



Principal Speaks...

Making a difference. As we have said in these pages, KSIT-Emanation is on a roll. We are upward bound and have momentum. Engineers turn ideas into reality; they question, explore, invent, discover, and create. Our drive to excel in moulding our students to contribute richly to the social service, intellectual and cultural milieu in our region. Our increasing recognition is evident by enormous success of our staff and students effort in contributing their rich service in several structures. The KSIT-Emanation expressing in its own way the hidden talent of our young minds. The contents of this newsletter definitely highlight the exciting activities of staff and students in all fields. I thank personally everyone for the effort in bringing out EMANATION containing useful information and look forward to hear from all readers, who would like to share with us. "Small things make perfection, but perfection is not a small thing."

Dr. T. V Govindaraju

Principal / Director

EDITORIAL

CO-ORDINATORS

Mr. Srinivas Murthy

Mr. Umashankar M

COMMITTEE

- Tejaswini Nagesh
- Vinayak Sharma
- Shreyas.H.S
- Varun Kumar
- Varun Sharma
- Sachin B.G.
- Satyanidhi S.V.
- Apoorva Vij
- Vasisth Pandit
- Abhijith Magal
- Vamshi Krishna
- Sumanth P.R.
- Rohit S.

*Emanation team
heartily congratulates
all the students who
have been placed in
Infosys, NTT DATA,
and Emphasis.*

PARIS MOTOR SHOW 2014

The global motor industry descended to Paris for the 2014 Paris Motor Show, one of the biggest events in the automotive calendar. Many concept cars were put on display, which included **Mercedes AMG GT**, **Mazda MX-5**, **Jaguar XE**, **Volvo XC90**, **Lamborghini Asterion**, **Land Rover Discovery Sport**, **Audi TT Sportback concept**, **Ferrari 458 Speciale A**, **Volkswagen XL Sport** and **Honda Civic Type R**. **The focus was on the hybrid technology and these two super-cars hogged the limelight.**

Lamborghini Asterion



Lamborghini has joined the ranks of Porsche, Ferrari and McLaren in the battle for hybrid supercar bragging rights. The Lamborghini Asterion concept, shown in the Paris Motor Show, sprints from 0 to 60 mph in only 3.0 seconds and can hit almost 200 mph. Yet this eco-minded Lambo can also run more than 30 miles on pure electric power! The 5.2-liter V-10 at the heart of the power train comes from the new Huracan sports car. Coupled to this engine are three electric motors: two at the front, and one at the rear. The combined output of the power train is a staggering 910-horsepower.

When Lamborghini decides to build a hybrid, you know the result will be green and mean!

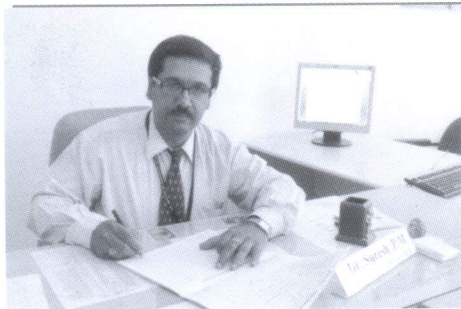
Toyota C-HR



Toyota vehicles are reliable, safe, hold resale value that could radically change, if the C-HR Concept being shown at the Paris Motor Show is any indication.

The C-HR Concept is a hybrid compact SUV, and could be a very close preview of things to come for Toyota. It sheds Toyota's image of safe, practical (if a bit uninspiring) economy cars for something bold, brash, and blue! It is built on a new Toyota platform and uses, not surprisingly, a power train similar to the petrol-electric pack in the Prius C in Australia.

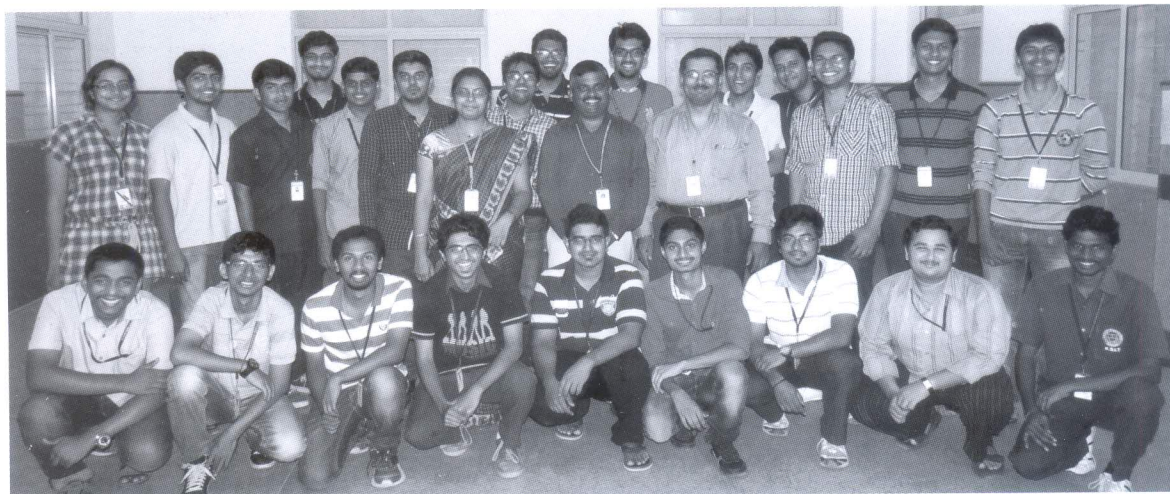




KSIT Emanation is progressing. It has given a platform for the staff and students to exhibit there hidden talents and capabilities. Today, the need of the hour introspection, when we look into the greater disorder (Entropy) prevailing in the society. The great contribution of a teacher to the society is handing over educated people built with wisdom in building the society the way Mahatma looked into. Sri Sri Ravishankar Guruji said in an interview that he realized that the firmness the terrorist had failed his attempt of reforming them. So everyone as a teacher In their life have to mould the students to contribute to the society. I thank all those who have put their efforts to bring out EMANATION with usefull information. I wish the contribution and the efforts grow in future also.

Dr. Suresh P M

Head of the Department



The automobile savvy group of students of the Mechanical Engineering department has teamed up, with a single mission... To build a buggy! They call themselves the "Redline Racing" team. This group of 25 dedicated students, is all set to participate in the 2015 'Baja' that will be held at Pithampur, Indore. The BAJA SAE Series® is an event, organized globally by the Society of Automotive Engineers, USA. In this event the students have to design, fabricate and validate a single seater four-wheeled off road vehicle, to take part in the series of events that test the vehicle for speed, agility, manoeuvrability, durability, etc.

The team started the project by creating a CAD model of the roll cage, knuckle and A-arms. After 2 months of brainstorming, they rocked the virtuals held in Ahmedabad in the first week of July 2014. Out of 325 teams that took part in the event, this group of amateurs were one of the 112 teams to get selected to the next round. The team has had a winning streak in the virtual round and now, they are all set to build the buggy. To turn this dream into reality, the team is in need of sponsors. The college management has been very supportive by generously funding the registration fees and providing for the workspace. So far, SP labs and Hydrolines have been encouraging and the team has been able to kick-start, by building the roll cage. SAE has also organised various workshops in Hyderabad and Vellore.

The buggy has to undergo a number of backbreaking tests like hill climbing, rock crawl, manoeuvrability, etc. The buggy has to be built by November this year, for the event scheduled to be held in Indore in February 2015. Racing against time, the team is all bent upon standing apart in the automobile world!

ARTICLE 1: SCORING

SCORE SUMMARY-STATIC EVENTS – 300 points

Design Evaluation
Cost Report
Prototype Cost
Presentation

DYNAMIC EVENTS – 700 points

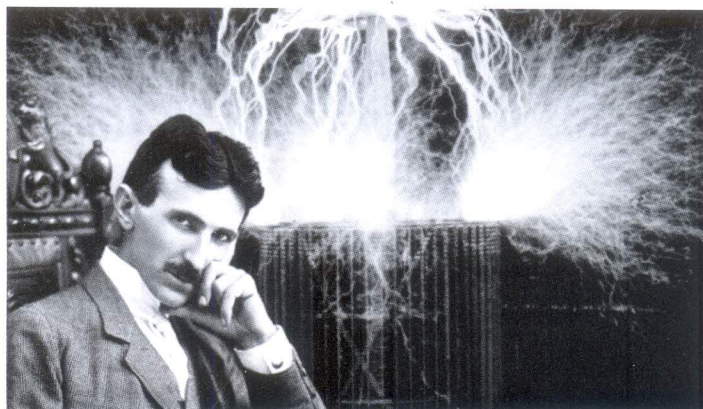
Acceleration
Hill Climb or Traction
Land Maneuverability
Rock Crawl
Suspension
Endurance

TOTAL POINTS





AURA...



A scientific giant, a genius and one of the best physicist, an electrical and mechanical engineers ever to grace the 20th century. A revolutionary, with a totally out of the box thinking, that was much ahead of his time and a fantastic journey from Smiljan, Croatia to the world's highest scientific forums. Today, we celebrate this great scientist's passion for inventions by using his innovations such as alternating electric current (AC) supply, mechanical oscillator/generators, electrical discharge tubes and X-ray imaging. Along with this, he is credited with the development of the first ever wireless controlled boat and TESLA COIL arguably his most famous innovation of all. He unsuccessfully theorized the idea of intercontinental wireless power through the principle of electrodynamic induction. He also demonstrated the generation of artificial lightning (millions of volts). In 1906, Tesla demonstrated his 200 horsepower (150 kilowatts) 16,000 rpm bladeless turbine. During 1910–1911 at the Waterside Power Station in New York, several of his bladeless turbine engines were tested at 100–5,000 hp. He is also known to have worked on the invention of death ray (an extremely powerful weapon). He, along with this mentor Thomas Alva Edison, narrowly lost to Sir William Henry Bragg and William Lawrence Bragg in 1915. One fact that can be appreciated, is the way in which he had changed the way the human civilization thought about the limitless possibilities of modern science. Tesla also claimed the possibility of generating free energy from the cosmic rays, in this context he says "This new power for the driving of the world's machinery will be derived from the energy which operates the universe, the cosmic energy, whose central source for the earth is the sun and which is everywhere present in unlimited quantities." Every student of science and technology can take inspiration from the life and times of Tesla.

"We build but to tear down. Most of our work and resource is squandered. Our onward march is marked by devastation. Everywhere there is an appalling loss of time, effort and life. A cheerless view, but true." **Nikola Tesla**

Man is born to conquer nature and not to follow it.

INDUSTRIAL VISIT REPORT

On the 12th of September the students of 5th semester mechanical engineering department had the opportunity to visit BIEC which was hosting the EMMA Expo. The Expo had various industries exhibiting their products and many more industries looking for worthy investments. While the businessmen had the opportunity to buy and sell, we students got to see the industrial world in action. We learnt about various industries, their products and the methods of production. As students we would have only learnt the various manufacturing processes and have no clue about the actual scale and scope of the processes. In this expo we got the opportunity to see the various industries and were able to relate parts of our curriculum to the working of industries.



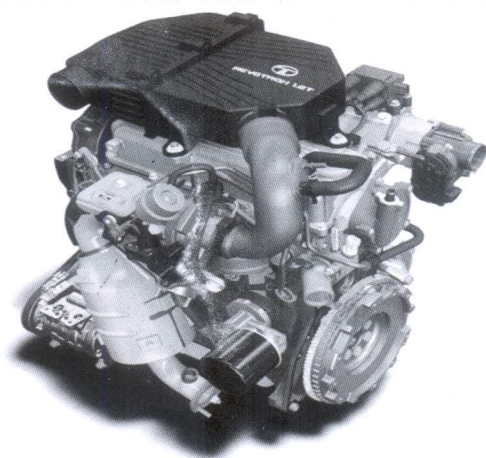
The expo exhibited various companies. There were many categories of companies like:

- Engine Parts
- Automobile parts
- Consumer Electronics Products
- Foundry Machinery and Equipments
- Drive Information System
- Car accessories
- Financial services, etc.

There was opportunity to interact with the companies under these categories. There were many budding companies which had innovative products and were looking for investors in their products. There were exhibitors even from Taiwan who were looking for a market in India. Taiwan industries are eager to start selling their products in India and had many promotional events. Taiwan universities were also present which gave students an idea about the opportunities of higher studies in Taiwan. The visit to the expo was thought provoking and an experience beyond our classrooms. We as students are much obliged to have had an opportunity to visit.

"THE REVOTRON" EXPLAINED

Tata Motors has been pushing the 1.2-litre Revotron engine quite hard into the public domain to the point where even Narain Karthikeyan is used as a brand ambassador for an engine. What makes it so special and why is Tata Motors pinning all its hopes on it? This one engine is the Revotron, a turbo-charged multi-point fuel injected engine feeding off petrol. Interestingly the name Revotron was derived from two words, Revo which is part of revolution and tron from 'Tronel' which according to Tata Motors is French for balance.



Displacement is listed at 1,193cc with 90PS of peak power coming in at 5,000rpm and 140Nm maximum torque available from 1,750 to 3,500rpm. The turbo kicks in at 1,700rpm though there is barely any perceptible turbo lag and the power delivery feels linear throughout.

The number that people first tend to look at is the maximum power figure, and with a turbocharged 83.8bhp on tap, the Revotron is certainly a big step up over the old naturally aspirated, 64bhp, 1.2 Xeta engine from the Tata Indica. This figure even bests the 1.2-litre petrol engines of the Toyota Etios Liva (79bhp), Ford Figo (70bhp), Fiat Punto (67bhp), Nissan Micra, Micra Active and Renault Pulse (75bhp), the three-cylinder VW Polo (74bhp) and the Hyundai Grand i10 (81.8bhp, so only just).

The Revotron engine offers three driving modes, an Eco, City and Sport mode of which City is the default setting. Leading technology developers, Bosch have assisted Tata Motors with the engine management system. Latest generation microprocessors manage the driving modes as well as the fueling and delivery.

This 2-valve per cylinder SOHC(Single OverHead Camshaft) engine might sound a bit jaded as the competition resorts to a more efficient 4-valve per cylinder layout. But an undersquare bore

auto
tech.

stroke configuration (75mm x 67.5mm) provides good torque characteristics which can be seen in the flat torque curve while a compression ratio of 9 (+/-0.3):1 ensures higher efficiencies.

What now?

Ultimately, these are all just numbers, and only a first drive of this engine in its eventual host cars will reveal how successful Tata has been with its first in-house turbo-petrol engine. The price of these cars will also be telling, as all the technology that has gone into have been costly, and some of this will undoubtedly be passed on to the customer. But then Tata Motors is known for delivering 'more car per car', so there's a good chance the cars that carry the Revotron 1.2T turbo-petrol engine will be priced very competitively.

K.S.I.T Students in AU2014

Autodesk, Inc. is an American multinational software corporation, that makes software for the architecture, engineering, construction, manufacturing, media and entertainment industries.

What is Autodesk University?

AU-Autodesk University is a platform where the Internationally professional designers, lead marketers, lead developers, multinational companies, business geeks and students from all corners of the world, who are a part of Autodesk World and Education Network meet under a common roof. This year, it was hosted in India: Mumbai on 11th and 12th September 2014.

Two students from our college: Vinayak Sharma & Abhijith Magal from Mechanical Engineering Department were the proud members of the event, who took up the task of leading the Bangalore region as Autodesk Student Experts. 8 other Student experts from different regions of the country were also present. The event went on for 2 days which involved talks from business giants and Innovators such as Tom Wujec, a leading and a recognized thought-leader and an award-winning innovator, Certification Exams on Autodesk Software; 3D printing technology; education booths; BIM (Building Information and Modeling) development.

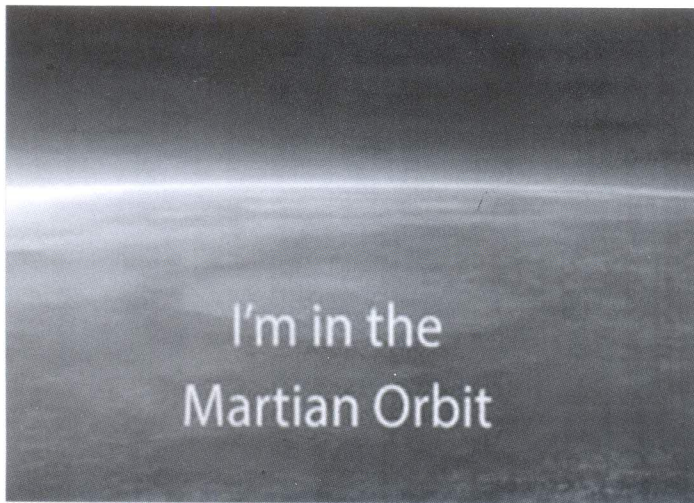
"AU was an experience of a lifetime, and the memories of being part of the AU will always be cherished", said the student experts.



DID YOU KNOW?

- To Turn Over a New Leaf means to make a fresh start, to change your behavior or attitude. In the 16th century people referred to pages in a book as "leaves". When they turned over a new leaf it meant they were turning to a blank page in a workbook to start a new lesson. This could also be more generally used as to say you're turning over a page of your life and starting a new one, etc.

MISSION TO MARS: A CLOSER LOOK AT THE RED PLANET



Launched on November 5, 2013 aboard PSLV rocket C25, Mangalyaan spacecraft was successfully inserted into the Martian orbit on September 24 after a 298-day transit to Mars.

India became the first Asian country to reach Mars and the first in the world to enter Martian orbit in its first attempt and also has spent the least amount of money to do so. India's Mars mission has a price tag of about \$74 million, a fraction of the \$671 million of the U.S. National Aeronautics and Space Administration's latest Mars program. The spacecraft, which is currently orbiting the Mars, is now studying the Red Planet's surface and scanning the atmosphere for methane with the help of its scientific instruments.

Specifications of spacecraft:

Mass: The lift-off mass was 1,350 kg (2,980 lb), including 852 kg (1,878 lb) of propellant.

Bus: The spacecraft's bus is a modified I-1 K structure and propulsion hardware configuration, similar to Chandrayaan 1, India's lunar orbiter that operated from 2008 to 2009, with specific improvements and upgrades needed for a Mars mission. The satellite structure is constructed of aluminum and composite fibre reinforced plastic (CFRP) sandwich construction.

Power: Electric power is generated by three solar array panels of 1.8 m × 1.4 m (5 ft 11 in × 4 ft 7 in) each (7.56 m² (81.4 sq ft) total), for a maximum of 840 watts of power generation in Mars orbit. Electricity is stored in a 36 Ah Li-ion battery.^[2]

Propulsion: A liquid fuel engine with a thrust of 440N is used for orbit raising and insertion into Mars orbit. The orbiter also has eight 22N thrusters for attitude control. Its propellant mass is 852 kg.

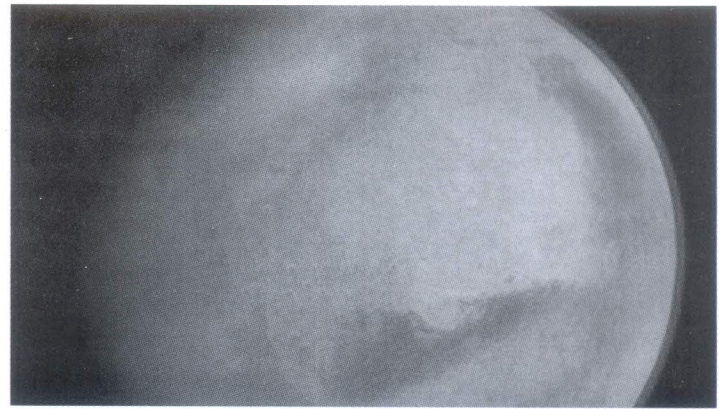
Communications:

Handled by two 230-watt TWTAs and two coherent transponders. The antenna array consists of a low-gain antenna, a medium-gain antenna and a high-gain antenna. The high-gain antenna system is based on a single 2.2-metre (7 ft 3 in) reflector illuminated by a feed at S-band. It is used to transmit and receive the telemetry, tracking, commanding and data to and from the Indian Deep Space Network.

Mangalyaan carries five instruments that will help advance knowledge about Mars to achieve its secondary, scientific, objective.



The spacecraft is currently being monitored from the Spacecraft Control Centre at ISRO Telemetry, Tracking and Command Network (ISTRAC) in Bangalore with support from Indian Deep Space Network (IDSN) antennae at Byalalu.



Mangalyaan sends its first 3D image of Mars

STEM ROBOTICS WORKSHOP

On the 9th of September, Mr. Mohan Nimbalkar, a certified STEM consultant held a seminar on STEM Robotics. Mr Mohan Nimbalkar has 10 years of experience in soft skills training and STEM Robotic Training for schools and Colleges across India. He is Presently working for Edubell, Procyon Infotech Pvt. Ltd as Zonal Manager and is a Consultant for LS Creative learning, an Indo-Japanese company for India and Dubai. He has experience in training different Clients from the industry, Comprehensive problem solving abilities, excellent verbal and written skills ability. Mr Mohan Nimbalkar has conducted training programs on Robotics for School and Engineering college students. He has conducted activity based learning for international school students and has organized 6 Indian Robotic Olympiad Robotic Competitions and FLL competitions Conducting spoken English basics, mid and advance levels, performing role plays on Effective Selling, Body language, Group discussion, Art of selling, Negotiation skills, how to reach targets and other fun filled activities, manners and etiquette, behaving with the clients, Do's and Don'ts while selling, etc. Enabling learning and development for people as individuals and conducting programs on Career guidance.



STEM is an acronym for Science, Technology, Engineering and Maths. STEM fields are collectively considered core technological underpinnings of an advanced society. STEM education is a sequence of courses or program of study that prepares students for successful employment, that require different and more technically sophisticated skills including the application of mathematics and science skills and concepts. STEM education can be an interdisciplinary or trans-disciplinary approach to learning where rigorous academic concepts are coupled with real-world problem-based and performance-based lessons.

"DON'T JUST DREAM ABOUT IT, WORK ON IT"

-AN INTERVIEW WITH THE ALUMNUS



Mr Kaushik is passionate about designing. He has completed his PG degree in machine design from KSIT. He is currently working in **TAAL Tech** as a **Design Engineer in Aerospace analysis**. He took his time to answer a few of our questions.

How was your experience in KSIT?

I had lot of freedom, no one pressurised me. Lecturers gave lots of assignments and questionnaires that helped us to prepare for exams. Graduating from KSIT was worth it because it helped me get a job, I was placed in a company of my area of interest.

What are the advantages of studying post-graduation?

M.Tech should be done only if you are interested. Although it narrows down your options, you will get to work in the field that you are interested in. The job opportunities after M.Tech are also of better quality.

How was your transition from student to a professional?

Transition was very bad. I used to enjoy college life a lot but while working you have to sacrifice your personal life. I'm forced to do the work and there is absolutely no freedom as it used to be during college days.

Expectations from students

Companies prefer smart engineers since they can grasp things faster than others. Whatever you study is less and the industry expects more from students. You have to keep learning throughout your life.

How did you go about finding a job?

Since in our time, the job requirements in industries were limited, it was difficult to find a job through campus placement. It was difficult to get placed off campus especially without any experience, I used to spend 3-4 hours every day searching for jobs online. I used to prepare according to the job requirements and also solve GATE problems and MCQs to keep in touch with the subjects. In the written test there was a theory based and objective questions which helped me crack the test.

What is the market situation as of now?

It is very difficult to get a job nowadays since job openings are less. You have to be very competitive. Companies filter people since they have no other option. It is important to maintain a good percentage for that. Doing internships gives an edge over other candidates.

Is it important to study other software correspondingly?

I did a course on CATIA but these courses did not help me because industries are more concerned about the technical aspects. There are many softwares used by different companies and it is not possible to learn them all, although learning one software is advantageous.

Scope compared to IT industry

It depends on the domain you are working in. Initially, as a fresher you have to be ready to work and compromise on the salary.

What is your success mantra?

Do what you want to. Other people may discourage you but don't lose hope. Work on your interest, don't just dream about it.

Your message to KSITians

Enjoy your college life. Once you enter a company you lose your freedom but, study at the same time, know your limits.

AUTODESK WORKSHOP REPORT



An introductory session for all third semester mechanical engineering students was organised on 25th of September 2014 on 3D design challenge competition, a national level mechanical design competition by Mr. Vaisakh Sarma, who is leading the Education Expert Programme in India and SAARC.

Autodesk Education Expert programme is an initiative taken by Autodesk Pvt. Ltd in order to promote design and innovation among enthusiastic students and also connect with students from all over the globe and further enhance their skills. In this direction, the company provides free 3-year license of engineering and design software and certification programs.

If you don't aim high, you will never hit high.

The 3D design challenge

Team of Two/Three

Design Topic:

"PUBLICALLY SHARED MOBILITY BIKE"

The challenge is to submit a public mobility bike design, suitable for an average Indian personality (height and weight) for best ergonomic posture.



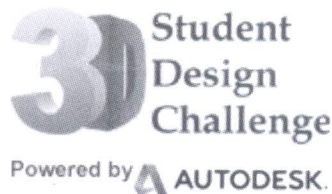
Seat and handle positions define the ride angle, which need to keep dignity by differentiating to normal

hard riding or exercising postures. Rider is not expected to use hand gloves, gripper tactile properties to support. Storage space for laptop, hand bag and lunch box (standards to be defined) is to be at front with clear visibility. Seat should absorb shocks on rough roads.

The mobility device could be powered/manual/hybrid with add on power pack. Alternative sources of energy are most welcome for a sustainable and green design. The transmission system could have a gear system to accommodate different drive torque requirement. The bike is intended primarily for rides in city and suburbs. The bike will be part of a public sharing system, where the bike will be dispensed from a kiosk for the subscribed user. This aspect has to be considered while designing the various features. Some of the issues being, space for parking in the kiosk, trouble free running and safe keeping.

Last date for registrations: 30th October 2014.(Extended)

For more information visit:<http://www.3dstudentdesign.com>



DID YOU KNOW?

• Straight from the horses' mouth comes from the 1920's meaning getting information directly from a person or place is your most reliable source. The information is obtained first hand, direct from the source or origin.

- A horse's age can be easily determined by examining the size and shape of his teeth. Your information about the horse's age would be correct and, straight from the horse's mouth.
- Wrong side of the tracks: To live on the wrong side of the tracks means to live on the less socially desirable part of town. In the 1800s, train tracks often divided a town into rich and poor sections. The rich people lived on the side of the track where the smoke from the trains did blow and the poor lived on the wrong side of the tracks where the smoke did blow and was also considered the dangerous side.
- The ghosts in Pac Man each have different behaviours: Red is the only one that will constantly chase you, Pink stays 32 pixels in front of Pac Man's mouth, Blue tries to stay in a fixed location and Orange is completely random.

Cowards only sin, brave men never, no, not even in mind.

ANOTHER LEAP TOWARDS A GREENER TOMORROW-FLYWHEELS

Flywheels have been used for thousands of years (e.g., in pottery wheels) and are still used in piston engines today. The basic design of a flywheel is a disk that rotates, sometimes at very high speeds, using conservation of energy to store surges from a power system and then release that power back as needed. In bikes or cars,

trucks and construction equipment, the flywheel is typically coupled with a continuously variable transmission (CVT) or hybrid transmission by electrical cables. During braking, elec-

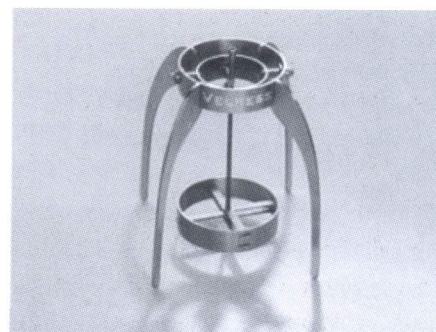


tricity is generated by an electric traction motor at the axles, which travels through the cables to charge the flywheel, spinning it up to 40,000 rpm or higher. Then, when the vehicle accelerates, the system works in reverse, so that less energy is needed from the combustion engine or from an electric/hybrid vehicle's batteries. Energy/fuel savings can be as much as 40 percent, and CO2 emissions are also cut significantly. Thus, the more a vehicle stops and starts, the better its fuel efficiency, and, unlike a battery, a flywheel never loses its ability to charge and discharge energy.

The Vekless Flywheel

Velkess flywheel technology developed by silicon valley inventor Bill Gray promises cleaner approach to flywheel systems and is the solution to cost effective energy storage. The Velkess flywheel (a new Kickstarter project called Velkess i.e very large kinetic energy storage system) is a more flexible energy storage device and has recently gotten underway to bring sustainable energy that meets the needs of the present without compromising the ability of future.

Gray's 'soft' rotor on the other hand is made of E-glass, operates in a vacuum and flexes in response to destabilizing forces therefore



reducing the amount of stored power lost to friction down to about 2 percent on a daily basis. E-Glass or electrical grade glass (used in the reinforcing phase of fiberglass) is not as strong as carbon fiber but can store up to 20 times more energy per dollar.

Like a cowboy's lasso, it gains stability as it rotates and according to the company, the energy on the rotor can be held in complete safety

The existing prototype flywheel floats on a high efficiency magnetic bearing assembly, can make or absorb 2 kW of power, and can store 0.5 kWh of energy. Gray needs to scale that storage capacity up 30 times to 15 kWh. That requires replacing the 25 lb flywheel rotor seen in the video with a 750 lb version.

This is the final piece of the puzzle for the completion of a fully working prototype which would pave the way for demo units which will be used to market the invention to potential buyers.

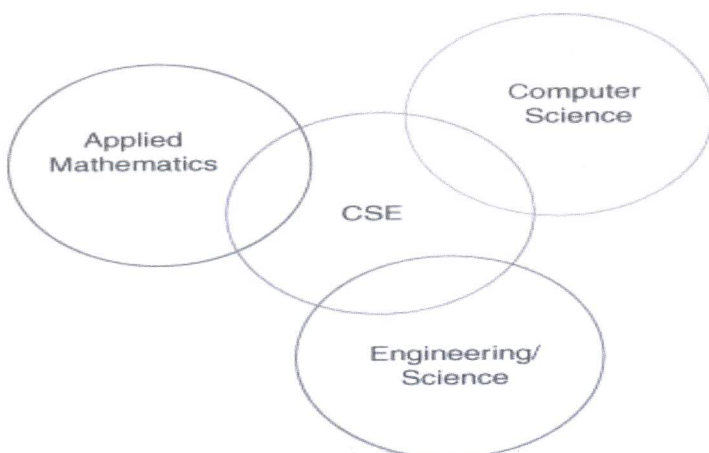
COMPUTATIONAL SCIENCE: THE THIRD MODE OF DISCOVERY!

Computation is now regarded as an equal and indispensable partner, along with theory and experiment, in the advance of scientific knowledge and engineering practice. Numerical simulation enables the study of complex systems and natural phenomena that would be too expensive or dangerous, or even impossible, to study by direct experimentation. Computational science and engineering (CSE) is a rapidly growing multidisciplinary area with connections to the sciences, engineering, mathematics and computer science. CSE focuses on the development of problem-solving methodologies and robust tools for the solution of scientific and engineering problems. Computer models and computer simulations have become an important part of the research repertoire, supplementing (and in some cases replacing) experimentation. Going from application area to computational results requires domain expertise, mathematical modeling, numerical analysis, algorithm development, software implementation, program execution, analysis, validation and visualization of results.

METHODOLOGY:

- High performance computing and techniques to gain efficiency (through change in computer architecture, parallel algorithms etc.)
- Modeling and simulation
- Algorithms for solving discrete and continuous problems
- Analysis and visualization of data
- Mathematical foundations: Numerical and applied linear algebra, initial & boundary value problems, Fourier analysis, optimization

With regard to computing, computer programming, algorithms, and parallel computing play a major role in CSE. The most widely used programming language in the scientific community is FORTRAN. Recently, C++ and C have increased in popularity over FORTRAN. Due to the wealth of legacy code in FORTRAN and its simpler syntax, the scientific computing community has been slow in completely adopting C++ as the lingua franca. Because of its very natural way of expressing mathematical computations, and its built-in visualization capacities, the proprietary language/environment MATLAB is also widely used, especially for rapid application development and model verification. Python along with external libraries (such as NumPy, SciPy, Matplotlib) has gained some popularity as a free and Copycenter alternative to MATLAB.

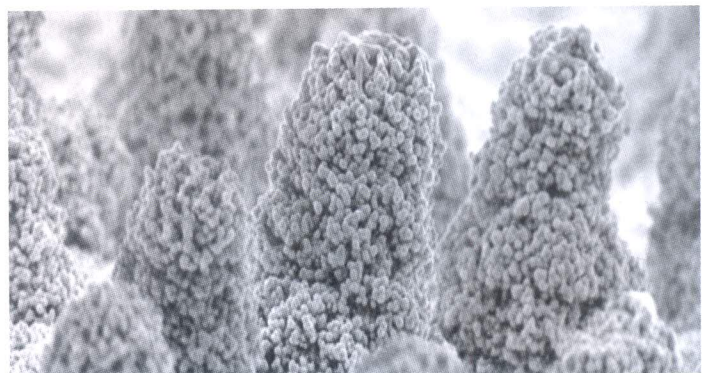


Various fields of application:

- ⇒ **Aerospace Engineering and Mechanical Engineering:** combustion simulations, structural dynamics, computational fluid dynamics, computational thermodynamics, computational solid mechanics, vehicle crash simulation, biomechanics, trajectory calculation of satellites
- ⇒ **Civil Engineering:** finite element analysis, structures with random loads, construction engineering
- ⇒ **Computer Engineering, Electrical Engineering, and Telecommunications:** VLSI, computational electromagnetics, semiconductor modeling, simulation of microelectronics, energy infrastructure, RF simulation, networks
- ⇒ **Industrial Engineering:** discrete event and Monte-Carlo simulations (for logistics and manufacturing systems for example), queueing networks, mathematical optimization
- ⇒ **Material Science:** glass manufacturing, polymers, and crystals
- ⇒ **Nuclear Engineering:** nuclear blast modeling, fusion simulations
- ⇒ **Petroleum engineering:** petroleum reservoir modeling, oil and gas exploration
- ⇒ **Physics:** Computational particle physics, automatic calculation of particle interaction or decay, plasma modeling, cosmological simulations

SOURCE: "Computational Science and Engineering Program: Graduate Student Handbook". cseprograms.gatech.edu. September 2009

Surface or technically known as substrate plays a major role in binding and preventing the loss or damage to the external, internal and complete failure of the system or component eventually. The surface needs to be thoroughly checked in prior to its usage and assessed accordingly. An engineering component usually fails when its surface cannot adequately withstand the external forces or environmental impact and the service conditions to which it is subjected.



Knowledge is a treasure, but practice is the key to it.

The choice of a surface material with appropriate mechanical, physical, chemical, thermal, optical, magnetic and electrical properties with sufficient resistance to friction wear, corrosion and degradation, is crucial to its functionality. Technological progress and manufacturing efficiency maybe constrained uniquely based on surface requirements for example, the fuel efficiency and power output of gas turbines or diesel engines are limited by the ability of key components to withstand high temperatures. So, improving the functionality of a existing product is one of the foremost aims of surface engineering. The economic benefits of surface engineering are enormous. According to a report in 2005, the value of the UK coating market was approximately 21.3 Billion Euros, and those coatings critically affect products with a value greater 143 Billion Euros. In brief, surface engineering is relevant to all types of products. It can increase performance, reduce costs and control surface properties independent of the substrate, offering enormous potential for – improved functionality; possibility to create an entirely new product; conservation of scarce material resources; reduction of power consumption and effluent output. Presently, research is going on in areas like- reducing the surface degradation in Naval Materials, improving the heat dissipation capacity in satellite launch vehicle., replacing stainless steel, artificial joints by composite coated in knee prosthesis and hip replacement surgery, Nano-coating for eye wear lens, Cladding techniques in thermal power plants, Solar Panels to achieve higher energy conversion efficiency and in many more areas.

DID YOU KNOW?

- To beat around the bush means to avoid answering a question or to approach something in a roundabout way. In the 1500s hunters hired people to called 'Beaters' to drive small animals such as birds, rabbits, foxes out of bushes so the hunters could get a better shot at them being careful not to drive the animals out into the open before the hunters arrived. They used their long sticks, hitting around the bushes rather than directly on them.
- John Glenn was not only the first American to orbit the earth; he was also the first person to eat in space. His meal? Semi-liquid applesauce, spaghetti, roast beef and bite-sized cubes of solid food that would often break into crumbs and float around the capsule, causing concern about damage to equipment
- If you drilled a tunnel straight through the Earth and jumped in, it would take you exactly 42 minutes and 12 seconds to get to the other side.

© & The Nobel Foundation Photo: Thomas Widenberg



The Norwegian Nobel Committee has decided to award the

2014 NOBEL PEACE PRIZE



Kailash Satyarthi and Malala Yousafzai

"for their struggle against the suppression of children and young people and for the right of all children to education."

As Dumbledore says in Harry Potter and the Half-Blood Prince:

"Age is foolish and forgetful when it underestimates youth."

"The terrorists thought they would change my aims and stop my ambitions. But nothing changed in my life except this: weakness, fear and hopelessness died. Strength, power and courage was born."

Malala Yousafzai is a Pakistani activist for female education, who is the youngest ever Nobel Prize recipient in any category. This young woman will grow up freighted with unimaginable challenges and elevated by her uncommon courage. She is known mainly for human rights advocacy for education and for women in her native Swat Valley in the Khyber Pakhtunkhwa province of northwest Pakistan, where the local Taliban had at times banned girls from attending school. Yousafzai wrote a blog under a pseudonym for the BBC, detailing her life under Taliban occupation, their attempts to take control of the valley, and her views on promoting education for girls in the Swat Valley.

"India has hundreds of problems and millions of solutions."

Kailash Satyarthi (born on January 11, 1954) is a human rights activist from India who has been at the forefront of the global movement to end child slavery and exploitative child labor since 1980 when he gave up a lucrative career as an Electrical Engineer for initiating crusade against Child Servitude. He has led the rescue of over 78,500 child slaves and developed a successful model for their education and rehabilitation. As a worldwide campaigner, he has been the architect of the single largest civil society network for the most exploited children, the Global March Against Child Labor, which is a worldwide coalition of NGOs, Teachers' Union and Trade Unions.

Kailash Satyarthi, was named on Friday, joint winner of the 2014 Nobel peace prize along with Malala Yousafzai.



Make in India is a great political pitch, it is an international marketing campaigning slogan coined by the Prime Minister of India, Narendra Modi on September 25, 2014 to attract businesses from around the world to invest and manufacture in India

The major objective behind this initiative is to focus upon the heavy industries and public enterprises while generating employment in India.

The highlights and purpose of Come, Make in India are-

The campaign, 'Make in India' is aimed at making India a manufacturing hub and economic transformation in India while eliminating the unnecessary laws and regulations, making bureaucratic processes easier and shorter, and make government more transparent, responsive and accountable.

The government emphasized upon the framework which include the time-bound project clearances through a single online portal which will be further aided by the eight-members team dedicated to answering investor queries within 48 hours and addressing key issues including labor laws, skill development and infrastructure.

This campaign basically gives hope to the unemployed to find a decent job if not big jobs as manufacturing leads to creation of lot of service sector activity. But India will have to make sure to focus on quality education rather than just skill development.

Here is the summary of the project and the prime reasons to invest.

Summary:

2.15 Million vehicles produced in 2013-14.

4th largest automotive market by volume, by 2015.

4 large auto manufacturing hubs across the country.

7% of the country's GDP by volume.

6 Million-plus vehicles to be sold annually, by 2020.

REASONS TO INVEST:

By 2015, India is expected to be the fourth largest automotive market by volume in the world.

Over the next 20 years, India will be a part of the big global automotive triumvirate.

Tractor sales in the country are expected to grow at CAGR of 8-9% in the next five years, upping India's market potential for international brands.

Two-wheeler production has grown from 8.5 Million units annually to 15.9 Million units in the last seven years. Significant opportunities exist in rural markets.

India's car market has the potential to grow to 6+ Millions units annually by 2020.

The emergence of large automotive clusters in the country: Delhi-Gurgaon-Faridabad in the north, Mumbai-Pune-Nashik-Aurangabad in the west, Chennai-Bengaluru-Hosur in the south and Jamshedpur-Kolkata in the east.

Global car majors have been ramping up investments in India to cater to growing domestic demand. These manufacturers plan to leverage India's competitive advantage to set up export-oriented production hubs.

An R&D hub: strong support from the government in the setting up of NATRiP centres. Private players such as Hyundai, Suzuki, GM are keen to set up an R&D base in India.

Tata Nano is a sterling example of Indian frugal engineering and is being positioned as a mobilizer of the young generation.

Electric cars are likely to be a sizeable market segment in the coming decade.

DID YOU KNOW?

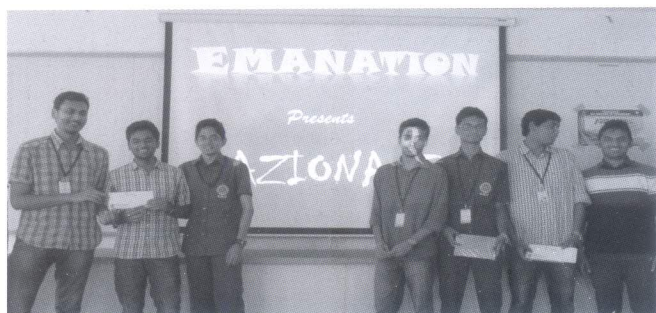
Get the sack:

To get the sack means to get fired. It may go as far back as the 1500s. It comes from a time when tradesmen carried all their belongings and tools around in a sack. When they were employed in a certain building they were able to leave their sack in a safe place or the boss's office. At the end of the day they were allowed to go pick up their own sack. If, at the end of the day, the boss was not pleased with their work, or felt they had not done a fair day's work for a fair day's wage he would literally "gave them their sack".

AZIONARE

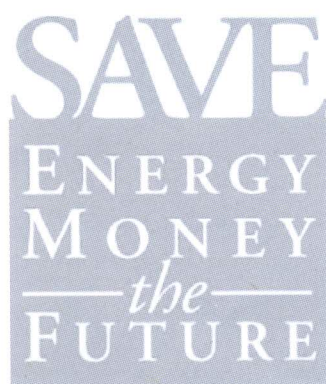
Team 'Emanation', after receiving an extremely warm response from the students for 'eQ: Emanation Quiz', came up with an all new event called 'AZIONARE' which was conducted on 17th September, 2014. The event was a team of two and over 245 teams took part in the event making it a highly successful one. It consisted of three rounds; First round was called 'Word Hippo', a crossword puzzle, where the participants were given 25 minutes to solve the puzzle. 40 teams were selected for the second round, which was called the 'A to Z quiz', a general knowledge quiz, which was well received by the participants. Six teams made it to the final round called 'Sell-Fie', which, as the name suggests, was a marketing round. The participants had to market and sell unique products given to them in a span of 2+1 minutes. This round, again, was highly entertaining and with the audience getting involved, it turned out to be an interactive one. Mrs Jalaja and Mrs Anuradha M V from the Basic Science and Humanities Department were called upon to judge the round. All six finalists put in their best efforts, and the judges awarded Abhiram J and Karthik M, of V Sem Mechanical, the first place and Pradyumna and Akshay, of V Sem Mechanical, the second place.

Overall, the event turned out to be extremely successful and team 'Emanation' is thankful to all students and teachers of K S Institute of Technology, for supporting and encouraging us to conduct Azionare.



Energy awareness "A step towards saving ourselves and our future"

"Earth provides enough to satisfy every man's needs, but not every man's greed"-words by Mahatma seems more appropriate for current scenario though he coined them decades ago. Man's greed is stealing beauty, possession, potential from the earth.



Earth's gifts in their purest forms such as water, air, sunlight, trees and forests are being destroyed ruthlessly by man. But he is failing to foresee his own destruction because of his high handedness. Wasting of available energy resources has pushed him to harness various other kinds of energy.

Water which is referred as 'Jeev Jal', one of the most important requirements for our survival is being wasted and is getting depleted just because of mere negligence of man. Even though 75% of earth is covered by water, only 3% of it is available as freshwater for human use. Unfortunately even that 3% is being wasted and polluted. 30% of total electricity across the globe is being produced using water. Electricity is wasted. We often forget to switch off lights, fans, refrigerators, ACs, computers, mobile chargers etc.. these habits lead to enormous wastage of electricity.

The KSIT SAE India collegiate club has taken an initiative to create awareness about the depleting conventional energy resources and encouraging the use of renewable energy resources like solar, wind and aims to impart knowledge about various methods to harness these resources. We don't want our future generation to live in darkness.

We request all the students to come forward, participate and make it a success, success in the sense create awareness. Spread this among your family members, friends. Several events are being planned creating a platform for you to render your work. The events that are planned towards this are:

- Short movie making on the same theme. We are planning to take this to bigger screens so that we can create awareness among larger masses.

- Planning to spread the awareness through posters and pamphlets.

Glimpses of AZIONARE

