

# Design and Analysis of Speed Reduction Gear Box of Organic Manure Mixing Cooler Drum

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**Abstract-** Although mechanical gearboxes used as torque and speed converters have already very high efficiency it is not only a task in automotive applications to further decrease gearbox power losses but also in many industrial applications. Different methods are discussed for power loss reduction in a gearbox. No load losses can be reduced, especially at low temperatures and part load conditions when using low viscosity oils with a high viscosity index and low oil immersion depth of the components. This in turn influences the cooling properties in the gear and bearing meshes.

**Index Terms-** Gear box, Power loss in gear box, efficiency of Gear box, load losses in Gear box.

## 1. INTRODUCTION

Gear is used almost all engineering purpose for power transmission for easily transmission & simplification in operation without any complex handling its suits to all engineering operation. Engineering design is an iterative process that is started with a poorly defined problem refined and then developed a model finally arrived at a solution. Due to nature of engineering design there could be more than one solution therefore a search should be conducted in order to find the best solution. As a mechanical design problem design of gearbox is very complex because of multiple and conflicting objectives.

## II. LITERATURE SURVEY

A. A Study on Optimized Design of a Spur Gear Reduction Unit by Faisal.S. Hussain, Syed Mohiuddin, Sajid Siddiqui, R.N. Dehankar

The field of gear design is an extremely broad and complex area, and a complete coverage in any research work is not possible. In this work only parallel axis spur gear reduction unit which is the type, probably encountered most often in general

practice, has been considered. A review of relevant literature in the areas of optimized design of spur gear indicates that compact design of spur gears involves a complicated algebraic analysis.

B. Optimization of Gear Reduction Unit Through Ray Diagram by Faisal.S. Hussain

A series of iterations is normally required to arrive at a practical combination of pinion teeth and module from their theoretical values. The present work describes the development of such a design methodology and diagnostic tool for determining the modes of failure for spur gear and also the causes of these failures have been studied. The ray diagram is also considered for finding out the minimum diameter and maximum transmission range.

C. Design and Optimization of 2-Stage Reduction Gearbox by Neeraj Patel Tarun Gupta Aniket Wankhede Vilas Warudkar

Engineering design is an iterative process that requires to be dealt with all feasible design solutions in order to arrive at desired objective. Proper design of gearbox has a significant place in power transmission applications. Traditional methods used in its design do not have ability in automating the process. Thus an attempt to automate preliminary design of gearbox has been accomplished in the paper. Software to automate preliminary design of gearbox with spur helical and bevel gears was developed. In the software KISSsoft we apply the problem with the objective function of minimizing of volume of gear trains.

D. Failure analysis of compressor & camshaft gear—An experimental approach by Arvind Yadav

This paper reports the result of an investigation of premature failure of compressor gear, camshaft gear

(ie; spur gear). In this paper three 1616 CR BS III Engine investigated for subjected to matter in different types of H series vehicle. A standard investigation procedure was employed in this analysis under various conditions. It was found by analyzing various observations the gear shaft was bending and teeth failure on endurance on engine occurred under these testing ,in this paper overload test engine (on test bed ) and different types of vehicle used for testing by running them at different-different speed and distance to calculate accurate reason of gear failure.

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