Macht 2k15

Volume I, Issue IV
Department of Mechanical Engineering

LITEARTH
FESTA
Coming Soon

ALUMNUS TALK

LSM
The new kid on the block

A BRIMMING INSPIRATION

REJUVENATE YOUR SENSES

SPECIAL FEATURETTE
COMMEMORATING THE MISSILE MAN

And much more inside....
As the editorial team of our departmental magazine “Macht”, we feel overwhelmed to be a part of this for the 4th consecutive edition. The pleasure and the responsibility of making the departmental newsletter is unparalleled and is experienced by every other member of LSM alike. One of the challenges faced by us has been to constantly change and re-invent the magazine in order to appeal to a larger section of students and staff alike. With the magazine works now coming under the newly emerged “Literature Society of Mechanical (LSM)”, we feel proud to be a part of this. We’ll be making some vibrant announcements but more importantly you can make it to the LSM activities with your contributions in the form of articles, arts, paintings, photography etc... We will be making some exciting announcements which are aimed at tapping the talent of the students. And in this moment of warmth, we request your active involvement and participation in the LSM activities and contribute to the students of the department as well as yourself too. Your contribution is highly important to us since this whole initiative of both Macht as well as LSM has been to improve the skills and knowledge of students. If you intend to make a difference to the department and to the students, approach us and we’ll help you. There are a lot of entrepreneurs, businessmen, technical geniuses, innovative scientists hidden in our department who are yet to realize their potential. The role of LSM is here to improve your soft-skills. With the activities, events, workshops which have been planned to be put into action, your skills and confidence are bound to go higher. At this highly esteemed moment, we feel deeply obliged to thank our beloved Chairman Dr. M.V.Muthuramalingam, Honorable CEO Shri. M.V.M.Velmurugan, our respected Principal, Dr. N.Duraipandian, Head of the Department, Dr. G. Prabhakaran, staffs and advisors who have been very helpful, encouraging and supportive in this journey and much more to come. Their continuous support has made the expectations to rise and this has indeed aroused our motivation. Also, we thank our alumnus Mr. Raja Sundar Singh. J and alumna Ms. Anju R, at this moment, who put up Macht for the first time, and inspired us to carry it forward to this level.

**PROLOGUE**

**Literature Society, Mechanical**
FROM THE HoD’s DESK

Macht, the official newsletter of the Mechanical department of Velammal Engineering College, initiated first by our prodigious alumni, is now carried by the vigor of the Literature Society, LSM. Sincere congratulations to the student members to have taken it intriguingly, keeping in view, the prospects of the freshers.

To articulate on the department,
We have 38 faculties, 10 doctorates with different specializations, 5 experienced professors. Amongst this, 15 faculties are pursuing Ph.D. The dept. has been granted a sum of 30 lakhs for facilities and technical enhancements.

The department’s consistent placement record has been so evident. It is felicitous that the department has an official MoU signed with the Sundaram Clayton Ltd., a part of TVS Group. Also, from this academic year, ASME is a collegiate club as well, alongside SAE, ISHRAE and ENFUSE. Participation towards SAE events like BAJA, SUPRA, EFFICYCLE, and GO-KART is eye-opening.

Also, training for the GATE exam is carried out and also guidance towards career development is thrown light on. Apart from this, keeping in view the importance of profile building and research oriented guidance for the students, we have a team of doctorates who are Anna University recognized supervisors:

Dr. G.Prabhakaran (Prof. and Head)
Dr. S.Satish Kumar
Dr. M.Thiruchitrambalam
Dr. K Varartharajan
Dr. S.Sekar
Dr. A.Krishnakumari
Dr. D.Devika
Dr. R.Ganesh

“Departmental activities and programmes conducted are done with the benefits and requirements of the students in perspective”

DEPARTMENT MISSION

- IMPARTING QUALITY EDUCATION TO THE STUDENTS IN CORE AREAS WITH MORAL VALUES THROUGH OUR DEDICATED TEAM.
- PROMOTING RESEARCH AND DEVELOPMENT BY GIVING HANDS ON EXPERIENCE OF STATE OF THE ART FACILITIES.
- PROVIDING PLATFORM FOR THE STUDENTS TO EXPLORE THEIR INNOVATIVE AND CREATIVE SKILLS.
- PROMOTING ACTIVITIES TO CULTIVATE THE SPIRIT OF ENTREPRENEURSHIP TO THE STUDENTS.
- EMPOWERING THE STUDENTS IN ORGANIZING EVENTS TO GAIN EXPERIENCE IN TEAM WORK AND LEADERSHIP QUALITIES.
- PREPARING THE STUDENTS FOR THEIR ROLE AS ENGINEERS IN SOCIETY WITH AN AWARENESS OF ETHICAL, ENVIRONMENTAL, ECONOMIC, SAFETY AND QUALITY ISSUES.

DEPARTMENT VISION

PRODUCING COMPETENT MECHANICAL ENGINEERS BY IMPARTING QUALITY EDUCATION BLENDED WITH HUMAN VALUES, AS POTENTIAL CONTRIBUTORS TO THE INDUSTRIAL DEVELOPMENT OF THE NATION LEADING TO THE WELL BEING OF THE FUTURE GENERATION.
PROGRAMME EDUCATIONAL OBJECTIVES

- Progress professionally as a result of his/her ability to solve technical problems and to work in multidisciplinary teams on problems whose solutions lead to significant societal benefits.

- Demonstrate Professional Engineering competence via promotions and/or positions of higher responsibility or successful transition from the "traditional" Mechanical Engineering career path into business, government or education.

- Make scholarly contributions to the literature by publishing papers, applying for patents, delivering effective conference presentations, and contributing to leadership articles.

- Demonstrate a commitment through involvement with community and/or professional organizations and/or by making contributions in achieving society’s greater prosperity.

- Demonstrate the need for life-long learning via progress in career and/or successful completion of an advanced degree and/or industrial training course(s) and/or Engineering certification.

PROGRAMME OUTCOMES

- An ability to apply knowledge of mathematics, science and engineering
- An ability to design and conduct experiments as well as to analyze and interpret data
- An ability to design a system, component or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
- An ability to function on multidisciplinary teams
- An ability to identify, formulate and solve engineering problems
- An understanding of professional and ethical responsibility
- An ability to communicate effectively
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
- A recognition of need for, and an ability to engage in life-long learning
- A knowledge of contemporary issues
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- An ability to demonstrate knowledge / understand the engineering and management principles and apply these to projects as a member/Leader in a team to manage projects in multidisciplinary environments.
The orientation program for the freshers of the mechanical department was felicitously graced by, **Mr. S. ILANGO**, V.P-HR & TQM, Automotive Product Division (Sundaram Clayton Ltd.)

Not only grace, the auditorium was filled with an air of inspiration. His structured speech got hold of the attention, of one and all who were present.

He put forth 3 important questions, which he delineated later, beautifully. He framed it this way-

- What are all the opportunities, that the budding engineers can find ahead of them?
- What do the industry, expect in real time from the engineers?
- The last, but not the least is, how to crack it?!

Mr. Ilango articulated his prescience and clairvoyance when he started with the available opportunities. According to him, the Indian economy is going to be burgeoning in the forthcoming 25 years. He had enough evidences put forward, supporting this statement. The average age here, is around 29, in contrast to the countries of the same caliber and status, whose population corresponds to an average age of more than 35. This obviously means, the globe is going to encounter skilled man power, predominantly from here, in the years to come. The GDP is expected to increase by about 8%. This opens to an eclectic scope, particularly in the mechanical field, according to him.

He then slickly moved on to explain on what the industry expects from the grads. The primary desirable qualities are,

- Being passionate, a complete possession of vigor.
- Sound in rudimentary and fundamental concepts.
- Communication skills – very important.
- The predilection for learning and exploring.
- Out of the box, thinking.

Precisely, it can be inferred, one needs to be a real engineer. To support this, he pertinently cited the famous Darwin’s theory of “The survival of the fittest”.

He then delineated on the important aspect. How to achieve this? This is what he says:

- The most important being laudable character and attitude towards fellow beings.
- Next is to be physically fit, and conscious over health.
- Suffice technical knowledge and skills is again an important criterion.
- Practical and hands-on training, the related exposure and the skills in the same.
- Equally important are the emotional skills, which helps holding all the above and keep going.

He stressed on how important practical exposure is, and went on to suggest that doing internships, in plant trainings are so crucial. Being very active and intriguing, towards participation is important too.
AN INTERVIEW WITH Mr. S. ILANGO

What is the core industry scenario outside India?

The scenario outside India is encouraging. Companies like BMW are putting in efforts on research and development to ensure a better world.

More automation results in less man-power resulting in less jobs. Your take on that?

In order to grab market share, your products have to both quality and be cheap. So, automation has helped us achieve that.

What are the qualities you look for in a fresher/graduate?

1st thing we look for is Time management. First one under this is prioritization. If you don’t know where you are going to be in 5 years, you have a lack of perception. The candidate should have internal motivation and drive to succeed. Myself coming here, I informed them no mementoes, nothing. What makes me come here is Motivation. I want to make a difference to the young people here. Work hard. There is no substitute for hard work.

You need to form a matrix where you need to categorize under the (Important-Not Important); (Urgent-Not Urgent) categories.

2nd thing is energy levels. If you are not energetic enough in 20s it’s really hard.

3rd one is fundamentals. We test how strong you are in your basics and root level knowledge.

4th thing is your clarity in thinking and communication skills. Your clarity in thought interprets your ability to convey things to others.

How should one work under the matrix method sir?

You need to do the urgent and important things first. Secondarily, most of the people do the unimportant urgent work. But you need to do the Important Not-urgent work. That’s how set steps towards your future.

GALVANISATON OF THE YOUNG MINDS!

Velammal is always keen on making sure that the students newly inducted into the department are clear about where they stand and what they should take up ahead and also the opportunities available before them. In this prospect, orientation programs are being organised and for this academic year 2015-16, the orientation programme was conducted for the Mechanical Engineering students. The welcome address was delivered by Dr. S.Satish Kumar, Professor. This was followed by an inspirational speech by the special guest of the day Mr. S.Ilango, V.P-HR & TQM, Automotive Product Division (Sundaram Clayton Ltd.). This was followed by a refreshing and vibrant speech from our alumni Mr. Raja Sundar Singh. J (Sundaram Clayton Ltd.) & Mr. Sibimaran. This was followed by a special address from Dr. G.Prabhakaran (Professor & Head of Mechanical Engineering Department) about the department and Dr. D.Devika, Professor, who spoke about the curriculum on offer. The college’s revelling placement statistics was brought into note by Asst. Professor, Mr M.Deepak Kumar. Mr Vinoth, Asst. Professor, then briefed the gathering about the plethora of opportunities available in higher studies and research opportunities.
Dr. A.P.J. Abdul Kalam became the 11th president of India in 2002. It’s interesting to note that Dr. Kalam had earned the title of “The People’s President”, during his reign of 5 years. What made him the people’s president? Kalam was easily recognizable with his amiable smile and trademark hairstyle. But beyond that, he took his role as a President beyond its constitutional definition. He always made it a point to consider welfare of the nation over politics. He went on tours of the nation motivating members of the public, especially students to participate in nation building. Dr. Kalam made everyone feel special. He made sure he replied himself to all letters addressed to the Rashtrapati Bhavan during his tenure.

Dr. Kalam began his career as a scientist at the DRDO (Defense research and Development Organization). As a part of the INCOSPAR committee, he worked under Dr. Vikram Sarabhai, the renowned space scientist. He moved to the ISRO (Indian Space Research Organization), where he made significant contributions as Project Director to develop India’s foremost Indigenous Satellite Launch Vehicle- SLV- III, which successfully launched the Rohini Satellite in the near earth orbit in July 1980. It was an important development in India’s ambitions as it marked India’s foray into the exclusive Space club. He was the paramount personality in the evolution of ISRO’s launch vehicle programme, working on the PSLV configuration.

He worked for two decades at the ISRO, mastering the launch vehicle technologies following which he worked on developing the Indigenous Guided Missiles at DRDO as the Chief Executive of Integrated Guided Missile Development Programme (IGMDP). Dr. Kalam played a significant role in developing major missiles such as AGNI, which was an intermediate range ballistic missile and PRITTHVI, the tactical surface-to-surface missile and also in developing indigenous capability in critical technologies through networking of multiple institutions. He ensured that his research on missiles was turned into development of strategic missile systems resulting in the Pokhran-II Nuclear tests in collaboration with the Department of Atomic energy which resulted in India getting recognized as a global nuclear power.

During his research on missiles, he developed a new composite material, which is similar to fibre, weightless yet very stable and hard to break. The then-contemporary carbon based prosthetic legs were too heavy which Dr. Kalam replaced by using the composite material he had created and made a light weight prosthetic legs for them. He described this experiment made him much more satisfied than any other missions he had been involved in. Dr. Kalam in association with Dr. Soma Raju, a cardiologist, developed a low cost coronary stent namely the “Kalam-Raju stent” in 1998. They followed it up with a rugged tablet PC for rural healthcare namely the “Kalam-Raju Tablet”.

Dr. Kalam has a unique honour of receiving honorary doctorates from 30 universities and institutions. He has been awarded the most coveted civilian awards - Padma Bhushan (1981), Padma Vibhushan (1990) and the highest civilian award Bharat Ratna (1997), as well.
AN INVIGORATING ODYSSEY

1931
- Born on Oct. 15, 1931
- Completes Aerospace Engineering in Madras Institute of Technology

1960
- Joins DRDO as a scientist
- Project Director of India’s 1st Satellite launch vehicle SLV - III

1979
- Deploys the Rohini Satellite in orbit
- Receives the highest civilian honour Bharat Ratna

1997
- Conducts the revolutionary Pokhran II nuclear tests
- Develops India’s first coronary stent namely Kalam-Raju Stent

1998
- Elected as 11th President of India in 2002 and goes on to be acclaimed as The People’s President
- Missile Man sets off to space Forever

AN ODE TO THE MISSILE MAN
“He was not the hero we deserved but the hero we needed”

A young Kalam from his college days

A budding Kalam interacting with Dr. Vikram Sarabhai

Doing what he does best

Dr. A.P.J. Abdul Kalam addressing the Nation on the eve of Independence Day-2005

A relaxed Kalam ahead of launch of Agni Missile

Books never had a better companion

Kalam all dressed up during the Pokhran tests

In Su-30 MKI fighter aircraft

Bharat’s Ratna

Great Minds at work

Courtesy: Quora
 HOW A GLORIOUS CAREER HERALDED

If you’re reading this, it's fortuitous that you're a Velammalian. VEC is an institution, working for the student community, revolving around the students. This aspect, eventually helped me through, to be a part of SUNDARAM CLAYTON, Ltd., I’d like to share a few ideas, out of my experience that helped me crack this feat.

First of all, RESOURCE MANAGEMENT. When there is demand of 40000 units and you have a machine that is capable of handling 30000 units per day, what would you do? You can’t buy two machines and produce 60000 units per day. This is where an engineer’s role comes into play. You are the one who gets to optimize the work. Never ever start blaming things. Don’t give excuses. Once you start giving excuses you’ll end up in failure.

DAILY WORK MANAGEMENT- This is of real importance. Myriad of droplets, make an ocean. Similarly, every day, if you can ensure some constructive work, fitting in works into idle times, it’s sure that you go places.

FOLLOW THE SYSTEM- a system is always a proven one, and that’s why it is implemented. Trust the purpose, get along with the system. To be precise, if you want to crack your semester exams, with ease and high grades, follow the system of internals and other such stuff. Towards the end, you will find it easy.

BENCHMARK HIGH: Never settle for less. Aim high. Benchmark high. That will drive you to do things, efficiently and scrupulously. Last but not the least, TEAMWORK, is very important. Deliberation towards participation is again an expected quality. That's how it works- knowledge intertwined with wisdom and ferventness takes you places.

-Mr. Raja Sundar Singh J Sundaram Clayton Ltd. Alumnus, VEC

THE HUNGRY TIDE- Amitav Ghosh
A SCRUTINY

It would do well to start this off by saying that I like vivid imagery a lot words that pull you into a different world, that make you smell and feel a new place. “The Hungry Tide” is a literary piece of work, most definitely not a light read, but it is so good that you do not care much for anything else when you are reading it. And that is an understatement. This novel is set in the Sundarbans, the tide country, where life is unusual, modified to suit the eccentric geology of the place. It primarily deals with a translator/businessman Kanai Dutt, Indian-American cytologist Piyali Royband, a fisherman of the Sundarbans, Fokir. A beautiful tale that explores a wide range of emotions and people.

-Deepika.V, II Year Mechanical
MASTERS ? MASTER IT!

Velammal Engineering college to University of Warwick, United Kingdom- A long journey indeed. Let me share a few experiences, that did drive me during this journey.

The fuel for the journey is your determination. Supporting factors to mention a few are, CGPA of 7.5-8, good academic record, no history of arrears, co-curricular achievements, projects, knowledge you possess, theory to practice.

My journey actually started with SAE tier-1 events. Failures marked the beginning of my journey, but nevertheless, as convention says, they were my stepping stones. They stepped me up to a level, that I became the Student Secretary of the club itself, during my final year. The essence is that, you should not keep view of the results. Instead, put in maximum efforts. Interns, In plant trainings, projects are crucial.

Coming to higher studies, you are free to go to anywhere in world. Engineering (or) Management (or) Engineering with Management are 3 wide streams. You have to begin preparation in 3rd year so that you can write the exams in the 4th year.

Few important criteria for masters abroad:

- SOP (Statement of Purpose)
- LOR (Letter of Recommendation)
- Profile
- GRE score
- TOEFL/IELTS
- Foreign languages (for countries like Germany)

Still it all depends on the requisites pertaining to the university. But these are a few common ones.

Eventually, My journey was possible with a seven-lakh-scholarship. That's very important. A top notch university, with scholarship- that's where you should aim at. Best wishes.

-Mr. Sibimaran
 University of Warwick, UK
 Alumnus , VEC

“Success is indeed elusive. Don’t evade but empower your own senses.”

Art by: Gadikota Enavamshi, IV Year Mech

MOMENT OF PRIDE

Kishore Khanna of batch 2010-2014 cracked into IIM-Ahmedabad and Mohan Raj of the same batch cracked into IIM-Bangalore.

Shateesh Ram Photography
III Year, Mechanical
**SOMETHING BIG FROM SOMETHING SMALL**

*Can you imagine?*

- A plastic sheet on the top of a car producing enough electricity, using sun light, to power the car!
- Producing a full scale engineering component by simply burying a tiny model of the component in a box of sand!
- A Bionic device, slightly bigger than common fly, to track a dreaded terrorist and kill him/her specifically without causing any harm to the people nearby!
- Scientists and Engineers believe that such amazing developments are possible because of Nano Technology.

A nanometre is 10⁻⁹ metre. A sheet of paper is about 100,000 nanometres thick; a single gold atom is about a third of a nanometre in diameter. Dimensions between approximately 1 and 100 nanometres are known as the nanoscale.

Nanotechnology is the understanding and control of matter at dimensions between approximately 1 and 100 nanometres and this is an interdisciplinary field involves imaging, measuring, modeling, and manipulating matter at this length scale. Nano materials exhibit unusual physical, chemical, and biological properties. These properties are different from those of bulk materials which we are using today. Current manufacturing processes start with bulk material, for example, a steel rod or an aluminum ingot or polycrystalline silicon and then material is removed to produce required engineering component. In the near future engineers will be able to produce components by assembling the required atoms and molecules.

It began in the year 1959, Nobel laureate Prof. Richard Feynman proposed that it will be possible to manipulate and control individual atoms and molecules. After a nearly a decade while carrying out research in the field of ultra-precision machining, Prof Norio Taniguchi coined the term nanotechnology. In the year 1981 scanning tunneling microscope was developed and individual atoms could be seen for the first time.

*How will the role of a Mechanical Engineer change in the next 20 years?*

According to the American Society of Mechanical Engineers, during the next 20 years the Mechanical Engineers will be called upon to develop solutions for various fields, such as water management, clean energy, environmental management, agriculture, aeronautics and medicine. To achieve this they will have to use Nano, Bio technologies and Applied Chemistry.

*What you can do learn Nano Technology?*

- Read popular articles on Nano technology.
- Attend symposiums, workshops and conferences.
- Join with ME students and carry out part of their project work.
- Choosing the elective subject “Fundamentals of Nano Science and Technology” during the final year
- Choosing a final year project work which is related to Nano Technology.

*Dr. M. THIRUCHITRAMBALAM*

PROFESSOR, DEPT OF MECHANICAL ENGINEERING

---

**FUN FACT**

Nanomaterials are created by precisely controlling structure at nanoscale dimensions to produce new materials.
It always seems impossible until it is done. I’ll share my interview experience of TVS and articulate few tips to prepare for an interview. I went for the day one of the interview process with lots of expectation as it was my first core company. Really half minded throughout the PPT session and excited to know about the test process. Written test has a series of seven rounds consisting of 250 questions in 70 minutes includes verbal, autonyms, synonyms, logical reasoning, emotional stability. Eighth round is technical round which consists of fifty questions in half an hour. It all started by the campaign of TVS placed seniors last year. They addressed third year class which arose the fire inside me.

Once the test was over we had break for 5 hours. I was confident on my performance but the thing is the test happened between the best of the bests of various colleges. HR announces the results. I was very happy that I was selected for next round. Technical and HR round were on the next day.

Actually speaking I didn’t read any new things on that day. I just focused on things that were on my resume. I slept for around 6-7 hours.

Some of my technical interview questions are as follows, which as you can see are simple and test your core knowledge and deep understanding of the subject:

- Tell me about yourself
- About projects
- What is Water hammer effect?
- What is die casting?
- HCDC & CCDC
- What is press tool?

- What are the considerations you make while designing stripper plate
- Calculation of tonnage of a press machine
- What is CMM?
- Which is better—Progressive or compound tool?
- What is meant by blow modeling?
- Stress-Strain curve
- About Jigs and Fixtures
- Explain about finishing process
- About in-plant training and internships

HR Questions

- Which field are you interested to work with design, production, procurement, manufacturing?
- Your strength and weakness
- What is the one thing you want to excuse from your life?
- Where do you see yourself after 5 years?
- How long will you work for us
- Are you willing to work in night shifts?
- Are you willing to work anywhere in India

Eventually I was informed, I got the accolade of the job offer. Also my batch mate RAMESH BALAJI shared a similar experience to have reached the same destiny. We would together say, Be bold, feel confident. 90% of the questions being from the area of interests, its essential that you are clear with your resume, just like we did. Best wishes.

-LOKESH. G , IV YEAR, MECHANICAL ENGINEERING
BOND GRAPH MODELLING

Modern Engineering system requires more precision in finding the solutions for any hectic problems in design. For this, traditional classical techniques have been adopted so far in the engineering system design concepts. But this may not be possible for the non-linearity conditions in the structure or boundary or the loading conditions. For the betterment, we found advanced engineering tools namely, Finite Element Analysis, Fuzzy logic, Fuzzy FEA, Artificial Neural Network, Genetic Algorithms and so on. But yet we have the limitations with these tools to apply in dynamical systems which are operated with various energy conversions. For an example, A mechanical lift pad operated with an hydraulic pump and an induction motor having a microcontroller is being controlled for various load and speed conditions, is having more influencing parameters both as an input and output. In this case, a dynamic analysis which shows the influence of m number of input parameters to the n number of output parameters is an indispensable requirement for a precision system. For such an analysis, the entire system has to be brought in to one roof of common platform i.e. the entire system has to be converted in to an energy form through which the above analysis could be achieved. Converting the entire system having various engineering tools to a common energy equation can be done by Bond Graph Theory. Bond graph theory provides such an effective methodology of understanding the entire system.

Bond graphs are a domain-independent graphical description of dynamic behavior of physical systems. This means that systems from different domains (i.e. electrical, mechanical, hydraulic, acoustical, thermodynamic and material) are described in the same form (energy flow form). The basis is that bond graphs are based on energy and energy exchange. Analogies between domains are more than just equations being analogous: the used physical concepts are analogous.

Bond-graph modelling is a powerful tool for modelling engineering systems, especially when different physical domains are involved. Furthermore, bond-graph sub models can be re-used elegantly, because bond-graph models are non-causal. The sub models can be seen as objects; bond-graph modelling is a form of object-oriented physical systems modelling. Bond graphs are labelled and directed graphs, in which the vertices represent sub models and the edges represent an ideal energy connection between power ports. The vertices are idealized descriptions of physical phenomena: they are
concepts, denoting the relevant (i.e. dominant and interesting) aspects of the dynamic behavior of the system. It can be bond graphs itself, thus allowing hierarchical models, or it can be a set of equations in the variables of the ports (two at each port). The edges are called bonds. They denote point-to-point connections between sub model ports. When preparing for simulation, the bonds are embodied as two-signal connections with opposite directions.

Furthermore, a bond has a power direction and a computational causality direction. Proper assigning the power direction resolves the sign-placing problem when connecting sub models structures. The internals of the sub models give preferences to the computational direction of the bonds to be connected. The eventually assigned computational causality dictates which port variable will be computed as a result (output) and consequently, the other port variable will be the cause (input). Therefore, it is necessary to rewrite equations if another computational form is specified then is needed. Since bond graphs can be mixed with block-diagram parts, bond-graph sub models can have power ports, signal inputs and signal outputs as their interfacing elements. Furthermore, aspects like the physical domain of a bond (energy flow) can be used to support the modelling process. Bond graphs were devised by Professor H. Paynter at Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts, U. S. A. as early as 1959. His former Ph. D. students Professor Karnopp, Professor Margolis (University of California at Davis) and Professor Rosenberg (Michigan State University, East Lansing, Michigan) have elaborated this graphical model representation into a methodology.

An excellent exposure of bond graph modelling can be found in the highly recognized textbook of Karnopp, Margolis and Rosenberg of which the fourth edition was published in December 2005. Readers who quickly want to become familiar with the concepts of bond graph modelling and who are looking for a brief introduction are referred to the 28 pages Introduction to Physical Systems Modelling with Bond Graphs by J. F. Broenink. Finally, bond graph modelling is supported by a number of advanced modelling and simulation software packages. A survey compiled by A. Samantaray is available at www.bondgraphs.com/software.html

Dr. S. RAMESH BABU
ASST. PROFESSOR
DEPARTMENT OF MECHANICAL ENGINEERING

DID YOU KNOW???

A small motor that has an uneven or unbalanced weight on it's output shaft is commonly found inside mobile phones that offer vibration mode. When this motor rotates, the rotating uneven weight on the output shaft causes the mobile phone to vibrate. Similar mechanisms are also found in gaming devices such as Play stations, Dual shock, XBOX and Wii controllers.
WONDER – R.J.Palaccio
A SCRUTINY

When does a work that is conventionally classified as children’s literature transcend those boundaries? When it is endearing? When it deals with questions that adults grapple with? Whatever it is, I can definitely tell you that “Wonder” by R.J.Palaccio is one of them. Narrated in a lucid manner, from different points of view, this novel is basically about August Pullman, a boy with birth defects. But then, will you always define such a person as “a boy with birth defects”? How does he see himself? How does he see the world? How does his family deal with a different kind of everyday life? Are we all defined by what we see in the mirror? Does who we are as a person, matter? The novel moves from being a description of Auggie’s life to a silent observer of different people, their choices and the way they deal with things. A lot of things in this book will make you smile, look at your own life critically, and although my description might be gloomy, the novel is truly uplifting.

EXCELLENCE IN SPORTS

The basketball team of the department of mechanical bagged the third place in the zonal, this time. Its also felicitous that mechies are the runners up in chess as well.

YOGA FOR THE YOUNG BEGINNERS

As the ancient Indians have demonstrated a thorough realization of reality through ancient texts, so did they award us with a life style full of scientific methods and one such method is yoga. yoga engages in elevating human potentials. Ancient text like Yoga Sutra, Hatha Yoga Padiyaka and Thirumoolar Thirumanthiram formulated yoga in eight stages.

<table>
<thead>
<tr>
<th>Stages</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yama</td>
<td>Principles of life</td>
</tr>
<tr>
<td>Niyama</td>
<td>Self-cleanness</td>
</tr>
<tr>
<td>Asana</td>
<td>Meditative Alignment</td>
</tr>
<tr>
<td>Pranayama</td>
<td>Energy utilization</td>
</tr>
<tr>
<td>Prathyara</td>
<td>Chakra meditation</td>
</tr>
<tr>
<td>Dharana</td>
<td>Ultimate Inward journey</td>
</tr>
<tr>
<td>Dhayana</td>
<td>Ultimate consciousness</td>
</tr>
<tr>
<td>Samadhi</td>
<td>Ultimate Freedom</td>
</tr>
</tbody>
</table>

The most important pieces of equipment you need for doing yoga are your body and your mind.

- Rodney Yee
Vinyasa means "breath-synchronized movement." and Vinyasa yoga is a series of poses that will move you through the power of inhaling and exhaling. Vinyasa movements are smoothly flowing and almost dance-like, which explains why it is sometimes referred to as Vinyasa Flow or Just Flow.

Like all styles of yoga, Vinyasa has both mental and physical benefits. Physically, sweat expels toxins and re-energizes your body. Mentally, the synchronized breathing relaxes your mind and helps to release any blockage of energy flow throughout your body.

Vinyas A

Vinyas B

Virabhadrasana

Sarvangasana

Sirasana

Nadi Suddhi

Strengthen your shoulders, arms, legs, and ankles and back.
Opens your hips, chest, and lungs.
Improves focus, balance, and stability.
Encourages good circulation and respiration.
Stretches your arms, legs, shoulders, neck, belly, groins, and ankles.
Energizes the entire body.

Stimulates the thyroid and parathyroid glands and normalizes their functions.
Strengthens the arms and shoulders and keeps the spine flexible.
Nourishes brain with more blood.
Stretches heart muscles by returning more venous blood to the heart.
Brings relief from constipation, indigestion, and varicose veins.

Stimulates the thyroid and parathyroid glands and normalizes their functions.
Strengthens the arms and shoulders and keeps the spine flexible.
Nourishes brain with more blood.
Stretches the heart muscles by returning more venous blood to the heart.
Brings relief from constipation, indigestion, and varicose veins.

Excellent breathing technique to calm and center the mind; Works therapeutically for most circulatory and respiratory problems; Releases accumulated stress in the mind and body effectively and helps relax; Helps harmonize the left and right hemispheres of the brain; Helps purify and balance the nadis, through the body; Maintains body temperature.
Amzen, the industry we visited produces various kinds of automobile parts by aluminium die casting method as its main operation of manufacturing. The clients of that company are Mahindra and Mahindra, Renault and many other as the third party (indirect dealership). We were taken to the industry and started with the arrival section where the raw material (aluminium) comes there and the principle used there is FIFO i.e. first in first out which means the material came first should be dispatched first.

The raw material is then feed into the heater where the temp is maintained at the melting point of aluminium and is let to melt the raw material, once it melts the molten metal is poured into a vessel and taken to the next section. In the next section the molten metal is separated from the slag by adding chemicals and the slag is formed as a layer at the top and it’s removed manually.

Once the molten metal is separated from the slag it is feed into the casting machine where the dies are used which are made according to the client requirement and then the product is formed and sent to the finishing area where the die casted product undergoes buffing and finishing is done by machines.

It is then sent to the checking section where the cast product is undergone many test to find defects and if it is fine it is sent to the packing section and if not its rejected and kept aside.

The experience of visiting AMZEN industry was great. The organization has a good work culture, great minds and high quality of work too. We learned a lot about the manufacturing process carried out. Automation is the key. Labor work is highly optimized. It is the need of the hour.

-Saketh.S.V  
II Year, Department of Mechanical Engg.

INHERENT COGNIZANCE!

Assignment: About how metallurgical equipments are manufactured in DANIELI China.

The company’s production team is divided into Planning or UPP, Time & Method Department or UTM, Machining, Carpentry, Assembly Workshop 1 (AWS1), Assembly Workshop 2 (AWS2), Assembly Workshop 3 (AWS3). Also, they have a QC team, MR or Material Request Team.

UPP team is further divided to GS, GP team. UPP does all the planning for producing the Equipment. They do works such as assigning which machine to which equipment, by what date the equipment must be ready for shipping also they coordinate with MR Team to order the Material. Initially, when the raw material arrives, the QC team checks the material in the R&D Lab by performing various tests such as impact test, bending test, tensile test, hardness test, etc. and report it to QC Team. If the material doesn’t pass any of those tests, they reject the material and send it back to supplier asking for new material.

Carpentry or welding is where the raw material in form of steel plates is cut into required shapes by using gas cutting or plasma cutting machine. After that the parts are assembled and welded together. Some parts must be heat-treated. For Heat treatment, they use an industrial furnace.
manufactured by Crefin. Not all parts can be heat treated within the plant because the cost is higher, so there are some companies, which exist especially for heat-treating the parts, according to standards provided by the company. After heat treatment, the parts are cleaned to remove rust by shot blasting and are painted with the color, specified by the customer.

UTM team, they assign the time, method for the processes to be carried out. For example, to produce a roller of very accurate dimensions we need exact tool inserts, tools, CNC program, etc. UTM assigns the operator to use a particular tool with tool insert, so that dimensional accuracy is achieved, which also in agreement with the company standards and customer requirements. Machining team controls all the machines in the company. They control all the operators and machines used, like suggesting which machine to be used.

Assembly Work Shop 1 and 3 are used to assemble all the new parts together before shipping. Assembly Work Shop 2 or Refurbishment Work Shop mainly for refurbishing the old equipments after checking dimensions, paint, damaged parts, hardness, etc. ASW 1 is used for assembling parts weighing below 100 T. ASW 3 is used for assembling parts above 100T. After assembling the parts, they contact QC department for one final inspection. If the equipment passes the inspection, the shipping department will take care of packaging and delivery. If not the drawing is scrutinized and necessary changes will be made.

-Yashwanth Kutti.P

III Year, Department of Mechanical Engg.

---

Inceptinnov

Inceptinnov is a platform that intends to infuse life into your ideas, however crazy, amazing, innovative they may be, in an effective and creative way that is beneficial to all. Here we put our efforts and funds into your ideas and make them possible. If you think you have an idea that is good enough to get us into you, approach us. It might have been out-rightly rejected as having no feasibility. However, if YOU believe that your project has a hidden potential that can make the world better, this is the right place.

An idea/project can be put like this. It can be as simple as porting a product that is designed for right handers to suit left handers. Your project must be something that makes the end user feel special. Example, a project has its own goal, deadline etc. which is to be fulfilled in order for the project to succeed.

Backing your idea means more than just funds to us. It's our way of contributing something to the world. Something that means we've made life better for the people around us.

For a constructive venture, Contact info@inceptinnov.co.in
inceptinnov@gmail.com

Visit us www.inceptinnov.co.in

---

PARAMOUNT INTELLECTUALS

<table>
<thead>
<tr>
<th>YEAR &amp; SEC</th>
<th>STUDENT</th>
<th>CGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - B</td>
<td>KIRAN KUMAR S</td>
<td>9.28</td>
</tr>
<tr>
<td>II - B</td>
<td>DANUSHKOTTI G</td>
<td>9.08</td>
</tr>
<tr>
<td>III - C</td>
<td>RAMESH BALAJI D</td>
<td>9.15</td>
</tr>
<tr>
<td>IV - B</td>
<td>KARTIK R</td>
<td>9.25</td>
</tr>
<tr>
<td></td>
<td>VIGNESHWARAN M</td>
<td>9.25</td>
</tr>
</tbody>
</table>

"I am not a product of my circumstances. I am a product of my decisions."

-Stephen Covey
Conducted and organized by the Southern Section of India SAE (SAEIIS.org), had a very big turnout this time at the Nationals held in Vellore VIT campus. Registration took quite a while and then the inauguration started, VIT chancellor and many others gave speech. Most notably chief advisor of late Dr. A.P.J. Abdul Kalam, Mr. Ponraj’s speech was very inspiring. Then our Competition on Business plan Started. Being in the nationals is a whole different scenario, after crossing college level, divisional level and finally being in nationals, we knew that the competition would be hard and more refined. 12 teams arrived for a same cause, same notion, and same aim – to win the Number one position and sell their business properly. One by one, teams started rolling out and we had our session of 20 min in the second half, after lunch. We were really prepared, ready to roll. Just in time, we went to the stage, loaded our files and started the presentation and gave them a splendid Presentation Communicatively. The judges expressed that our Communication skills were exceptional but our content was not satisfying. So after giving our best, we sat down and realized all other teams reports, they had different topics from eco-friendly to profitable projects. So overall it was a very great experience nonetheless which gave us the motivation to come again and to win the trophy next time. Main points to ponder on this competition from our learnt experience are to Read the rules 100% with caution to not miss any points and to always have your head up and give a neat performance. (Other participants were found to be a little less on this side). Final thoughts, Since this was an SAE event, Students from various College such as CIT, VIT, SSN, and lot more have participated, mainly CIT and VIT had bulk entries into many competition, but students from VEC where pretty much negligible or none. There were Surprise events, where students could register on spot and most of the events where core mechanical oriented like Sheet metal, machining and etc. All these competitions will help us greatly as a practical experience and also in building a great profile. Never miss them.

– Shyam Karthik.K

III Year, Department of Mechanical Engg.

MAKE IN INDIA

Prime Minister Narendra Modi launched the “Make in India” campaign on September 25, 2014. It is an ambitious campaign which aims to turn the country into a global manufacturing hub. Make in India is an initiative program of the Government of India to encourage Multinational Companies and domestic companies to manufacture their products in India. The launch comes on the eve of Mr. Modi’s first visit to the US as prime minister. Under the program, the government...
has identified 25 key sectors like in which India has the potential of becoming a world leader. The Prime Minister said that, it is important that the purchasing power of an individual is enhanced, as this would further boost demand, and hence spur development, in addition to benefiting investors. The new Government will take necessary initiatives for skill development to ensure that skilled manpower was available for manufacturing.

-Arya Girish
III Year, Department of Mechanical Engg.

BIG DATA IN MANUFACTURING

Big data have significant potential to create value for both business and consumers. Big data manufacturing is an evolving term which is characterized by 3Vs, namely

- Extremely volume of data
- Variety of types of data
- Velocity at which the data must be processed

The volume of data may be in the order of megabytes, gigabytes, terabytes, petabytes. The variety of data may be like database, photo base, photo web, video, mobile, unstructured etc. The velocity of data may be batch, periodic, near real time. In turn big data requires too much time, cost to put it into traditional relational database for analysis, new approaches to store and analyze data have emerge that rely less on data schema and data quality and this requires a main platform like Hadoop to store large data in and across the world. The various fields were big data are into daily practice are manufacturing sector were machine to machine communication is possible, buildings, auto motives: theft of cars (prevention), auto routing, tracing, data mining, etc. The data collected from these sources is the main asset of BD.

Big data when used in cars which is an essential part of human’s life “ cars will be able to speak, they will be able visualize things and propagate on its own”. They would provide a wealth of information that would be useful and invaluable to drivers, repair shops and automakers alike. The main objective of big data in cars is customer satisfaction which will make our country digitized in future. manufacturers gain profit by improving efficiency and quality of products. Production today-on a par with the physical assets and human capital and the increasing intensity with which enterprises are gathering information alongside the rise of multimedia, social media, and the internet of things will continue to fuel exponential growth in data for foreseeable future.

In order to make vehicles speak in future more and more vehicles will be fitted with sensors and connectivity solutions. A study says mostly 70-80% of cars sold in 2016 will be connected. Connected cars could provide a steady stream of data on vehicle movements, condition, wear and tear of parts and ambient conditions. Big data tells us prior about any repair is to occur in car and gets itself connected with the near by workshops. This car to car communication will help us humans prevent accidents and drive a safe driverless vehicle.

-Dr. G. PRABHAKARAN,
PROFESSOR & HEAD, DEPT. OF MECHANICAL ENGINEERING
DESIGN TECHNOLOGY IN SOPHISTICATED MULTIMEDIA

The movie, AVATAR was taken by the virtual camera, RED EPIC, which drives to capture motion in the graphical software. The graphical structure of the characters in the movie are manually designed and then extruded by AUTODESK-MODBUG.

The above picture was designed by AUTODESK MAYA. AUTO DESK COL-OURL SMOKES was used for color preferences and AUTODESK MODBUG, for finishing.

The swing camera (so called because its screen could swing to any angle), has no lens at all, only an LCD screen and markers that record its position and orientation within the volume relative to the actors. That position information is then run through an effects switcher, which feeds back low-resolution CG versions of both the actors and the environment of Pandora to the swing cam’s screen in real time.

The prototypes are made with the correct dimensions and requirement. CG imaginary machine scans the entire model. The CG imaginary software is used for bringing about the motion of prototype. ADOBE ILLUSTRATOR is mainly employed for the screenplay. The RED EPIC camera with the graphical software captures the video and stills with the sensor of 19 megapixel.

-Jayasuriya.A  
II Year, Department of Mechanical Engg.

SOLAR TECHNOLOGY IN INDIA

Sun is the biggest source of energy available to us. This vast amount of energy can be utilized to generate electricity. At a new facility jointly run by IUSSTF and IISc. Bangalore, parabolic troughs of specially coated aluminium generate electricity.

When it begins to operate, sunlight reflected from the troughs will heat water in pipes to 200°C which will run turbines, producing 100KW of electricity. The objective is to find combinations of components that will suit extreme Indian conditions. The array will be used to test reflective materials and heat transfer fluids (for e.g. Molten salt in addition to water). Small wireless sensors will send data via the internet where it will be analyzed.

India, third largest producer of greenhouse gases, poised to be a big player in the solar energy market, with Prime Minister Modi’s National Solar Mission. Our efforts at industrialization and electricity generation, while keeping down greenhouse gas emission will reflect on the world’s ability to do the same. Thus this could very well be the key to India’s energy future.

-Deepika.V  
II year, Department of Mechanical Engg.
DEPARTMENT OF
MECHANICAL ENGINEERING
presents

Liteartha Festa

Elevator Pitch
Group Discussion
Spell Bee
Eloquescence
Crosswords
SOP Writing
Mock Interview

COMING SOON JAN 2016

Organized by
Literature Society of Mechanical
(LSM)

COORDINATORS
Staff: Mr. S. Vijay Rampal
Students: II & III Yr. LSM
Members
"Every engineering bud has the vigor and the potential. We feel responsible to emanate them out, to benefit the individual and the society."

GADIKOTA ENAVAMSHI
FINAL YEAR

"Share your knowledge, find ways for its articulation. That is the key for wisdom and a successful career."

BALAJI RAJENDIRAN
FINAL YEAR

"The innate knowledge intertwined with one's wisdom and skills, differentiates an engineer from everyone else. Let us be ambitious to emerge as true engineers."

MAHESH G
THIRD YEAR

"The space between the mouth and the power of the nib, is ever omnipotent and can make wonders. There we go."

AJITH SANKAR S
THIRD YEAR

"Want to be an entrepreneur? Want to be a techie? Meet people. Convince enough. Get your grit on the go. There you go. You achieve places"

ARAVIND R
THIRD YEAR

"Team work - that is the key. Learn and let learn. The cognizance you achieve is extraordinary"

KEERTHIKA L
THIRD YEAR

"Work fervently and smartly. Never compromise for scruples. When you turn back– you will feel a self satisfaction. It’s an achievement indeed"

KRITHIKA E
THIRD YEAR

SPECIAL THANKS

COVER ART BY SAI GANESH K, II YEAR
LOGO BY SAIFULLAH D, III YEAR