning causing a major oil spill, 80 kms away from Mumbai's coast. The oil flow was stopped at noon, but ONGC spokesperson said that the spill was spread around 4 sq. km. The Coast Guard and Navy were immediately alerted and four ships, Dornier planes and Chetak Helicopters were dispatched to tackle the oil spill. The leakage was detected at 8.45am on Friday, two km away from BPB platform (Bassein oil and gas field) in western offshore.

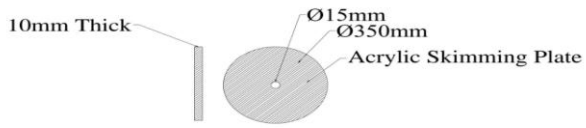
Aegean sea (Spain, 1992)

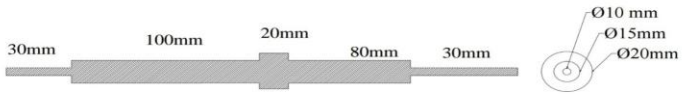
On 3 December 1992, while ship is close to the port of La corona on the Galician coast, north west Spain , the Greek OBO carrier AEGEAN SEA, during heavy weather, laden with 80,000 tons of north sea Brent crude oil, ran aground. The vessel broke into two and caught fire. Ship and spilled cargo burned for several days.

III. PROBLEM DEFINITION

- The sea oil separating is time consuming process and also requires a lot of cost.
- There at are many machines available in the market for separation of the oil from water.
- For minimizing time as well as operating cost, we have decided to make a mechanism for separation of the oil from water

❖ **DESIGN:**





- **LIST OF COMPONENT:** 1) DC gear motor . 2) Solar panel for battery charging. 3)Battery to store and supply power to motor. 4) Oil Skimming Disk. 5) Bearing. 6)Floating tube. 7)Solar panel specification

IV. CONCLUSION

By observing above information we conclude that,

- We have analyzed different characteristics of the disk type oil skimmer mounted on floating tube.

- Also its possible advantages and disadvantages were taken into consideration.
- We chose disk type oil skimming process because it was simple yet effective than its already expensive counter parts available in the market.
- And attaching a solar panel made it free from utilizing the energy from the grid, thus making it eco friendly.
- This is almost maintenance free design hence has the potential to save a considerable amount of money that is spent on maintaining such kind of devices.

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