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Disc Type Oil Skimmer

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Abstract: This paper describes the practical requirement for the successful use of skimmer in the situation. Most likely to be encountered during an oil spill, a number of options are available to respond to marine oil spills. The primary technique adopted by many government authorities is mechanical recovery of oil from the sea surface. This is usually achieved by use of booms to concentrate spilt oil, allowing a skimmer to selectively recover and pump the oil to storage. Many different types of skimmer exist with designs optimized to deal with different scales of operation, oil types and environmental conditions.

Keywords: Disc(12"), Tank,Motor, Controller, Scrubber, Battery, Oil collecting chamber,

I. INTRODUCTION

Skimming method is known for its environmental friendly features, in which this method works mechanically to recover spilled oil on polluted area using its skimmer devices. There are several methods in handling oil spill accident, in which the most effective methods are using mechanical oil skimmer with disc plate. The effectiveness of the oil skimmer on handling oil spills is influenced by various factors, such as the depth of the disk submerged or the disk surface area dipped into the oil spill, the area of the wiper sweep, the thickness of the oil on the disk surface, and the rotation speed of the disk. As mostly in our day to day life we used the filtered water & reuse it again by filtering it repeatedly. But due to lubricant or oil which has been mixed with water due to no. of reasons, during filtration it damages the filter media (which is inside the purifier), & in result the maintenance cost is increased & also the cleaning work by periodically intervals of days is increased. So to overcome this problem, the only solution is to extract or separate oil from waste water before the water is filtered for reuse. After extracting or separating oil or any other lubricant from waste water which is harmful for purifier, doesn't come in contact with filter media, & hence as a result it will not get damaged. So with the help of 'DISC TYPE OIL SKIMMER' the separation of oil from water is possible, & probability of this project are also maximum because, as this device is more economical & less in construction cost & also can be fitted anywhere & also its efficiency is more as the design is suitable & appropriate.

II. LITERATURE REVIEW

A. UmerFarooq, Ingrid C. Taban, (2018). There experimental study title "Study of the oil interaction towards oil spill recovery skimmer material: Effect of the oil weathering and emulsification properties"

B. D.R. TOPHAM(1925). In his experimental study title "An Analysis of the Performance of Weir Type Oil Skimmers" Vol. 7,Nos. 5–6, pp. 289–297,200.

C. N Widiaksana AAYudiana and Y S Nugroho. In their paper title "Analysis of effectiveness of oil spill recovery using disc-type oil skimmer at laboratory scale". 105 (2018) 012086,shows that due to numerous accident of water pollution due to oil spill occurrence.

D. MdSalimMiah, Saphwan Al-Assaf ,Xiaogang Yang, Alison mcmillan. In their experimental title: "Thin film flow on a vertically rotating disc of finite thickness partially immersed in a highly viscous liquid"

E. Francis C. Morey(1940). In his experimental study title: "thickness of a liquid film adhering to a surface slowly withdrawn from the liquid" Volume 25,September 1940.

III. DESIGN LAYOUT

Technical Specification			
Input Voltage: (50/60HZ)	AC 110/220V	Separating Element:	Scrubber(plastic/rubber)
Input Power:	20W	Oil Tank Capacity:	4 Literes
Operating Speed:	Adjustable Controller	Operating Temperature:	0^0 C – 45^0C
Work Period Setting:	16Period per Day	Overall Dimensions:	500*450*120(mm)
Gross Weight:	15.7Kg	Net Weight:	13Kg

(Calculated as per design)

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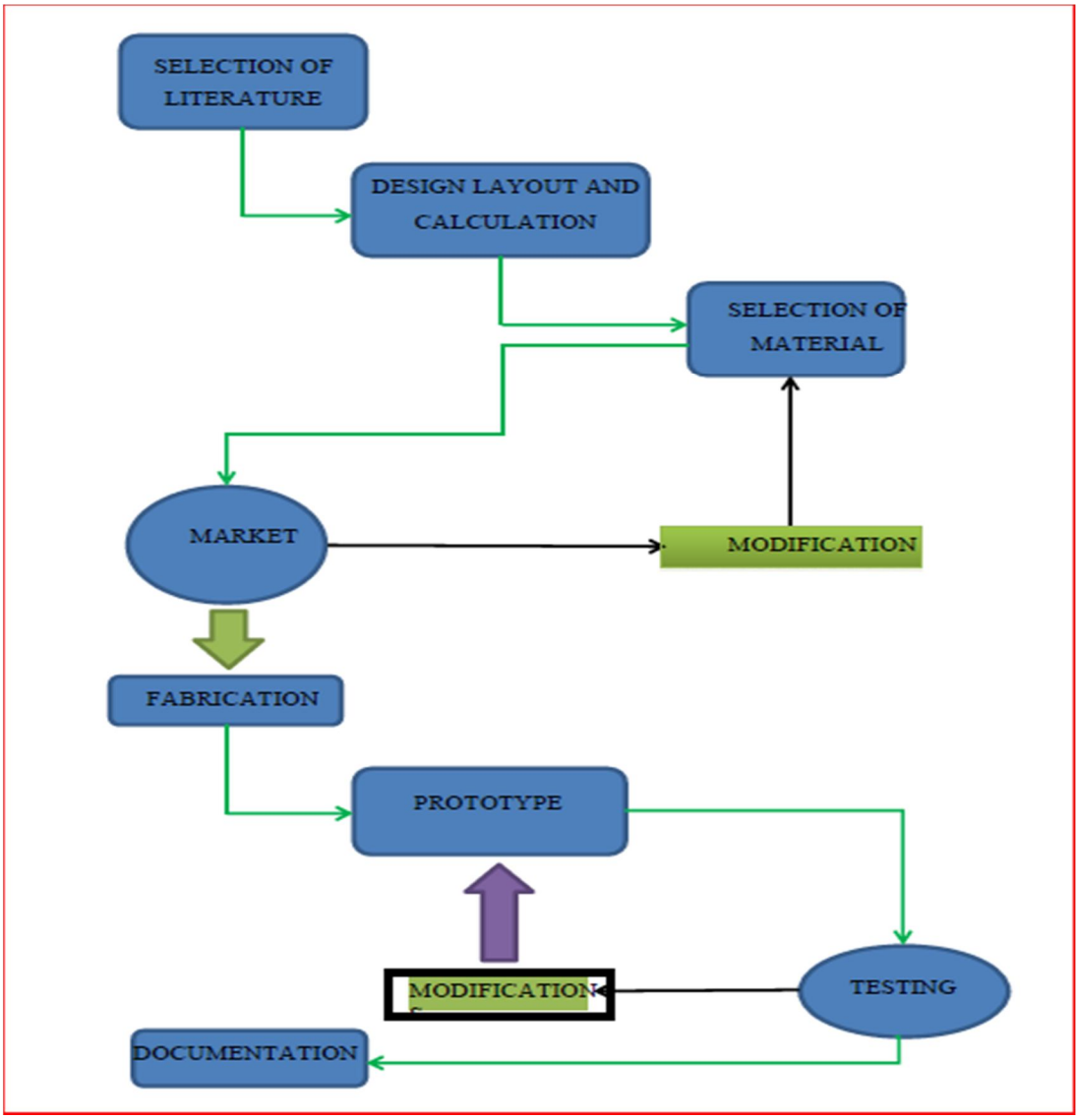
IV. METHODOLOGY



REFERENCES

[1] Mamta Patel Assistant Professor, Mechanical Department, Gujarat Technological University (GTU), Babaria Institute of Technology Vadodara "oil skimmer" – Mumbai NH # 8, Varnama, Vadodara - 391 240, India[2015]
[2] 'Victoria Broje' and 'Arturo A. Keller', " Improved recovery of oil spills from water surfaces using tailored surfaces in Oleophilic skimmers, Donald Bren School of Environmental Science & Management, University of California, Santa Barbara.
[3] 'Kristi mckinney and John Caplis', Evaluation Of Oleophilic Skimmer Performance In Diminishing Oil Slick Thicknesses
[4] Suraj Nair, KajolKamble, SayaliShewale, Sanjay Lohar, "Design & Fabrication of Disc Type Oil Skimmer", IJSART, Volume 3, Issue 4 – April 2017
[5] TusharPathare, MauliZagade, RohanPawar, PriteshkumarPatil, Prof. A.S. Patil "Endless Belt Type Oil Skimmer", International Journal of Recent Research in Civil and Mechanical Engineering, Vol. 2, Issue 1, pp. 95-100
[6] SurajBurungale, ManojKamble, AvinashDeokar, Sumitkamble, Prof. Kuber K.H, "Oil Skimmer Mechanism in Sugar Factory", International Journal of Mechanical and Industrial Technology, Vol. 3, Issue 2, pp. 174-176
[7] Broje, V., and Keller, A. A., "Improved Mechanical Oil Spill Recovery Using an Optimized Geometry for the Skimmer Surface", Environ. Sci. Tech.,2006, vol 40(23) pp. 7914-7918
[8] Schulze, R., 1998. Oil Spill Response: Performance Review of Skimmers. American Society for Testing and Materials, Manual Series,MNL34.
[9] Abdelnour, R., Roberts, B., Purves, W., 1980. A field evaluation of oil skimmers. In: Proceedings of the Third Arctic Marine Oil Spill Conference, Edmonton.

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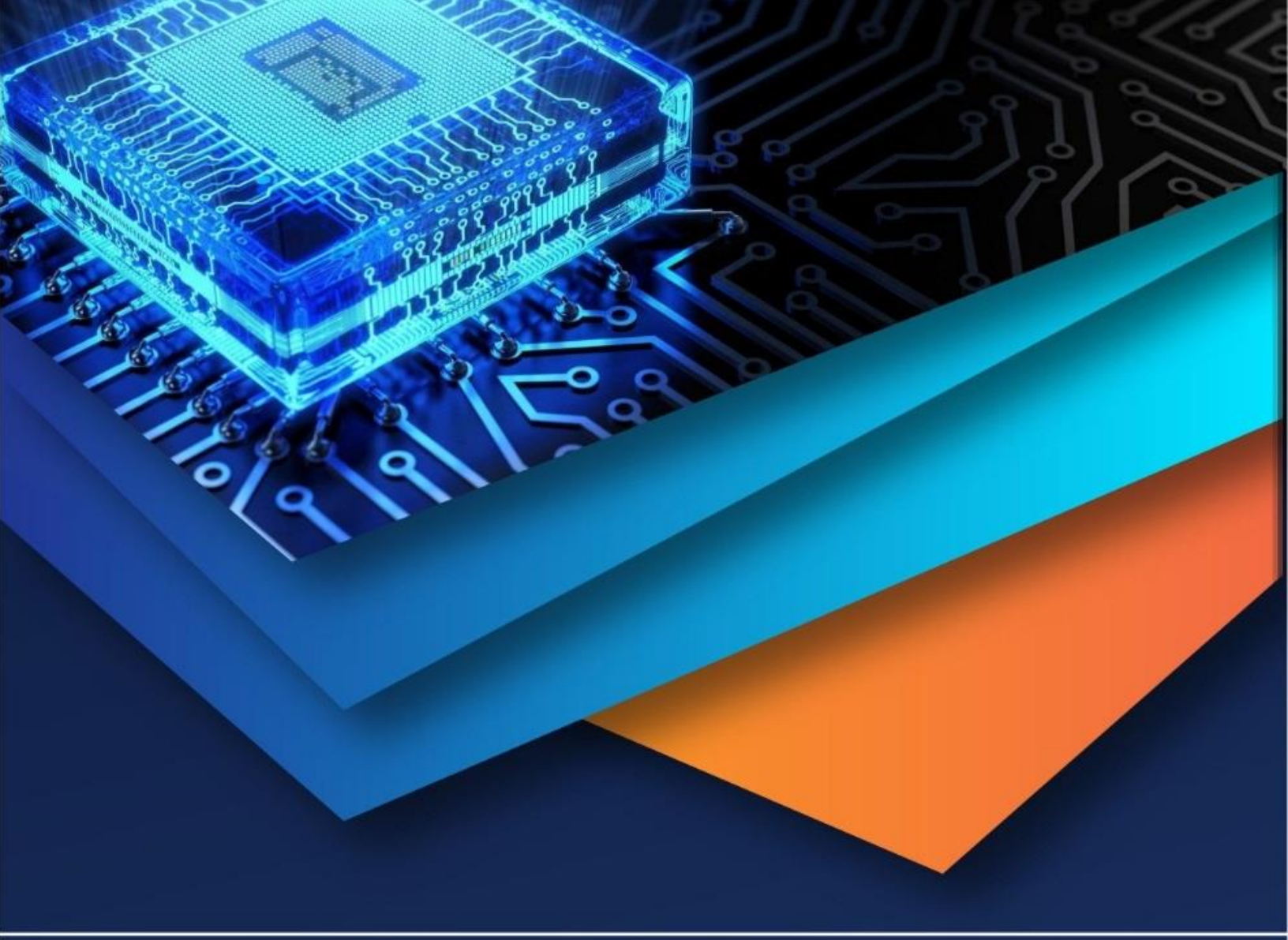

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