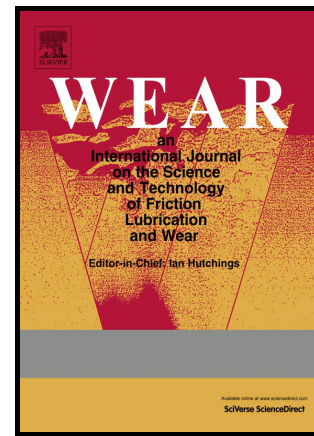


## Author's Accepted Manuscript

Enhancement of Wear Resistance on Normal Contact Ratio Spur Gear Pairs through Non-Standard Gears

R. Prabhu Sekar, R. Sathishkumar



[www.elsevier.com/locate/wear](http://www.elsevier.com/locate/wear)

PII: S0043-1648(17)30539-2  
DOI: <http://dx.doi.org/10.1016/j.wear.2017.03.022>  
Reference: WEA102125

To appear in: *Wear*

Received date: 19 July 2016  
Revised date: 18 January 2017  
Accepted date: 28 March 2017

Cite this article as: R. Prabhu Sekar and R. Sathishkumar, Enhancement of Wear Resistance on Normal Contact Ratio Spur Gear Pairs through Non-Standard Gears, *Wear*, <http://dx.doi.org/10.1016/j.wear.2017.03.022>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

# Enhancement of Wear Resistance on Normal Contact Ratio Spur Gear Pairs through Non-Standard Gears

R. Prabhu Sekar<sup>1\*</sup>, Sathishkumar. R<sup>2</sup>

<sup>1</sup>Assistant Professor, Automobile Engineering, SRM University, Chennai, India.

<sup>2</sup>PG Scholar, Anna University, Coimbatore, India.

prabhusekar.r@gmail.com

sathishrkl@gmail.com

## Abstract

Tooth wear is considered to be one of the major causes of failure modes in gearing systems. The achieved service life of the geared unit mainly depends on the gear tooth strength and surface wear. Excessive wear is characterized by loss of tooth profile, which results in high noise and vibration, a minor loss of conjugate action and a reduction in efficiency. Hence, enhancement of gear life against wear becomes an important requirement for effective design detailing of gears. This article presents an idea to minimize the wear of the gear teeth by adopting non-standard gear. Non-standard gear is defined as one whose tooth thickness at the pitch circle is not equal to  $0.5\pi m$ . In this study, the impact of the tooth thickness coefficient on tooth wear for standard and non-standard spur gears is numerically investigated. The non-standard tooth thickness in the pinion leads to enhancement of the tooth strength and leading to reduction of tooth wear. Finally, the influence of gear parameters such as gear ratio, pressure angle and pinion teeth number on wear depth, for non-standard pinion and gear has been investigated and the results of the parametric study are discussed.

## Abbreviations

EHL, Elasto hydrodynamic lubrication; FEM, Finite element method; HPTC, Highest point of tooth contact; HPSTC, Highest point of single tooth contact; LPSTC, Lowest point of single tooth contact; LPTC, Lowest point of tooth contact; NCR, Normal contact ratio

Download English Version:

<https://daneshyari.com/en/article/4986507>

Download Persian Version:

<https://daneshyari.com/article/4986507>

[Daneshyari.com](https://daneshyari.com)