

Oil Skimmer

Raju Merugu¹ chaitresh moolya² Rohit Yadav³ AshishGupta⁴

Department of Mechanism under prof fahim sheikh

Student of Mechanical Engineering, Mumbai university-india

Abstract- In Precision Machine Tools, There Is A Coolant System Which Is The Main Requirement Of A Machine While Doing Operation On The Materials Which Are Comparatively Harder. When Operation Is Going On, At That Time There Is Generation Of Heat Due To Friction Between Tool And Work Material. This Heat Causes Wear And Tear Of Tool And There Is Also Unwanted Deformations In The Material. There Is Also A Possibility Of Change In Properties. So We May Not Get A Good Quality Product Because Of Improper Cooling System. There Are Also Some Other Losses Due To Heat.E.G. Reduction In Tool Life, Operation Is Not Easy Etc. To Avoid This, A Coolant Which Is a Mixture of Water and Soluble Oil, Does Main Role For Cooling .In A Machine, The Coolant System Is Made Of Re-Circulating System. "OIL SKIMMER" Is A Machine, Which Separates The Oil From Coolant. As Name Suggests, The Belt Does The Main Roll. Because Of The Belt, The Oil Gets Attracted Towards Drum And Gives Oil From Oil-Coolant Mixture.

Keywords- Pvc Belt, Oil-Coolant Mixture, Container,Chain,Pedestal Bearing, Motor.

1. INTRODUCTION

Selection:- Today World Required Speed In Each And Every Field. Hence Rapidness And Quick Working Is Most Important. Now A Days For Achieving Rapidness, Various Machines And The Equipments Are Being Manufactured . In Such A Modern Era Of Liberalization, Small Scale Industries Are Contributing In A Big Way To The Growth Of Our Country. The Engineer Is Constantly Confronted With The Challenges Of Bringing Ideas And Design Into Reality. New Machines And Techniques Are Being Developed Continuously To Manufacture Various Products At Cheaper Rates And High Quality. Taking Into Account The Above Contribution We Have Tried To Manufacture Such Equipment Which Is The Accessory Of Machine Tool To Have The Treatment To The Cutting Fluid After Having Used As A Coolant. Because The Coolant After Having Continuous Use, Gets Mixed Up With The Lubricating Oil And Its Property Gets Changed. Hence It Becomes Necessary To Separate The Oil From The Mixture Of The Oil And The Coolant.

What Is Oil Skimmer?

The Oil Skimming Is The Operation Of Removing Or Separating The Oil From The Oil Polluted Coolant. The Oil And The Coolant In The Mixed Form Is Collected In The Containers. And One Of The Following Classified Methods Are Adopted To Separate The Oil From The Coolant.Oil Being The Lighter Element As Compared To Coolant Mixed With The Water, It

Floats Over The Coolant. The Endless Belt Running Over The Roller Is Adjusted Such That The Belt Will Violently Smash The Layer Of The Mixture Coolant. The Oil Being The Lighter And Sticky Will Stuck To The Belt. The Belt Then Is Rubbed Against The Resting Scoop Or The Container Where The Oil Is Collected After Separation.

2. LITERATURE REVIEW

It Is Estimated That Between Million Metric Tons Of Oils Are Released Into The Worlds Water Every Year Of Which More Than 90% Is Directly Related To Human Activities Including Deliberate Waste Disposal.

Marine Oil Spills, Particularly Large-Scale Spill Accidents Have Received Great Attention Due To Their Damage To The Environment.

In India, Most Of The Manufacturing Industries Release Their Oil Waste Into The Nearby Sea, Lake,Or Ponds Etc.

Because Of This Our Aquatic Life Is Under Great Threat.

Acc. To Recent National Water Quality Inventory Reports, Non Point Source Pollution Remains The Nation Largest Source Of Water Quality Problem

3. REQUIREMENTS OF CUTTING FLUID

Cutting Fluids Are Used In Metal Machining For A Variety Of Reasons Such As Improving Tool Life , Reducing Work Piece Thermal Deformation , Improving Surface Finish, Away Chips From The Cutting Zone.

CUTTING FLUIDS FOR CNC LATHE OPERATION

Aluminium-

Turning –Mineral Oil With 10% Fatty Or Soluble Oil

Milling-Soluble Oil With 96% Water, Mineral Oil Or Straight Fatty Oil.

Drilling- Soluble Oil With 75 To 90% Water

Tapping-dry or 25% lard oil + 75% mineral oil

Alloy steel- for turning- 25% sulphur base oil, with 75% mineral oil

For turning, milling and drilling- machined dry

Tapping- Lard Oil, Spur Oil, Wood Grease Or 25% Sulphurised Lard Oil.

For Turning ,Milling And Drilling- machined Dry Tapping- Dry Or 25% Lard Oil +75% Mineral Oil

Alloy Steel-

For Turning – 25% Sulphur Base Oil, With 75% Mineral Oil

For Milling -10% Lard Oil With 90% Mineral Oil.

For Drilling –Soluble Oil With 75% Water.

Methodology of Oil Skimmer

Oil Skimmer Works On Difference Between Specific Gravity Of Oil And Coolant

Because Of This Oil Will Float On Water

By Using This Principle We Can Separate Oil From Coolant

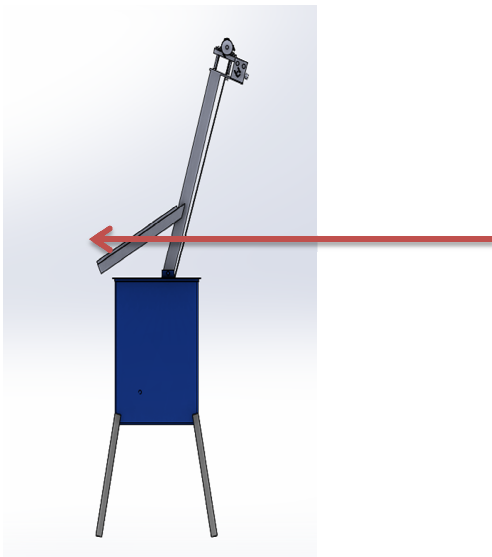


Fig.1 Side View of Oil Skimmer

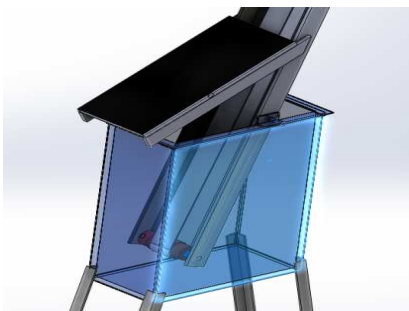


Fig.2 Showing container view of oil skimmer

3. APPLICATIONS

Centre less grinding machine.

Cylindrical Grinding machine.

Surface Grinders.

Automats

Milling Machine & where coolant separation is necessary.

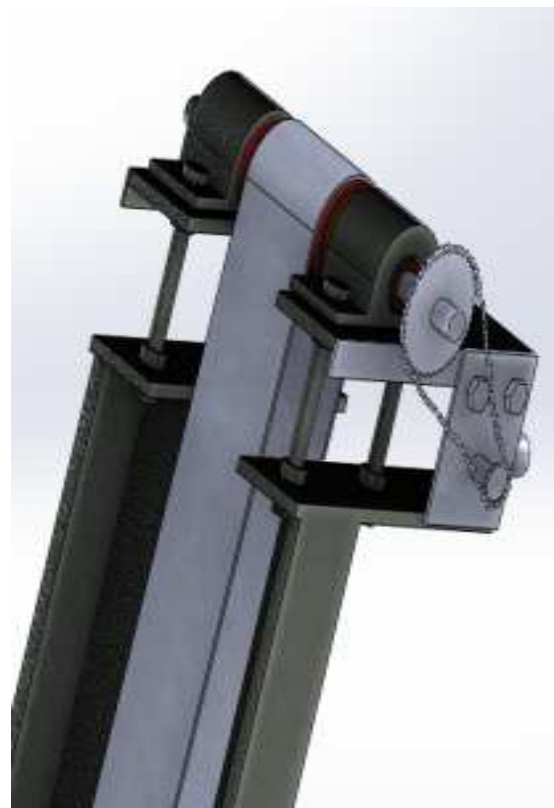


Fig.3 showing belt running over pedestal bearing

4. ADVANTAGES:-

Increase in tool life.

Increase in coolant life.

Better quality can be obtained.

Increase in surface finish & accuracy.

Increase in production rate.

Increase in coolant supply.

Increase in the life of coolant pump.

Conserve wash water by removing oily wastes

Remove tramp oils from costly coolants

Prevent plugging of pipes, sprays, filters or sewers

Limitation

Oil skimmer can separate only adhesive oil fluid particles. It can separate the oil which can float on the coolant.

5. FUTURE SCOPE

It is almost impossible to give clear thought to every aspect / possibilities to introduce the various subsystem in the present project. However, following things can be possibly introduced which way help to increase the efficiency of present project. In present model it is possible to extend the work as discussed below:

The filtration system is to be modified with drilling arrangement which results in effective utilization of re circulated coolant & will increase list of coolant.

In filtration system, the cleaner way works on the principle of centrifugal separation & hence can be separate magnetic & non magnetic particles heavier than coolant.

To ensure a very high degree of filtration paper filter are connected in series with the cleaning system. filtration is done by the cleaners & secondary paper filtration. This cleaner gives more efficiency.

REFERENCE

- [1] workshop technology-prof hazara
- [2] production technology-prof. r.k. jain
- [3] manufacturing science- prof amitabh ghosh
- [4] workshop technology- prof bawa
- [5] google study



Raju merugu was born in the year 1994. He is very much interested in mechanical engineering.

He completed hsc in bnn college. Further he is studying in last year of bachelor of engineering Under mumbai university, india. His area of interest covers everything relating to machines.



Chaitresh Moolya Was Born In The Year 1994. He Is Very Much Interested In Mechanical Engineering.

He Completed Hsc, Further He Is Studying In Last Year Of Bachelor Of Engineering Under Mumbai

University, India. His Area Of Interest Covers Everything Relating To Coolants.



Ashish gupta was born in the year 1990. He is very much interested in mechanical engineering.

He completed hsc, further he is studying in last year of bachelor of engineering under mumbai University, india. His area of interest covers everything relating to robotics.



Rohit yadav was born in the year 1992. He is very much interested in mechanical

He completed hsc, further he is studying in last year of bachelor of engineering under Mumbai University, india. His area of interest covers everything relating to machines.

Prof. Fahim Sheikh Is Currently Working As Professor In Mechanical Department At Theem College Of Engineering, Boisar.