1st International Conference on Mechanical Power Transmission 2019

IOP Conference Series: Materials Science and Engineering Volume 624

Chennai, India 11 – 13 July 2019

ISBN: 978-1-5108-9828-8 ISSN: 1757-8981 Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence. Licence details: http://creativecommons.org/licenses/by/3.0/.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact the Institute of Physics at the address below.

Institute of Physics Dirac House, Temple Back Bristol BS1 6BE UK

Phone: 44 1 17 929 7481 Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400 Fax: 845-758-2633 Email: curran@proceedings.com Web: www.proceedings.com

Table of contents

Volume 624

1st International Conference on Mechanical Power Transmission

11-13 July 2019, Chennai, India

Accepted papers received: 23 August 2019 Published online: 7 October 2019

Preface

Preface

Peer review statement

Papers

Investigation on modal behaviour of FGM annular plate under hygrothermal effect

Pankaj Sharma and Rahul Singh 1

Development of Self-Propelled Material Handling System

G A Walke, S N Rivankar and S P Verlekar.....7

Nonlinear parameter estimation in damping with volterra series through harmonic probing

Hari Prasad Chintha and Animesh Chatterjee.....13

Power loss prediction in asymmetric spur gear considering gear tooth dynamic load

Benny Thomas, K Sankaranarayanasamy, S Ramachandra and SP Suresh Kumar....19

Assessment of structural behavior of torque converter dampener

Ujjwal Kumar Das, Vinogradov Victoria and Ch Bhaskara....25

Study of the lubricating properties of hybrid liquid paraffin with TiO₂ and CuO as nanoadditives for engine oil application

Adarsh Kumar Shah, K P Vineesh and M L Joy.....31

Dynamic characteristics analysis of a lead screw by considering the variation in thread parameters

Alex S Syriac and Shital S Chiddarwar.....37

Numerical Simulation and Experimental Validation of Planetary gearbox System Design to Govern Constant Generator Speed in Hydro Power Plant

Bhargav, M. A. Parameshwaran, S. Sivaraj and Nithin Venkataram.....43

Extraction of vibration behavior in conventional and electric drive two-wheeler using order analysis

Lalsaheb Mulla, Piyush Khuba, Apeksha Dhere and Sakthivel Palanivelu.....49

To Optimise the Performance of Electric Powertrain by Tuning the CVT

S Gawade, J Bari, N Anagolkar and D Ashok.....55

Degradation analysis of gear oil SAE 90 used in load haul dumper machine

Nagesh Dewangan, Anil Kumar Agrawal, Mohd A H Siddiqui and Somnath Chattopadhyaya.....61

Crack detection in a shaft using finite difference technique

R Nigam and S K Singh.....67

Powder metallurgy process towards functional gradation of Al-Al₂O₃ metal ceramic mixture samples

R Nirmalkumar, Ritwik Sohgaura, Ravikiran Kadoli and Sharnappa Joladarashi.....74

Influence of Link Lengths & Input Angles on the Foot Locus Trajectory of Klann Mechanism

N Prashanth, R M Manoj and B Nikhil.....80

Influence of vehicle parameters on handling characteristics and its control using torque vectoring

Mayuresh Mutha, Chinmay Karanjkar, Prasad Kadekar, Mandar Nikumb and Sakthivel Palanivelu.....86

A Novel Methodology to Optimize Design Parameters of an Asymmetric Gear

N Umar Farook, R Parthasarathy, P K Murshid, Anikesh Kumar Rathod, S B Naveen Raghava Krishnan, Anoop Kumar Verma, K P Vineesh and A M Sreenath.....92

Gear loss factor using the load distribution model for varying contact ratio in spur gear drive for improved bending strength

R Ravivarman, K Palaniradja and R Prabhu Sekar.....97

Design Optimization and Loaded Tooth Contact Analysis of Multispeed Gearbox for Low Noise Behaviour

M Mahendran, V Murali, N Baskar and V Srinath.....103

Investigation on Influence of Circumferential Velocity and Lubrication Oil Grades on Scuffing and Thermal Efficiency of Gearbox

D Vaidhyanathan, A Pushparaj, K Mahendran and V Ragunathan....110

Newtonian approach towards mathematical modelling and tuning of a Continuously Variable Transmission

Prajwal B Bharadwaj and Jeyaraj Pitchaimani.....116

Study and control of factors influencing casting shrinkage using DOE and numerical simulation

Sarabjit Singh, Dr. Rajesh Khanna and Dr. Neeraj Sharma.....122

Evaluation of lubricant properties of vegetable oils as base oil for industrial lubricant

E Sneha, S Rani and Muhammed Arif.....128

Design optimization of steering knuckle by adopting bionic design approach

Vikas Ghungarde, Sudhir Awachar, N K Vaidya and T Jagadeesha.....134

Optimal Design and Analyses of T-shaped rotor Magnetorheological Brake

S Acharya, T R S Saini and H Kumar.....140

Multi-objective optimum design of an aero engine rotor system using hybrid genetic algorithm

K Joseph Shibu, K Shankar, Ch. Kanna Babu and Girish K Degaonkar.....146

Influence of S₀ Type of Addendum Modification on Sliding Performance of Spur Gears

Y C Niranjan, C Prithvi and B K Sridhara.....152

Vibration based real time brake health monitoring system – A machine learning approach

T M Alamelu Manghai and R Jegadeeshwaran.....158

Real time condition monitoring of hydraulic brake system using naive bayes and bayes net algorithms

T M Alamelu Manghai, R Jegadeeshwaran and G Sakthivel.....164

Milling cutter condition monitoring using machine learning approach

A D Patange, R Jegadeeshwaran and N C Dhobale.....169

Impact of Adaboost and Support Vector Machine Classifier in Automotive Sector

Graceson Jeriel Frederick, G Sakthivel and Jagadeeshwaran.....175

Vibration Analysis of Heterogeneous Gearbox Faults using EMD Features and SVM Classifier

Setti Suresh and VPS Naidu.....181

Contact analysis of a planetary gear train using linear complementarity

M Pathak and S Rakshit.....187