PARIPEX	OR	GINAL RESEARCH PAPER	Engineering
	OIL V WHE	VATER SEPARATOR THROUGH GRINDING EL	KEY WORDS:
Dr. Deo Raj Tiw	vari	Department of Mechanical Engineering IIMT Co Noida, UP, India	llege of Engineering, Greater
Ayush Kumar Chandra		Department of Mechanical Engineering IIMT Co Noida, UP, India	llege of Engineering, Greater
Bharat Bhusha	n	Department of Mechanical Engineering IIMT Co Noida, UP, India	llege of Engineering, Greater
Himanshu Kum	nar	Department of Mechanical Engineering IIMT Co Noida, UP, India	llege of Engineering, Greater
This project helps us to constrate all form water in one newway. Project tells him to constrate all from water for maintaining water			

This project helps us to separate oil form water in one new way. Project tells him to separate oil from water for maintaining water as it states without any emulsion as previously used. Previously grinding wheel used as cutting, finishing etc, but after this new way of thinking added to its contents. We analyze its ability to use in a just new ways of separating oil from water. Carefully studies help in thinking beyond the box. We are hoping that our experiment on oil water separation helps different people to think as grinding wheel as a separation tool. It will give ideas about variety of uses of human thinking beyond the box.

## 1. INTRODUCTION Metal shaft

A shaft is a rotating machine element, usually circular in cross section, which is used to transmit power from one part to another, or from a machine which produces power to a machine which absorbs power. The various members such as pulleys and gears are mounted on it.

# Types

BSTRA

They are mainly classified into two types.

- Transmission shafts are used to transmit power between the source and the machine absorbing power; e.g. counter shafts and line shafts.
- 2. Machine shafts are the integral part of the machine itself; e.g. crankshaft.

### **Grinding wheel**

Grinding wheel is a wheel composed of an abrasive compound and used for various grinding (abrasive cutting) and abrasive machining operations. Such wheels are used in grinding machines. But we use grinding wheel for oil water separator.



The wheels are generally made from a composite material consisting of coarse-particle aggregate pressed and bonded together by a cementing matrix (called the bond in grinding wheel terminology) to form a solid, circular shape.

### Gear

A gear or cogwheel is a rotating machine part having cut teeth, or cogs, which mesh with another toothed part to transmit torque. Geared devices can change the speed, torque, and direction of a power source. Gears almost always produce a change in torque, creating a mechanical advantage, through their gear ratio, and thus may be considered a simple machine.

## Bearing

A bearing is a machine element that constrains relative motion to only the desired motion, and reduces friction between moving parts. The design of the bearing may, for example, provide for free www.worldwidejournals.com

# Nut

A nut is a type of fastener with a threaded hole. Nuts are almost always used in conjunction with a mating bolt to fasten two or more parts together. The two partners are kept together by a combination of their threads' friction (with slight elastic deformation), a slight stretching of the bolt, and compression of the parts to be held together.

linear movement of the moving part or for free rotation around a

fixed axis; or, it may prevent a motion by controlling the vectors of

100°00

normal forces that bear on the moving parts

### **Plastic pipe**

Plastic pipe is a tubular section, or hollow cylinder, made of plastic. It is usually, but not necessarily, of circular cross-section, used mainly to convey substances which can flow — liquids and gases (fluids), slurries, powders and masses of small solids. It can also be used for structural applications; hollow pipes are far stiffer per unit weight than solid members.

### D.C. Motor

A DC motor is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor. The most common types rely on the forces produced by magnetic fields. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor.



## **PARIPEX - INDIAN JOURNAL OF RESEARCH**

## FIG: DC MOTOR

DC motors were the first type widely used, since they could be powered from existing direct-current lighting power distribution systems. A DC motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight motor used for portable power tools and appliances. Larger DC motors are used in propulsion of electric vehicles, elevator and hoists, or in drives for steel rolling mills. The advent of power electronics has made replacement of DC motors with AC motors possible in many applications.

#### Chain drive

Chain drive is a way of transmitting mechanical power from one place to another. It is often used to convey power to the wheels of a vehicle, particularly and motorcycles. It is also used in a wide variety of machines besides vehicles.Most often, the power is conveyed by a roller chain, known as the drive chain or transmission chain,[1] passing over a sprocket gear, with the teeth of the gear meshing with the holes in the links of the chain. The gear is turned, and this pulls the chain putting mechanical force into the system.

Roller chain and sprockets is a very efficient method of power transmission compared to (friction-drive) belts, with far less frictional loss



#### Fig:- Chain drive 2. WORKING PRINCIPLE

The basic principle of oil water separator is that, oil and water can be separate by the help of grinding wheel because the viscosity of oil is more as compare to water. And grinding wheel as abrasive particles or rough surface which collect the oil from the surface of the water. In oil water separator we use metal shaft, dc motor, grinding wheel, nut, gear, chain derive, etc.



Oil/Water separators have limited application in stormwater treatment because their treatment mechanisms are not well suited to the characteristics of stormwater runoff (i.e., highly variable flow with high discharge rates, turbulent flow regime, low oil concentration, high suspended solids concentration). In addition, separators can require intensive maintenance, further restricting their desirability as a stormwater treatment BMP. The primary use of oil/water separators will be in cases where oil spills are a concern. Their inclusion in these guidelines is merely to provide as wide a range as possible of stormwater BMPs. While the use of oil/water separators may be appropriate for high traffic areas such as multi-family dwellings and apartment complexes, the decision to use an oil/ water separator should be made on a case-by-case basis.

If an oil/water separator is to be used for treatment, it should be located offline from the primary conveyance/detention system. The contributing drainage area should be completely impervious and as small as necessary to contain the sources of oil. Under no circumstances should any portion of the contributing drainage area contain disturbed pervious areas that can be sources of sediment.

#### 3. SPECIFIC ADVANTAGES AND DISADVANTAGES

It is a straightforward installation with a simple construction and

easy operation. Once installed, only the floating layers needs to be removed on a regular basis so that the contents (and thus retention time) are not excessively diminished. The system requires little maintenance.

An oil/water separator only works for oil-like substances that are water-insoluble, are difficult to mix with water and/or have a density that is similar to that of the water. If this is not the case, like in oil in water emulsions, the oil/water separator will not function.

#### 4. APPLICATIONS

The use of oil/water separators is standard practice in locations where wastewater or rain water could be polluted with mineral oil or other difficult to dissolve hydrocarbons. Installations may range from small systems (1 l/s) to very large ones (240 l/s).

Sectors in which oil/water separators are implemented, include oil refineries, food industry, slaughterhouses and car garages. Separators are also used as preliminary wastewater purifiers in restaurants, catering companies, etc.

#### Here are a few examples:

- Rain water from car parks, fuel stations, scrap yards and storage sites for dangerous substances. This often involves larger volumes;
- Wastewater from car and truck washes;
- Wastewater from barrel cleaning and tank cleaning;
- Wastewater (e.g. floor cleaning) from car garages, car body workshops and other work places for machines and equipment:
- Removal of oil from degreasing baths;
- Wastewater released in oil refineries.

#### 5. CONCLUSION

Enterprise-wide optimization for the petroleum refining industry involves optimization of the supply chain involving manufacturing and distribution with emphasis on integration of the different decision making levels. The key manufacturing operations include crude oil loading and unloading, mixing of crude oil, production unit operations of conversion and separation, operations of blending, and distribution of products. Other components of the petroleum supply chain network include oil explorations, crude oil procurement, and sales and distribution of products. The main issues present in the petroleum industry across various decision levels (strategic, tactical, and operational) and within oil refinery operations are discussed. This paper presents an extensive literature review of methodologies for addressing scheduling, planning, and supply chain management of oil refinery operations. An attempt is also made to identify the future challenges in efficiently solving these problems.

The limitations of existing oil recovery systems in severe sea states are a challenge for the development of a new generation of robust oil recovery vessels. Relevant requirements lead to the following design critéria:

- High transit speed
- Wide intake area for an extensive skimming range
- Low hydrodynamic resistance of the system
- docking device
- Sea-keeping ability
- Ability to operate in shallow waters.

#### REFERENCES

- Khurmi R S, (2014), 'A text book of machine design', Eurasia publishing house(P) Itd., New-Delhi, ISBN 9788121925372 Mahadevan K and Reddy K.Balaveera, (2015), 'Design data hand book', CBS publishers and Distributors (P) Itd., New-Delhi, ISBN 9788123923154 API 421, February 1990, American Petroleum Institute Cincinnati, OARM. "Useful sites in addition to NSCEP". Archived from the original
- 2
- 3 4.
- 6
- Circliniati, OARM. Oseful sites in addition to NSCEP Archived from the original on 2015-12-08. Retrieved 2015-06-03.
  "Oil Water Separator Flow Process Description". Retrieved 2015-06-11.
  "Separation and Purification Technology" (PDF). www.atmc.umassd.edu. Archived from the original (PDF) on 2015-09-24. Retrieved 2015-06-03.
  Cincinnati, OARM. "Useful sites in addition to NSCEP". Archived from the original on 2015-12-08. Retrieved 2015-06-03. 7.
- 8 Herman, Stephen. Industrial Motor Control. 6th ed. Delmar, Cengage Learning,
- 2010. Page 251. Ohio Electric Motors. DC Series Motors: High Starting Torque but No Load Operation III-Advised. Ohio Electric Motors, 2011. Archived November 8, 2011, at Web Cite
- "Universal motor", Construction and working characteristics, Retrieved on 27 April 2015. 10
- Laughton M.A. and Warne D.F., Editors. Electrical engineer's reference book. 16th ed. Newness, 2003. Page 19-4. 11.
- William H. Yeadon, Alan W. Yeadon. Handbook of small electric motors. McGraw-
- Hill Professional, 2001. Page 4-134.

32