

# Oil Skimmer

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**Abstract-** *These days there are so many import and export business are going on in the world. Because of expansion of business and shipping by sea in the cheapest mode its used on large scale due to these huge cargo shipping these are so many cases of oil spill in the sea. World has witnessed big oil spill accidents into the oceans and made huge impact on the industries as well as the ecosystems. After oil spill it creates a slick (A thick layer of oil) that ensures the sunlight and oxygen pass through water. It affects the life below the water due to lack of oxygen and sunlight. Assume of the oils are dangerous and poisonous they are quite harmful for human. As a remedy to these oil spills there are some types of oil skimmers are present. Belt type, Disc type, Rope type, drum type, Disc type etc. All of these are used in recovering the oil that has spilled. Nemours studies has been carried out in the field of oil spill recovery. This study is totally based on the how we recover the oil that has spilled.*

## I. INTRODUCTION

The oil skimmer uses a rotating medium which is submerged inside the water. This rotating medium may be drum, belt or disc. The oil floating on water sticks to the rotating element due to adhesion. This adhered oil is then separated from the element using a separating strip.

Higher speeds will increase the mass flow rate but it will increase the quantity of water recovered thereby reducing efficiency. In this paper, we intend to show that by changing number of disc. Disc type oil skimmer the efficiency of the operation in terms of quality of oil recovered can be increased. Mostly, disc made of mild steel is used in oil skimmers. We have used a disc made of iron. Iron is a low cost material which is also light in weight. Our aim is to find the efficiency of disc made of iron and compare it with the efficiency obtained by disc made of mild steel. In oil spills, mostly crude oil is spilt.

Accidental Oil spills from tankers and ships contribute to 15 percent of the oil entering the ocean every year. Oil tankers and ships have spilled over 6 billion tones of oil into our seas since 1970.

## Measure problem if oil not clean

- Death and harm to sea creatures.
- Heavy damage to marine plant life.
- Makes seafood unsafe to consume.
- Hinders shipping routes and fishing industry.
- Heavy losses of oil shipment lost.
- Risk of fire during cleaning operations.

## Objective

An oil skimmer is a device that is designed to remove oil floating on a liquid surface from oil spills.

## Future scope

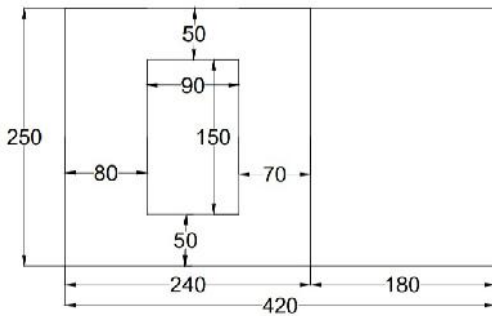
As we all know that there is still increasing demand for the oil and fuels. As a result there is more need to extract oil from the bottom of the ocean. Because of this there are going to be more spills and accidents resulting in more pollution. So as a remedy we are going to need the mechanical disc type oil skimmer which is going to recover the oil efficiently from the surface of water. An efficient oil skimmer will a need of the hour in future, to recover the oil spilled on the surface of water. It will be necessary to recover the oil that has been spilled because the numbers of sea life deaths are high right now. The world cannot risk more deaths as it will affect the whole ecosystem, thus we conclude there will be an itching need for the efficient oil skimmer in future. Currently we are working on disc type oil skimmer.

## II. LITERATURE SURVEY

Thombare Babasaheb B.I (2018), has studies in their paper as named “A Review on Analysis of disk Type Skimmer “that according to polar and non- polar properties of oil and water, water consist of H<sup>+</sup> and OH<sup>-</sup> having polar nature while oil acts as an non-polar substance. Therefore, they do not get mixed with each other and the oil floats on water instead of sinking in. They studied that the oil has lesser density than water so oil floats on water. The belt material they selected was a non-polar material due to which the oil gets attracted to

the belt. They took the belt material like (cotton, rubber, steel, oleophilic, etc.) They took the material that had higher adhesive properties than water. Due to which the belt absorbs the oil more easily than the water. This is what they concluded in their paper

**III. BLOCK DIAGRAM**



**Working principal**

An oil skimmer is a machine that removes floating oil and grease from liquid. The floating oil adheres to skimming media, such as a belt, tube, rope, mop, or disk. The media then runs back to the machine to be wiped clean. Weir style skimmers use a pump to collect floating oils.

**Conceptual model**



**Application**

Oil skimming makes use of the differences in specific gravity and surface tension between oil and water. These

physical characteristics allow the mild steel disc to attract oil and other hydrocarbon liquids from the surface of the fluid

**IV. OPERATION**

- Disc is driven by a geared motor
- As the disc passes through the liquid due to oleophilic nature of disc surface, oil gets deposited on the surface. Geared motor is used for speed reduction to ensure maximum possible oil deposition
- scrapes oil from disc surface and oil is temporarily collected in tank

Oil skimmers are simple, dependable and effective machines for removing oil, grease and other hydrocarbons from water. The floating oil adheres to skimming media, such as a belt, tube, rope, mop, or disk. The media then travels back into the machine and is wiped clean. Weir style skimmers use a pump to collect floating oils

**V. CONCLUSION**

As we have studied in the past oil spill has occurred several times. These oil spills have caused a great collision on ecological life around the region of spillage. The main causes of oil spills is because of the carelessness of transporting authority and sometimes due to unpleasant weather causing storm which results in spilling of large tons of oil in water. The spilled oil is waste oil as well as destroys the coastal life around it. While assembling for this project we have concluded that the oil spillage is not only harmful but also results in loss of lives and money. So the recovery of spilled oil is very necessary. oil skimmer which is one of the method of regaining the oil which is spilled. After designing our project and testing it we have concluded that we can regain about more than 90% by using oil skimmer. INDIA and other country where demand of oil is increasing rapidly, we think it will be very useful. So after regaining spilled oil we can use it for other purpose.

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