Volume 2

IMAGINEERING
Imagination meets Engineering

Department of Mechanical Engineering

MANGALAM COLLEGE OF ENGINEERING

(An ISO Certified Educational Institution, Approved by AICTE and affiliated to M.G. University)

Special points of interest:

- BAJA SAE 2014 by Mechanical students
- TORQUE 2013
- International Journals by ME Team
- About Mechanical Department
- ME Innovations
- ME results

Inside this issue:

From the Captain's Desk:

Greetings to all. It gives me an immense pleasure in bringing out this newsletter of Mechanical Department. This Newsletter is brought to you with a motive to showcase the activities of the department, achievements made, seminars & tech fest conducted and notably to enhance the teaching learning process. This Newsletter is the second issue of Mechanical Engineering Department which enlightens the various activities held during the last one year in the department. I hope this newsletter will encourage the dear students and faculties in their overall development.

This term has been an eventful one wherein the students have enjoyed the opportunity of having interacted with professionals from the corporate world and achieved good placements in reputed firms. Also it is very much commendable to the faculty and students of mechanical department for achieving 100% pass in the MG University M Tech (IEM) second semester exam and a very good college position in the 7th semester B Tech Mechanical exam results. Another major achievement of the department is the number of paper publications (total nine) made by our team in the last one year. There are two International journal publications, two international conference and five national conference paper presentations by Mechanical department staff and students. My heartiest congratulations to all and keep it up this spirit in future also.

Also my sincere appreciation goes to the teaching staff and especially current final year mechanical engineering students for conducting a national tech fest **" TORQUE 2013"** in a grand manner which has made a history in the Mangalam college of engineering by attracting a very huge crowed to watch the Auto Show and Bike stunt race conducted alongwith this tech fest. This year we had good final year projects by our students and some of them have been selected for the projects competitions especially the one SAE India's BAJA 2013 at Bangalore, the design & development of a new all terrain vehicle. Finally I would like to thank the staff and students who have contributed in making this newsletter a successful and informative one.

Don't restrict your thoughts to the boundaries of the classroom. Let your imagination and thoughts flow. I wish you all to break the barriers and think out of the box.

കാഴ്ചയുടെ വിരുന്നൊരുക്കി ടോർക്ക് 2013

.Why Mechanical Engineering? - An article for engineering aspirants

The most common query among all engineering aspirants is about the "best engineering branch/ course/ specialization/ discipline". According to us, all engineering disciplines are equally good. What matters is your interest and aptitude for that engineering branch. So don't pick a branch you have no interest in, just because it promises fat pay packages! But selecting an engineering branch can be very difficult. You often get confused whether to give importance to the branch of your choice or a reputed institute. So, to make things easier, let me enlighten everyone about the prospects of mechanical engineering.

Mechanical Engineering is the hard core branch of engineering with increasing demand day by day and which happens to be the backbone of any industry with amazing versatility An evergreen field, there will always be opportunities here, despite varying market trends. It is one of the oldest branches of engineering and therefore one of the broadest.

During the four years of study, the basic focus is on subjects such as thermal engineering, machine design, industrial engineering and production engineering, Mechanical engineering graduates can also find placements in IT sector because of their strong hold over subjects such as mathematics and physics. Software is all about logic, and students who are strong in mathematics and physics are considered to be good in logic. This particular courses is in demand and most importantly, unlike in the earlier days, girls fill up one-third of the seats. Mechanical engineering are no longer considered to be a taboo area for the girls.

Mechanical engineering graduates can find placements in almost every sector, right from construction sector to steel industry and from automobile to software. Earlier there was only one branch and subsequently sub-branches such as marine, aerospace, automobile, industrial, computer aided design & manufacturing and metallurgical engineering were formulated to suit the growth of knowledge and the industry demands

As a mechanical engineer you will get into design, analysis, manufacture and maintain anything that moves! Entry-level salaries range from about Rs 1.5 to Rs 3.15 lakh per annum. Pay hikes depend on your performance and any further skills you acquire.

Recruiters include ISRO, DRDO, BARC, Bosch,, Cummins, L&T,NTPC, SAIL,Tata steel, BPCL, HPCL, Indian Oil, GAIl, Petronet, Shipping (SCI), Neyveli, Titanium, KMML, Balmer Lawrie, HMT, Defence force, Indian Railway, Air India,, Seaport. Shipyard, ONGC, MRF, CEAT, Apollo tyres, Godrej, Voltas, Bluestar, ABB, Maruti, TATA Motors, General Motors, Hundai, Honda, Toyota ,Fiat, Reliance ,BEML, Ashok Leyland, Bajaj, Hero, Suzuki, Yamaha,, TVS, Kirloskar Mahindra & Mahindra, LMW, Suzlon, Thermax, SKF, Engineers India, RCF,BHEL, Container corporation, Seimens etc. in addition to various software companies like TCS, Infosys, Wipro, HCL ,CTS etc.

A battery-powered robotic arm that boosts human strength has won the 2013 James Dyson award.

The Titan Arm, designed by four mechanical engineering students from the University of Pennsylvania, could help people with back injuries rebuild and regain control of muscles. It can also be used by people to lift heavy objects as part of their work.

New Advances in Natural Gas Vehicles

Domestic production of natural gas is projected to increase significantly within the next decade. Chris Hagen, assistant professor in energy systems engineering, believes that this growth in natural gas production, coupled with advancements in methane-fueled vehicle, holds great promise toward relieving America's dependence on foreign oil.

Prof. Chris Hagen with an advanced engine

Hagen is spearheading a research program at OSU-Cascades to develop a self-contained natural gas vehicle with an engine that can compress the fuel and power the car, thus eliminating the need for fueling stations.

Hagen's research is one of 13 new cutting-edge projects funded by ARPA-E (the Department of Energy's Advanced Research Project Agency–Energy) through its new program titled Methane Opportunities for Vehicular Energy

Latest Mechanical Innovations

Ride the Ryno: The one wheeled bike that you can't fall off . It 's designed by Portland-based RYNO Motors specifically for commuters to help beat the traffic. The RYNO has a single wheel and runs on electricity. The RYNO has a lithium-iron-phosphate battery pack, that is said to recharge in just an hour and a half. It is also fitted with self-balancing technology that means the bike will automatically right itself if the driver leans too far to the left or right, or too far forwards and backwards. It weighs 57kg and can cope with slopes of up to 30 per cent gradient. With a top speed of 25 mph (40 km/h) and a range of up to 30 miles (48 km), it's intended more for short-distance, low-speed jaunts, possibly even being ridden amongst pedestrians. Its inventors claim you can even ride it into a lift and spin round

Insect-Sized Spy Drone Robots Unveiled

Just when you thought insects couldn't get any creepier, the US Air Force has unveiled tiny finger-sized insect spy drones that would be undetectable to most. This can be used to inject toxins into enemies during wars. **Read more at** http://www.techeblog.com/index.php/tech-gadget/insect-sized-spy-drone-robots-unveiled#GEdsjwxcdh6V9m3B.99

For the millionaire who has everything: A $190,000 hovercraft

How are you planning on spending your summer vacation this year? If you had a good year, you might be considering buying a fishing boat or maybe even a jet ski. But if you had a really, *really* good year, you might want to put one of these in the water: A $190,000 hovercraft that lets you explore the waterways —and the sky — of exotic vacation destinations in style.

This Flying Hovercraft has a 130-hp, twin-cylinder liquid-cooled engine that can push the craft to speeds over 70mph. True to its hovercraft nature, this vehicle is usable in both fresh and salt water, as well as on land over sand, grass, or snow. It also includes a pair of wings that help the craft take small flights to jump over obstacles as high as 20 feet.This hovercraft may sound expensive, but it's a relative bargain considering that you could spend ten times as much on a Corvette-turned-speedboat or fifteen times as much on a $3 million RV.

INTERNATIONAL JOURNAL OF INDUSTRIAL ENGINEERING RESEARCH AND DEVELOPMENT (IJIERD)

SERVICE QUALITY ANALYSIS AND IMPROVING CUSTOMER SATISFACTION IN AUTOMOBILE SERVICE INDUSTRY USING QFD

Thirumanas K R(1) K C Joseph(2)

1. Asst Professor, Deptt. Of ME, IIET Kothamangalam, India.
2. HOD, Deptt. Of ME, Mangalam, Ettumanoor, India.

INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH AND APPLICATIONS (IJERA)

Designing and Analysis of Roll Cage of an ATV

Amal Tom 1and Abu Thomas Cherian 2

1 B.Tech student, 2Assistant Professor Mechanical Department, Mangalam College of Engineering, Kottayam,

ICMF 2013 - 3rd International Conference on Materials for the Future - Innovative Materials, Processes, Products and Applications

" EXPERIMENTAL STUDY ON THE EFFECT OF FORGING TEMPERATURE ON MECHANICAL PROPERTIES OF ALUMINIUM ALLOY AA2219 "

BY SIJO JOSE

“SIMULATION ON RADIAL AND CIRCUMFERENTIAL TEMPERATURE VARIATION ON REFRACTORY WALLS OF ROTARY KILN USING ANSYS CFX”
— by Jishnu M

NATIONAL CONFERENCE ON ADVANCED TRENDS AND TECHNOLOGIES IN MECHANICAL ENGINEERING

PERFORMANCE ANALYSIS OF PRECISION ANGULAR CONTACT BALL BEARINGS USING VIBRATION SPECTRUM—
BY AJITH KURIAN BABY

National conference, NCME Trends 2013 conducted at Toc H Institute of Science and Technology on 30th September 2013

MODELING AND OPTIMIZATION OF INTEGRATED PRODUCTION INVENTORY DISTRIBUTION NETWORK FOR A TYRE RETREAD MANUFACTURING INDUSTRY—Martin James

NATIONAL CONFERENCE ON ADVANCED TRENDS AND TECHNOLOGIES IN MECHANICAL ENGINEERING

DESIGN AND ANALYSIS OF VIBRATION ISOLATOR USED FOR LAUNCH VEHICLES —Binny Kuriakose

COST BENEFIT ANALYSIS OF INTRODUCING FURAN SAND AT AUTOKAST LTD —Arun Jose

SUPPLIER EVALUATION AND ESTABLISHING A RATING SYSTEM ON SUPPLIER PERFORMANCE USING FUZZY TOPSIS AND AHP - Sarath Chandran

MG UNIVERSITY 100% RESULTS

M.TECH INDUSTRIAL ENGINEERING & MANAGEMENT 2011-13 BATCH UNDER THE DEPARTMENT OF MECHANICAL ENGINEERING HAS ACHIEVED 100% RESULT IN THE SECOND SEMESTER EXAMINATION.

S7 MG UNIVERSITY RESULTS April 2014

BRANCH	TOTAL NO OF COLLEGES in MG University	MANGALAM POSITION
Mechanical Engineering	22	12

ARTICLE ON AIR BAGS

Airbags are a type of automobile safety restraint like seatbelts. They are gas-inflated cushions built into the steering wheel, dashboard, door, roof, or seat of your car that use a crash sensor to trigger a rapid expansion to protect you from the impact of an accident.

History

Allen Breed was holding the patent to the only crash sensing technology available at the birth of the airbag industry. Breed invented a "sensor and safety system" in 1968, the world's first electromechanical automotive airbag system.

However, rudemental patents for airbags go back to the 1950s. Patent applications were submitted by German Walter Linderer and American John W. Hedrik as early as 1953

In 1971, the Ford car company built an experimental airbag fleet. General Motors tested airbags on the 1973 model Chevrolet automobile that were only sold for government use. The 1973, Oldsmobile Toronado was the first car with a passenger air bag intended for sale to the public. General Motors later offered an option to the general public of driver side airbags in full-sized Oldsmobile's and Buick's in 1975 and 1976 respectively. Cadillacs were available with driver and passenger airbags options during those same years.
Early airbags system had design issues resulting in fatalities caused solely by the airbags.

Airbags were offered once again as an option on the 1984 Ford Tempo automobile. By 1988, Chrysler became the first company to offer air bag restraint systems as standard equipment. In 1994, TRW began production of the first gas-inflated airbag. They are now mandatory in all cars since 1998.

Types of Airbags

There are two types of airbags; frontal and the various types of side-impact airbags. Advanced frontal air bag systems automatically determine if and with what level of power the driver frontal air bag and the passenger frontal air bag will inflate. The appropriate level of power is based upon sensor inputs that can typically detect: 1) occupant size, 2) seat position, 3) seat belt use of the occupant, and 4) crash severity.

Side-impact air bags (SABs) are inflatable devices that are designed to help protect your head and/or chest in the event of a serious crash involving the side of your vehicle. There are three main types of SABs: chest (or torso) SABs, head SABs and head/chest combination (or "combo") SABs.

TORQUE 2013

A snap from Auto Expo

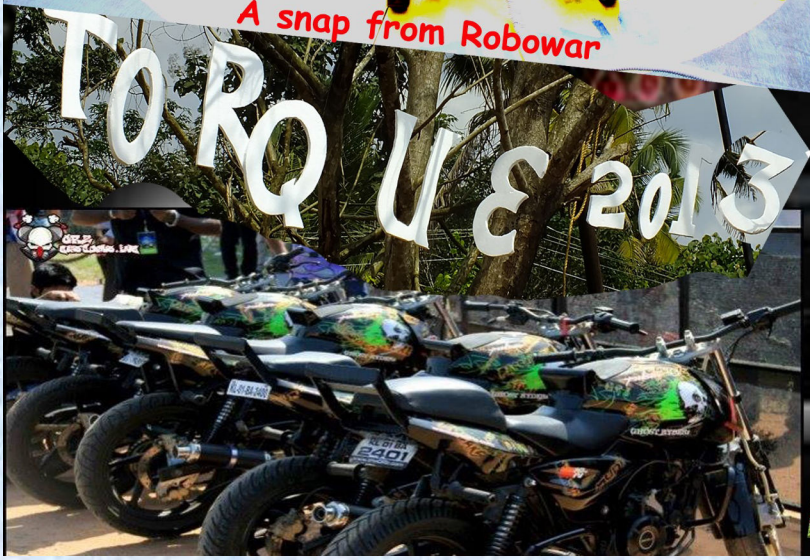
Inuagural ceremony

GHOST RYDERz bikes at Auto Expo

Presidentail speech : K.C.Joseph
(Mechanical Dept.

A snap from Robowar

Inuaguration: Biju Varghese
Chairman, ML



A snap at Robowar

TORQUE 2013


Prize distribution by HOD
FreAkS In ToWn
GHOST RYDERz stunting
Auto Expo snaps
ROYALMEXX

It is the mark of an educated mind to be able to entertain a thought without accepting it

I'm quite into the idea of engineering being beautiful.

CAMPUS PLACEMENT OF S8 ME STUDENTS

Shanank P S
IBS

Abhijith V Sadanand
TCS

Jose Thomas
Kennedy Institute UK
(Through Bloomberg)

GATE 2014 Achievers S8 ME

K U Sethunath

Muneez V P

Abhiraj P D

Best final year student project selected : Hydrogen-boosted petrol engine - a working model

Faced with the ever increasing cost of gasoline, automakers worldwide are working overtime to cost-effectively improve vehicle fuel economy, while still meeting today's strict emissions requirements. Hydrogen-boosted petrol engines have the potential to considerably improve fuel economy.

One promising way to boost fuel economy is to add hydrogen to the fuel/air mixture in a conventional petrol engine. It's called a hydrogen-boosted gas engine. However, since hydrogen isn't readily available at your local filling station, selling a hydrogen-boosted gas engine hasn't been on the short list at many automakers. That is until now. There's a new technology that utilizes a fast-response on-board reformer to generate a small amount of hydrogen from gasoline. This hydrogen is added to the engine's normal air/fuel mixture. This greatly improves overall combustion quality by allowing nearly twice as much air for a given amount of fuel introduced into the combustion chamber. Engines designed to run on a mix of hydrogen/petrol can see a fuel-economy gain of 20 to 30 percent with no requirement for control of harmful NOx emissions, oxides of nitrogen.

A prototype hydrogen-boosted engine is developed by a group of final year mechanical students headed by Nandu G Nair as a part of their course project. Performance data generated during the early phase of testing is encouraging to be watched intensely by everyone concerned with automotive and energy environmental matters because the system is associated with the buzzword "hydrogen."

New Members of ME Team

Martin James

Sijo Jose

Jishnu M

Shijo Thomas

Binny Kuriakose

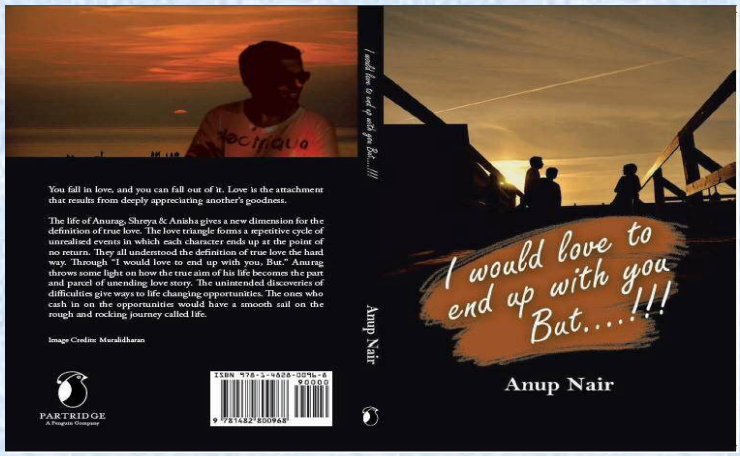
Ajith Kurian Baby

Shifa Sulaiman

Develop a passion for learning. If you do, you will never cease to grow.

ZEAL XII representing S7 Mechanical of Mangalam college of Engineering at SAE BAJA 2013 Bangalore

Maiden fictional novel published under Penguin Publications: Anup Nair



This S7 ME team of SAE India Collegiate Club qualified amongst final 120 teams from overall 278 teams from all over India to present their virtual design of an all terrain vehicle at Bangalore

World wide EBook & paperback release taken place on August 2013. Paperback version in India would be available from December 2013.The book is a fictional version of the blog " A life beyond college"

ME STUDENTS INDUSTRIAL VISIT AT DP WORLD VALLARPADAM KOCHI

Onam celebration of ME students

Sahodaya Education Expo at Labour India Public School

ME students at Mysore Palace

ME students on a trip to Goa

Social Activity by ME students