

2nd International Conference on Frontiers in Automobile and Mechanical Engineering 2016

IOP Conference Series: Materials Science and Engineering
Volume 197

Chennai, India
7 - 9 July 2016

Editor:

J. Lilly Mercy

ISBN: 978-1-5108-4174-1
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.

Copyright© (2016) by the Institute of Physics
All rights reserved. The material featured in this book is subject to
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2017)

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 197

Frontiers in Automobile and Mechanical Engineering

7–9 July 2016, Sathyabama

University, Chennai, India

Accepted papers received: 2 May 2017

Preface

011001

OPEN ACCESS

[Frontiers in Automobile and Mechanical Engineering](#)

011002

OPEN ACCESS

[Peer review statement](#)

Materials

012001

OPEN ACCESS

[Development of friction material by using precast prefired \(pcp f\) blocks](#)

R Dineshkumar, E V V Ramanamurthy and Ch Krishnapavanteja.....1

012002

OPEN ACCESS

[Comparison of the Effect of Curing on the Properties of E-Glass/Cyanate modified Epoxy Cross Plied Laminates](#)

W Andrew Nallayan, K.R Vijayakumar and Usama Tariq Rasheed.....8

012003

OPEN ACCESS

[Optimization of Profile and Material of Abrasive Water Jet Nozzle](#)

K P Anand Bala Selwin and S Ramachandran.....21

012004

OPEN ACCESS

[Analysis of copper mixed kerosene servotherm in EDM of Monel 400™](#)

P.A. Anandakumar, Baya Molla, Fisha Biruke and S. Aravind.....31

012005

OPEN ACCESS

[Optimality of cycle time and inventory decisions in a two echelon inventory system with exponential price dependent demand under credit period](#)

Seelam Krugon and Dega Nagaraju.....38

012006

OPEN ACCESS

[Comparative Study of Fault Diagnostic Methods in Voltage Source Inverter Fed Three Phase Induction Motor Drive](#)

R. B. Dhumale and S. D. Lokhande.....49

012007

OPEN ACCESS

[Design, Static Analysis And Fabrication Of Composite Joints](#)

G. Mathiselvan, R. Gobinath, S. Yuvaraja and T. Raja.....63

012008

OPEN ACCESS

[Mechanical Characterization of Baslat Based Natural Hybrid Composites for Aerospace Applications](#)

J. Alexander and S.J Elphej Churchill.....71

012009

OPEN ACCESS

[Recent developments in turning hardened steels – A review](#)

V Sivaraman and S Prakash.....79

012010

OPEN ACCESS

[Review on Microstructure Analysis of Metals and Alloys Using Image Analysis Techniques](#)

Suganthini Rekha and V.K. Bupesh Raja.....88

012011

OPEN ACCESS

[Optimization of Tensile Process Parameters of Bi-Axial Glass Fibre Reinforced Epoxycomposite Using Taguchi Method](#)

I Infanta Mary Priya and B K Vinayagam.....93

Internal Combustion Engine

012012

OPEN ACCESS

[Analysis of CO₂, CO and HC emission reduction in automobiles](#)

K N Balan, T N Valarmathi, Mannem Soma Harish Reddy, Gireddy Aravinda Reddy, Jammalamadaka K M K Sai Srinivas and Vasani.....100

012013

OPEN ACCESS

[Green fuel utilization for diesel engine, combustion and emission analysis fuelled with CNSO diesel blends with Diethyl ether as additive](#)

Ashok Kumar, K. Rajan, K.R. Senthil Kumar, K. Maiyappan and Usama Tariq Rasheed.....106

012014

OPEN ACCESS

[Experimental Investigation of Performance and emission characteristics of Various Nano Particles with Bio-Diesel blend on Di Diesel Engine](#)

N Karthik, X Goldwin Xavier, R Rajasekar, P Ganesh Bairavan and S Dharseelan.....116

012015

OPEN ACCESS

[A Comprehensive Review of Effect of Biodiesel Additives on Properties, Performance, and Emission](#)

S Madiwale, A Karthikeyan and V Bhojwani.....122

012016

OPEN ACCESS

[Optimization of Rice bran biodiesel blends on CI engine and investigating its effects](#)

J. Jayaprabakar, Biraj Dey, Krishanu Dey, Batchu Hareesh and M. Anish.....129

012017

OPEN ACCESS

[Comparative study of performance and emissions of a CI engine using biodiesel of microalgae, macroalgae and rice bran](#)

J. Jayaprabakar, A. Karthikeyan, K. Saikiran, N. Beemkumar and Nivin Joy.....138

012018

OPEN ACCESS

[Experimental investigation on Performance and Emission Characteristics of J20, P20, N20 Biodiesel blends and Sound Characteristics of P20 Biodiesel blend Used in Single Cylinder Diesel Engine](#)

R. rajasekar, N. karthik and Goldwin Xavier.....145

012019

OPEN ACCESS

[Review on Enhanced Heat Transfer Techniques using Modern Technologies for 4S Air Cooled Engines](#)

S Ramasubramanian and V K Bupesh Raja.....150

012020

OPEN ACCESS

[Experimental Investigations on Diesel engine using Methyl esters of Jatropha oil and fish oil](#)

A Karthikeyan, J Jayaprabakar and Richard Dude Williams.....155

012021

OPEN ACCESS

[Performance and Emission Analysis of Diesel Engine by Copper Coating Over Piston Crown and Cylinder Head](#)

S. Yuvaraja, G. Mathiselvan and R. Gobinath.....162

012022

OPEN ACCESS

[Effects of Nano Additives in engine emission Characteristics using Blends of Lemon Balm oil with Diesel](#)

J. Senthil kumar, S. Ganesan, S. Sivasaravanan, S. Padmanabhan, L. Krishnan and V.C. Aniruthan.....169

012023

OPEN ACCESS

[Performance Test on Compression Ignition Engine by Blending Ethanol and Waste Plastic Pyrolysis Oil with Cetane Additive](#)

S Padmanabhan, S Ganesan, J Jeswin Arputhabalan, Varun Chithrala and P Ganesh Bairavan.....178

012024

OPEN ACCESS

[Emission and Performance Analysis of ZrO₂ And CeO₂ Coated Piston Using Refined Vegetable Oils](#)

J Hemanandh, K.V. Narayanan and Vemuri Manoj.....185

012025

OPEN ACCESS

[Influence of MgO on Performance and Emissions of DI Engine using blends of Castor oil](#)

S Ganesan, s Padmanabhan, J Senthil kumar, Navakanth Polina and Sanivada Krishna kumar.....193

012026

OPEN ACCESS

[I.C. Engine emission reduction by copper oxide catalytic converter](#)

S.P. Venkatesan, Desai Shubham Uday, Borana Karan Hemant, Kagita Rajarshi Kushwanth Goud, G. Lakshmana Kumar and K. Pavan Kumar.....199

012027

OPEN ACCESS

[Prospects of pyrolysis oil from plastic waste as fuel for diesel engines: A review](#)

V L Mangesh, S Padmanabhan, S Ganesan, D PrabhudevRahul and T Dinesh Kumar Reddy.....208

Thermal

012028

OPEN ACCESS

[Investigation on Nano Refrigeration](#)

G Senthil kumar, K Saravanan and K Ajay Kumar.....213

012029

OPEN ACCESS

[Electric Power from Cryo \(Nano\) Ice](#)

A. Kandasamy and M. Chandran.....218

012030

OPEN ACCESS

[Design and Analysis of a Two-Stage Adsorption Air Chiller](#)

P Benrajesh and A John Rajan.....224

012031

OPEN ACCESS

[Experimental investigations on effect of different materials and varying depths of one turn exhaust channel swiss roll combustor on its thermal performance](#)

Sagar B. Mane Deshmukh, A. Krishnamoorthy, V. K. Bhojwani and Ashwini Pawane.....234

012032

OPEN ACCESS

[Experimental study on productivity of modified single-basin solar still with a flat plate absorber](#)

V Ramanathan, B Kanimozhi and V K Bhojwani.....245

012033

OPEN ACCESS

[Thermal Analysis of Fluidized Bed and Fixed Bed Latent Heat Thermal Storage System](#)

N Beemkumar, A Karthikeyan, Kota Shiva Keshava Reddy, Kona Rajesh and A Anderson.....252

012034

OPEN ACCESS

[Review of Phase Change Materials Based on Energy Storage System with Applications](#)

R. Thamarai kann, B. Kanimozhi, M. Anish, J. Jayaprabakar, P. Saravanan and A. Rohan Nicholas.....260

012035

OPEN ACCESS

[Modelling and Optimising the Value of a Hybrid Solar-Wind System](#)

Arjun Nair, Kartik Murali, S.P Anbuudayasankar and C.V. Arjunan.....268

012036

OPEN ACCESS

[Performance Improvement of Energy Storage System with nano-additives in HTF](#)

N Beemkumar, A Karthikeyan, B Saravanakumar and J Jayaprabakar.....281

012037

OPEN ACCESS

[Recent developments in drying of food products](#)

T.N. Valarmathi, S. Sekar, M. Purushothaman, S.D. Sekar, Maddela Rama Sharath Reddy and Kancham Reddy Naveen Kumar Reddy.....286

012038

OPEN ACCESS

[Investigation of Sensible and Latent Heat Storage System using various HTF](#)

N Beemkumar, A Karthikeyan, A Manoj, J S Keerthan, Joseph Paul Stallan and P Amithkishore.....296

012039

OPEN ACCESS

[Analysis of Thermal Energy Storage Tank by ANSYS and Comparison with Experimental Results to Improve its Thermal Efficiency](#)

N Beemkumar, A Karthikeyan, Kota Shiva Keshava Reddy, Kona Rajesh and A Anderson.....302

012040

OPEN ACCESS

[Charging and Discharging Processes of Thermal Energy Storage System Using Phase change materials](#)

Dr. B. Kanimozhi, Kasilanka Harish, Bellamkonda Sai Tarun, Pogaku Saty Sainath Reddy and Padakandla Sai Sujeeth.....311

012041

OPEN ACCESS

[Experimental investigations of hybrid PV/Spiral flow thermal collector system performance using Al₂O₃/water nanofluid](#)

R Gangadevi, B K Vinayagam and S Senthilraja.....318

Design

012042

OPEN ACCESS

[Design and Static Analysis of Airlesstyre to Reduce Deformation](#)

Nibin Jacob Mathew, Dillip Kumar Sahoo and E. Mithun Chakravarthy.....327

012043

OPEN ACCESS

[Agricultural robot designed for seeding mechanism](#)

Dr. K A Sunitha, G S G S Suraj, CH P N Sowrya, G Atchyut Sriram, D Shreyas and T Srinivas.....334

012044

OPEN ACCESS

[Design and Analysis of Wind Turbine Blade Hub using Aluminium Alloy AA 6061-T6](#)

S. Ravikumar, V. Jaswanthvenkatram, Y.J.N.V. Sai kumar and S.Md. Sohaib.....340

012045

OPEN ACCESS

[Design and Analysis of Boiler Pressure Vessels based on IBR codes](#)

B Balakrishnan and B Kanimozhi.....348

012046

OPEN ACCESS

[Flexural Behavior of Aluminum Honeycomb Core Sandwich Structure](#)

Vidyasagar Matta, J Suresh Kumar, Duddu Venkataraviteja and Guggulla Bharath Kumar Reddy.....356

012047

OPEN ACCESS

[Design Intent for CAD Modeling Features Using Boolean Operations](#)

Chandrakant R Sonawane and Ghadge Sujit.....367

012048

OPEN ACCESS

[Design and Analysis of Drive Shaft using Kevlar/Epoxy and Glass/Epoxy as a Composite Material](#)

P Karthikeyan, R Gobinath, L Ajith Kumar and D Xavier Jenish.....375

012049

OPEN ACCESS

[Finite element analysis of chip formation usingale method](#)

V. Jayaprakash.....383

012050

OPEN ACCESS

[Design and Analysis of High Pressure Hydraulic Filter for Marine Application](#)

Toshin Momin, RP Chandrasekar, S Balasubramanian and Dr. AM Junaid Basha.....390

Composites

012051

OPEN ACCESS

[Experimental Analysis of Exhaust Manifold with Ceramic Coating for Reduction of Heat Dissipation](#)

J Saravanan, T N Valarmathi, Rajdeep Nathc and Prasanth Kumar.....399

012052

OPEN ACCESS

[Fabrication of SiC particulate reinforced polyester matrix composite and investigation](#)

R. Selvam, S. Ravi and R. Raja.....405

012053

OPEN ACCESS

[Effect of Steel slag on Wear Characterization of Aluminium Composite Using Taguchi Technique](#)

K S Sridhar Raja, V K Bupesh Raja, F Aaro Rinold and L.S Abhilash.....413

012054

OPEN ACCESS

[Computational analysis of frp composite under different temperature gradient](#)

P. Gunasekar and S. Manigandan.....419

Production

012055

OPEN ACCESS

[Evaluation of Thrust force in Drilling Woven roving Glass fibre reinforced Aluminium Sandwich laminates with TiAlN coated drill using Taguchi analysis](#)

G. Ramya Devi and K. Palanikumar.....425

012056

OPEN ACCESS

[Measurement and analysis of thrust force in drilling sisal-glass fiber reinforced polymer composites](#)

M. Ramesh and A. Gopinath.....433

012057

OPEN ACCESS

[Quality of Work Life – A Study](#)

Dr. T.K Mily Velayudhan and M.D Yameni.....440

012058

OPEN ACCESS

[Evolution and Recent Trends in Friction Drilling Technique and the Application of Thermography](#)

Mathew Alphonse, V.K. Bupesh Raja, K. Logesh and N. Murugu Nachippan.....454

012059

OPEN ACCESS

[Evaluation and Selection of Best Priority Sequencing Rule in Job Shop Scheduling using Hybrid MCDM Technique](#)

Kalla Kiran Kumar, Dega Nagaraju, S Gayathri and S Narayanan.....468

012060

OPEN ACCESS

[Evaluation and selection of material handling equipment in iron and steel industry using analytic hierarchy process](#)

Sajja Varun, Raj Harshita, Sesha Pramod and Dega Nagaraju.....478

012061

OPEN ACCESS

[Evaluation and Selection of Predicaments in Pharmaceutical Supply Chain using AHP under Fuzzy Environment](#)

E.V.S. Nikhil, V. Sai Ram, V. Charan Yadav, Kalla Kiran Kumar and Dega Nagaraju.....487

012062

OPEN ACCESS

[Reduction of Defects in Al-6061 Friction Stir Welding and Verified by Radiography](#)

D Kumaravel, Dr V K Bupesh Raja, Chakravarthy Potnuru and Navakanth Polina.....494

012063

OPEN ACCESS

[Experimental Investigation and Taguchi Optimisation of Drilling Properties on Teak Wood Reinforced Epoxy Resin](#)

J. Lilly Mercy, Mohamed Shaqir Tanvir and K. Swaroopkanth.....499

012064

OPEN ACCESS

[Process improvement by cycle time reduction through Lean Methodology](#)

R Siva, Mahamed naveed khan patan, Mane lakshmi pavan kumar, M Purusothaman, S Antony pitchai and Y Jegathish.....505

012065

OPEN ACCESS

[Plasma Nitriding of CP Titanium Grade-2 and Ti-6Al-4V Grade-5](#)

J.R. Deepak, V.K. Bupesh Raja, J. Senthil Kumar, Subin Thomas and Thomas Raju Vithaiyathil.....512

012066

OPEN ACCESS

[Salt Bath Nitriding of CP Titanium Grade-2 and TI-6AL-4V Grade-5](#)

J. R. Deepak, V.K. Bupesh Raja, K. Arun Kumar, H Varun Radhakrishnan and Sonu Skariah Thomas.....518

012067

OPEN ACCESS

[Experimental Investigation of Mechanical Properties of Welded Corten Steel A588 Grade Plate Using ER70S - 6 Filler Material for Construction Application](#)

J.R. Deepak, V.K. Bupesh Raja, Mittapalli Janardhan Guptha, Palaparathi Hari Durga Prasad and V. Sriram.....524

012068

OPEN ACCESS

[Experimental Investigation Nano Particles Influence in NPMEDM to Machine Inconel 800 with Electrolyte Copper Electrode](#)

K Karunakaran and M Chandrasekaran.....532

012069

OPEN ACCESS

[Investigation on the Effect of Friction Welding Parameters on Impact Strength in Dissimilar Joints](#)

C. Shanjeevi, J.Jeswin Arputhabalan, Rohan Dutta and Pradeep.....547

012070

OPEN ACCESS

[Optimization of Drilling Parameters for Reducing the Burr Height in Machining the Silicon Carbide Particle \(SiCp\) Coated with Multi Wall Carbon Nano Tubes \(MWCNT\) Reinforced in Aluminum Alloy \(A 356\) Using Meta Modeling Approach](#)

M. Sangeetha and S. Prakash.....553

012071

OPEN ACCESS

[Building Brand Power](#)

S Lakshmi and S Dr. Muthumani.....563

Automobile

012072

OPEN ACCESS

[Experimental Investigation on The Electromagnetic Clutch Water pump and Pneumatic Compressor for Improving the Efficiency of an Engine](#)

R Kumarasubramanian, Goldwin Xavier, W Mary Nishanthi and R Rajasekar.....568

012073

OPEN ACCESS

[Experimental Investigation of Thermal Performance in a Vehicle Cabin Test Setup With Pcm in the Roof](#)

M. Purusothaman, Saichand kota, C Sam Cornilius and R Siva.....576

012074

OPEN ACCESS

[CFD and Thermo Mechanical Analysis on Effect of Curved vs Step Surface in IC Engine Cylinder Head](#)

S. Balaji, N. Ganesh and A. Kumarasamy.....585

012075

OPEN ACCESS

[Analysis of Effect of Inlet Swirl In Four Stroke Single Cylinder Diesel Engine With Different Inlet Valve Geometries Using CFD](#)

R. Gobinath, G. Mathiselvan and R. Kumarasubramanian.....592

Aeronautical

012076

OPEN ACCESS

[Aerodynamic Analysis Over Double Wedge Airfoil](#)

U S Prasad, V S Ajay, R H Rajat and S Samanyu.....605

012077

OPEN ACCESS

[Aerodynamics and flow characterisation of multistage rockets](#)

G Srinivas and M V S Prakash.....611

012078

OPEN ACCESS

[Recent developments of axial flow compressors under transonic flow conditions](#)

G Srinivas, K Raghunandana and B Satish Shenoy.....625

012079

OPEN ACCESS

[Fault diagnosis of helical gearbox using acoustic signal and wavelets](#)

SK Pranesh, Siju Abraham, V. Sugumaran and M. Amarnath.....635

012080

OPEN ACCESS

[Numerical simulation of dimples in airfoil using MATLAB](#)

P. Booma Devi and Dilip A Shah.....649

012081

OPEN ACCESS

[Experimental and numerical analysis of convergent nozzle](#)

G Srinivas and Bhupal Rakham.....658

012082

OPEN ACCESS

[Numerical investigation of mixing characteristics of chevron nozzle by passive controls method](#)

J. Devipriya and Dr. Kanimozhi.....671

012083

OPEN ACCESS

[Aerodynamic analysis of seamless horizontal stabilizer](#)

S. Nithya and S. Kanimozhi.....679

012084

OPEN ACCESS

[Analysis and Optimization of Central Processing Unit Process Parameters](#)

R Kaja Bantha Navas, Budi Venkata Chaitana Vignan, Margani Durganadh and Chunduri Rama Krishna.....686

012085

OPEN ACCESS

[Experimental and Transient Thermal Analysis of Heat Sink Fin for CPU processor for better performance](#)

S. Ravikumar, Parisaboina Subash Chandra, Remella Harish and Tallapaneni Sivaji.....695

012086

OPEN ACCESS

[Design and analysis of Air flow duct for improving the thermal performance of disc brake rotor](#)

T Raja, G Mathiselvan, M Sreenivasulureddy and X. Goldwin Xavier.....701

012087

OPEN ACCESS

[MRR and TWR evaluation on electrical discharge machining of Ti-6Al-4V using tungsten : copper composite electrode](#)

J Prasanna, S Rajamanickam, O Amith Kumar, G Karthick Raj and P V V Sathya Narayanan.....705