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# AUTOMATION IN SINGLE FLOW BEARING MACHINES

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**Abstract -***Ring plus aqua is the best manufacturer company for different types of bearing. The manufacturing process of single flow bearing consist of different types of process. The operation like grease filling, Sleeve fitting and weight measuring are the basic final three operations which are going manually. So it let to be time consuming. So to reduce this time as well as human error we change the system from manually to automatically.*

*The operation like grease filling, seal fitting and weight measuring are done automatically. Which will reduce the human efforts and provides faster production rate as compare to current system. Current system includes human operated mechanism, which having very slow speed of above mentioned operation but this will not benefits for the industry from the industrial side, so we study on the above machine and design a new automated single flow bearing machine which overcomes the maximum problem faced by manual syst*

## 1. INTRODUCTION

**Title:-**

"Automation in single flow bearing machine."

**Current situation:-**

In industry Ring Plus Aqua there are all operation will be performed on single flow bearing machine which is done by manually by worker so, it increases time for production and reduces the efficiency of worker which also effect on productivity .

**After applying our method:-**

In industry we are complete project and search simple methods which are very important to increase production as well as profit as well as product quality is maintained.

We select the suitable method for production as well as smooth flow of material for production. The work like Grease Filling, Sleeve fitting and weight measuring will be done automatically by using conveyor system.so, increase production rate and increase the productivity also better quality of product can be increase .

## 2. LITERATURE REVIEW

**Athanasius Chasalevris, Fadi Dohnal [1]** Represents new results examining the relationship between bearing grease composition and rolling –sliding friction in lubricated contacts Friction coefficient and lubricating film thickness of a series of commercially available bearing grease and their bled oils were measured in laboratory tribometers. Test grease were selected to cover a wide spectrum of thicker and base oil types and base oil viscosities. The trends in measured friction coefficients were analysis in relation to grease composition in an attempt to establish the relative influence of individual grease on friction .Tow distinct operating regions with markedly different friction behavior are identified for each grease. At relatively high speeds the grease behave approximately as their bled/base oils, while in the low speed region the frictional response is very dependent on their thicker type and properties of the lubricating film. Low viscosity, synthetic base oil seems to offer efficiency advantages in the high speed region

regardless of thicker used, while the choice of thicker type is significant under low speed conditions[1]

**N.K. Sinha, Baldev Raj [2]** Bearing seals, also known as grease seals, are used to protect tapered, spherical, cylindrical and double-row bearing from excess grease loss and contamination .In 1956, Clark seals partnered with The Timken Company to develop the industry's first precision bearing seals for tapered roller bearings. Over the years, Clark Seals has pioneered many significant advancements in bearing seal design and manufacturing technology, including the industry's first sheave and excluder bearing seals, unitized zero-friction bearing seals, hand-install bearing seals and vacuum molding technology, a technology that revolutionized seal manufacturing. Today, Clark seals manufactures the longest lasting bearing seals in the world at our plant in Tulsa,Oklahoma.We have more than 200 designs available to fit all types, sizes and brands to tapered,spherical,cylindrical and double-row bearing. Some of our more common designs are shown below

Bearing Seal Selection:

This all metal seal is used to help retain grease and act as a shield. A heavy press fit retains the seal in the housing during bearing re-lubrication. Slight leakage of excess grease occurs during operation. It is often used where high temperatures prevent using an elastomer lip seal, such as overhead cranes in steel mills. The CB is an excluder that seals against a chamfered large cone rib diameter. It has a nose gasket to improve O.D.sealing.[2]

**Frank Wardle [3]**An important aspect of ultra-precision applications is to select the most appropriate bearing type and arrangement. Ball-bearing manufacturers supply a wealth of information and design data but not much of it relates to the criteria of particular interest to ultra-precision machine designers, namely motion error, static stiffness, damping and heat generation. Whilst these factors are dependent on the internal design of the bearing and under the control of bearing manufacturers they are also substantially influenced by application variables associated with housing and shaft design. This chapter provides a means of estimating the static stiffness of ball bearings subject to different mounting arrangements and types of load; a basic understanding of the mechanisms that influenceion applications is to select the most appropriate bearing type and arrangement

In hydrodynamic lubrication (EHL), an extreme smoothness of the contacting surfaces is essential for the formation of a thin lubricant film, which separates the moving surfaces from each other damping and to provide guidance on the selection of damping coefficient; a basic understanding of the mechanisms that create motion error and how they are influenced by bearing application variables; and a means of estimating bearing torque and power loss.[3]

**Peter R, N, Childs[4].**Film thickness measurements in grease lubricated contacts are presented for different greases. The conditions used in the experiments are similar to the ones expected in fully-flooded slow rotating bearings. The results show that at very low speeds grease produces film thicknesses substantially thicker than base oil lubrication. An empirical model is developed which can reflect this behavior. Input to the model is a simple film thickness measurement test to characterize new grease. The model is used to estimate the effective grease viscosity leading to the bearing lubrication parameter kappa. This model is proposed for fully-flooded slow rotating bearings instead of the current practice using the base-oil viscosity[4]

**3. CONCLUSIONS**

By changing it's the properties more production is takes place.Also it maintained high accuracy. Itrequired less manpower. In these case fast production will be done that is it required less time.These process is less costly and less maintenance. On these machine unskilled labour (worker) also works. The conveyor and pocket will easily adjustable

and easy to assemble and disassemble. More efficiency takes place.

In our project we change the operation like grease filling, Sleeve fitting and weight measuring done automatically which will reduce the human efforts and provides faster production rate as compare to current system. Current system includes human operated mechanism, which having very slow speed of above mentioned operation but this will not benefits for the industry from the industrial side, so we study on the above machine and design a new automated single flow bearing machine which overcomes the maximum problem faced by manual system

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**Peter R, N, Childs2016.**Film thickness measurements in grease lubricated contacts are presented for different greases. The conditions used in the experiments are similar to the ones expected in fully-flooded slow rotating bearings.

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