ASPIRE

Achievements in Sports, Projects, Industry, Research and Education

Monthly Newsletter

Department of
Mechanical Engineering

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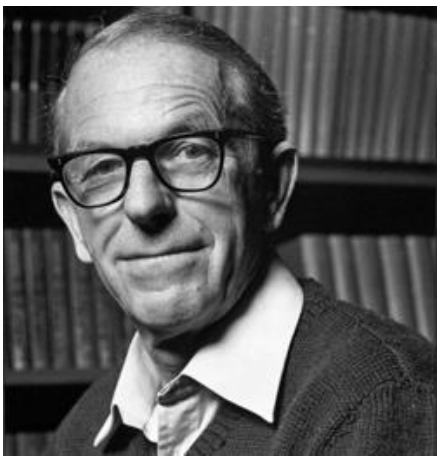
Sri Sivasubramaniya Nadar College of Engineering

Rajiv Gandhi Salai, Kalavakkam, Chennai, Tamil Nadu, India

SSN

Frederick Sanger



'Scientific research is one of the most exciting and rewarding of occupations'

Frederick Sanger, the English biochemist is one of the few distinguished laureates to secure a double noble prize. He was awarded the Nobel prizes for his work on structure of proteins, especially that of insulin and for his contributions towards sequencing of nucleic acids

Sanger was born on 13 August 1918 in Rendcomb, a small village in Gloucestershire, England. Sanger was able to spend most of his time in high school experimenting in the laboratory alongside his chemistry master, Geoffrey Ordish, who had originally studied at Cambridge University. Working with Ordish made a refreshing change from sitting and studying books and awakened Sanger's desire to pursue a scientific career. In 1936 Sanger went to St John's College, Cambridge to study natural sciences.

Beginning in the 1940s, Sanger studied the composition of the insulin molecule, a hormone that regulates sugar content in blood. He used acids to break the molecule into smaller parts, which were separated from one another with the help of electrophoresis and chromatography. Further analyses determined the amino acid sequences in the molecule's two chains, and in 1955 Frederick Sanger identified how the chains are linked together. It was this achievement that earned him his first Nobel prize in Chemistry in 1958. The sequencing of insulin was instrumental in developing its synthetic variety for millions of diabetic patients, making it accessible and affordable.

In 1977, Frederick Sanger developed a evaluation method based on using small amounts of what are known as dideoxynucleotides. These can be inserted into the DNA chain, but at a certain nucleotide they stop growth of the chain so that fragments of different lengths are created. After undergoing what is known as electrophoresis, the nucleotide sequences in a DNA sample can be identified. This was a major breakthrough and allowed long stretches of DNA to be rapidly and accurately sequenced. It earned him his second Nobel prize in Chemistry in 1980, which he shared with Walter Gilbert and Paul Berg. The new method was used by Sanger and colleagues to sequence human mitochondrial DNA and bacteriophage λ. The dideoxy method was eventually used to sequence the entire human genome.

Campus Update

Shiv Nadar Foundation Makes US$ 7 Million Endowment to Massachusetts Institute of Technology to Aid Research

Dear all,

We are delighted to share with you that the Shiv Nadar Foundation has made an endowment of US$ 7 million to Department of Electrical Engineering and Computer Science (EECS) at Massachusetts Institute of Technology, USA. This endowment will help enhance research and gift outstanding students the opportunity to study at the institution.

Aided by the endowment, EECS at MIT is establishing two scholarships –**The Vamasundari Devi Fellowship Fund** and **The Shiv Nadar Undergraduate Research Fund** to support some of the most promising undergraduate students in the department.

The Vamasundari Devi Fellowship Fund will support female students and commemorates Mr Shiv Nadar's mother, a woman of strong will and character and also a huge influence on his life. She impressed upon Mr Nadar early on, the need to extend the gift of education to meritorious students which led to the establishment of the Shiv Nadar Foundation. **The Shiv Nadar Undergraduate Research Fund** will support gifted students in the department undertake research projects.

Mr Nadar has often spoken about how his higher education was funded through generous scholarships that he received as a student. His philanthropic efforts through the Shiv Nadar Foundation are anchored in education, including six institutions and initiatives offering world-class educational opportunities to a diverse set of students. Under Mr Nadar's guidance, the Foundation's efforts in higher education are embedded in research and strive to create new knowledge to help solve issues of global importance.

The endowment to MIT is another; yet significant step towards aiding research and supporting education for meritorious students.

https://snu.edu.in/news/newsroom/shiv-nadar-university-next-vice-chancellor

Department Update

Placement Update

MECH HITS A MAIDEN CENTURY IN PLACEMENTS!!

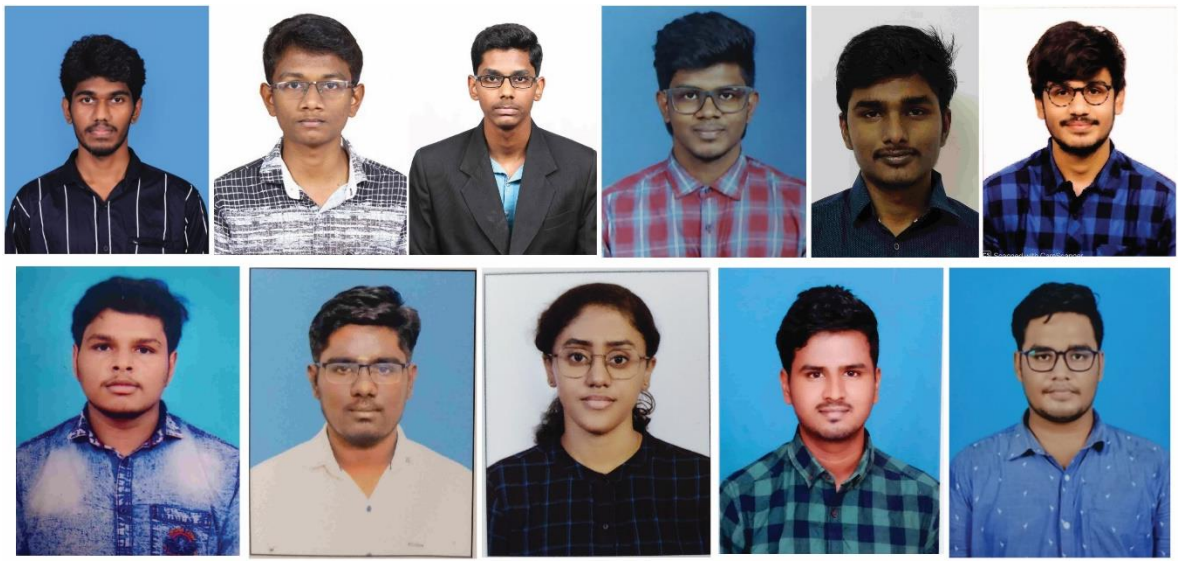
YES, THE NUMBER OF PLACED HAS SURPASSED THE MAGIC NUMBER "100"

Full Credits to our Students, the dept in its entirety and the strong moves of our CDC. Special Appreciations to the Students of Batch 2022 for making this happen!!

With 11 getting placed in HCL and 8 in Wipro, the Total placed in Mech Dept. is 113 as on date.

Company Name: **HCL**
Job Type: **Regular**
CTC: **INR 4,75,000/-**

1. Bala Ashwanth B
2. Blesson John J
3. Dhanush Raj D
4. Jervis Vasanth J
5. Karthik V.U.
6. Rohit K
7. Sai Kishore K.R
8. Sakthivel E
9. Sneha S
10. Subash S
11. Ravi Kanthan B.U



Company Name: **Wipro**

Role: **GET** Job Type: **Regular**

1. Chenchu Ram Vakati
2. Karthikeyan M.D.
3. Karthikrajan Jayakumar
4. Naresh Kumar
5. Naveen Kumar R
6. Rohit K
7. Subash S
8. Venugopal S

Company Name: **SRF Limited**

Job Type: **Core (Senior Executive)**

CTC: **INR 6,00,000/-**

1. Bowsica SP

Company Name: **Trane Technologies**

Job Type: **Internship**

Stipend: **INR 12,000/-**

1. Harshitha S

Company Name: **TATA Consultancy Services**
Job Type: **Regular**
CTC: **INR 3,90,000/-**

1. **Naresh Kumar**

Company Name: **Wood PLC**
Job Type: **Core**
CTC: **INR 4,80,000/-**

5 Mech students got placed in a nice Core Company WOOD with a CTC of 4.8 LPA.

Wood PLC [Foster Wheeler] is an EPC & Consulting Company as well with clients worldwide across different sectors such as Oil & Gas, Energy, Piping, Manf, HVAC and So on. There was an aptitude round followed by a Technical cum HR interview at our campus. Questions were mainly from the D&F, Projects, and Testing of Attitude of the students to serve for 4 long years at least. "Stay for long" is a great concern with many of the core industries visiting us! They wish the students to stay for at least 3 to 4 years. It's a Global challenge with the present Gen as everyone wants to pursue higher studies.!! I hope our students play reasonably long innings though 20-20 has become the new norm!!

1. **Krishnanand M**
2. **Mohammed Riaz Khan K N**
3. **A Sabareesh**
4. **Skanda Vijay Viswanadhan**
5. **Mohammed Tanvir R**



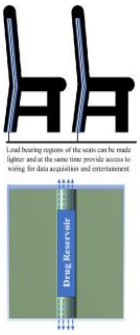


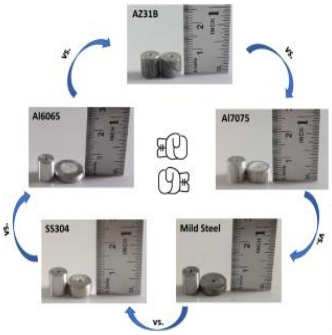
HEARTY CONGRATULATIONS

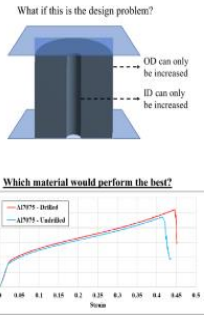
Dr. N. Lakshmi Narasimhan

International Journal Publication - SCI Clarivate Indexed

Azhagiyamanavalan, Vijayaraghavan, Anirudh Venkatraman Krishnan, C. Y. H. Lim, and Manoj Gupta. "Validating the potential of centralized holes to enhance the compressive response of Mg-, Al-, Fe-Based commercial alloys." MRS Communications (2021): 1-6.







Praveen, R., Koteswara Rao, S. R., Damodaram, R., & Suresh Kumar, S. (2021). Numerical and experimental investigations on the effect of target thickness and solution treatment on the ballistic behaviour of AA7075 thick plates. Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 09544062211038981..

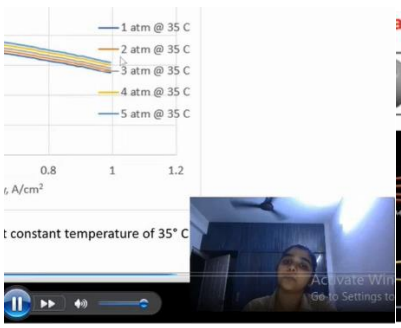
Balasubramaniyan, C., K. Rajkumar, and S. Santosh. "Enhancement of machining and surface quality of quaternary alloyed NiTiCuZr shape memory alloy through ultrasonic vibration coupled WEDM." Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications (2021): 14644207211058297.

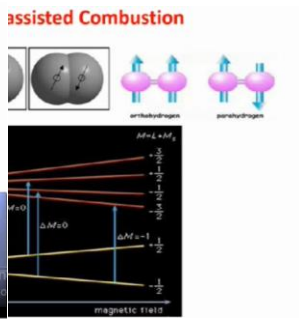
Faculty Write-Up

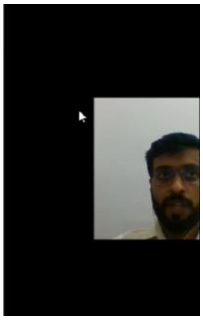
GreenTech21, 26-27 Nov 2021

International Conference on Green Energy and Technology

The Department organized International Conference GreenTech21 in Virtual Mode
Conveners: Dr. Raja S and Dr. Alphin M S
Co- Convenors: Dr. Vinoth T and Dr. Damodaran P

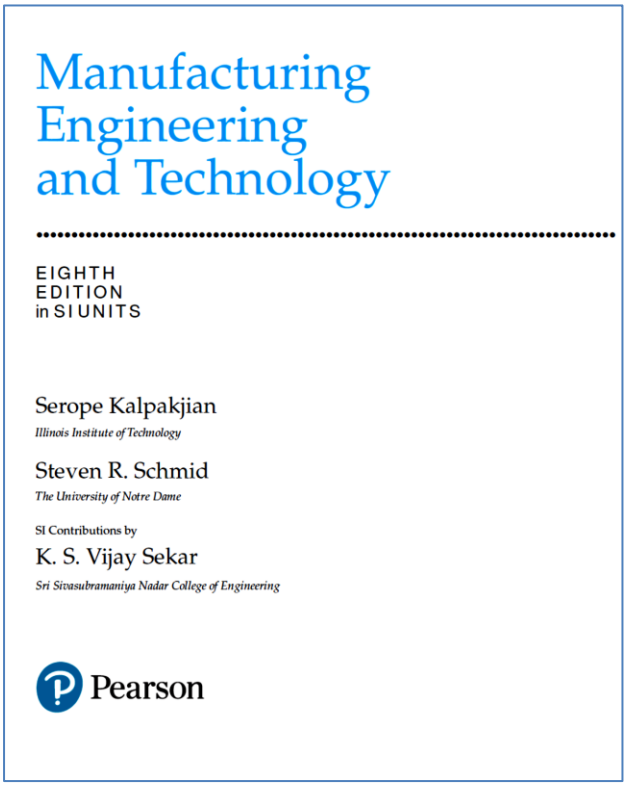






Dr. K.S. Vijay Sekar, Professor, Mechanical Engineering, shares his experience on working on an International level textbook on Manufacturing Engineering.....

I had the opportunity and the privilege of working on the 8th global SI edition of Manufacturing Engineering and Technology by Kalpakjian and Schmid, published by Pearson. This book is a gold standard in leading universities across the US and rest of the world. The work primarily involves converting the US edition book into a standard SI edition that will cater to a global market where SI units are the default standard.



In addition to doing the SI conversions for the textbook as well as the Solutions manual, I have also contributed about 80 new problems to the end of chapter along with updated solutions, since they wanted to differentiate with the US edition text.

I am happy to share that this assignment was once again given to me based on the strength of the quality of work I did on the previous 7th Asia Pacific edition in 2014. My name has been included in the Title page of this marquee, world class textbook with our institute affiliations. Officially the book will hit the stands in January 2022.

I am elated to share the title page of this book here.

Scopus Publication

M. Nalla Mohamed and R. Sivaprasad, Investigation on the Effect of Patterned Holes on Energy Absorption Characteristics of Aluminium Square Tubes, Recent Advances in Manufacturing, Automation, Design and Energy Technologies, Lecture Notes in Mechanical Engineering 607-614, 2021-22.

M. Nalla Mohamed and R. Sivaprasad, Experimental Investigation on Adhesive Bonded Fold Tubes Under Quasi-Static Loading, Recent Advances in Manufacturing, Automation, Design and Energy Technologies, Lecture Notes in Mechanical Engineering, 657-666, 2021-22.

M. Nalla Mohamed and R. Sivaprasad, Numerical Crashworthiness Investigation of Multi-Section Tubes, Recent Advances in Manufacturing, Automation, Design and Energy Technologies, Lecture Notes in Mechanical Engineering, 667-674, 2021-22.

N. Sivashanmugam, K. L. Harikrishna, S. R. Koteswara Rao, Corrosion behaviour of friction stir welded rare earth magnesium alloy ZE41 under salt spray test, AIP Conference Proceedings, 2395, 2021.

N. Sivashanmugam, K. L. Harikrishna, G. Kalusuraman, Prediction of optimal process parameters for precision parts of phosphor bronze in high-speed milling, AIP Conference Proceedings, 2395, 2021.

M. S. Alphin and S. Monish Manoj, Product development, simulation and experimental testing on achieving artificial mobility using Jansen's linkage, AIP Conference Proceedings,2395, 050005 (2021); https://doi.org/10.1063/5.0068288

Faculty Monthly Activities

Dr. Alphin M S presented a paper titled "Design Improvement Approach: Vibration Analysis of Domestic Mixer Grinder Blade" has been provisionally accepted in the International Conference on Industrial and Manufacturing Systems (CIMS-2021), held during Nov 11-13 2021 as a Joint venture of Dr. B R Ambedkar National Institute of Technology (NIT), Jalandhar and Punjab Engineering College (PEC), Chandigarh.

Dr. S. Santosh, Assistant Professor, attended One-week online AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Design, Synthesis and Characterization of Novel Materials" at Indian Institute of Information Technology Tiruchirappalli from 25/10/2021 to 29/10/2021.

Dr. S. Santosh, Assistant Professor, attended a one-Week Online AICTE Training and Learning (ATAL) Academy FDP on Novel Materials (22-26 November 2021) Organized by Dept. of Mechanical Engineering, University College of Engineering, Osmania University

Dr A S Ramana, Associate Professor attended webinar on NEP for Southern Region organized by NAAC on 16-11-2021

Non-Teaching Staff Monthly Activities

Nagarajan S / Lab Instructor/ Mechanical Engineering completed the online course "Microsoft Excel 2019" beginners on Alison during Oct 2021.

Nagarajan S/ Lab Instructor/ Department of Mechanical Engineering completed the online course "Introduction to Microsoft Word 2019/365" in Alison on 26/11/2021.

Student Write-Up

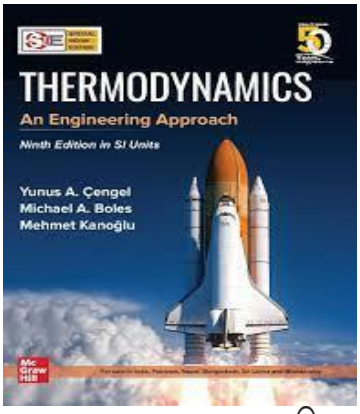
STUDENT ACTIVITIES

S.no	Date	Activity done during the month
		SECOND YEAR
1)	07/11/2021	Mathusha Rao, 2nd Year • Submitted a Solution Paper for the University Physics Competition conducted by the University of Winnipeg and Providence Rhode Island. • Completed a few online courses
		THIRD YEAR
2)	15/10/2021	A. Ashiq Akram ,3rd Year • NPTEL Course in Electrical Vehicles and Renewable Energy
3)	10/11/2021	Pon Ayappan A ,3rd year • NPTEL- Applied Thermodynamics for Engineers
4)	10/11/2021	Vallikannan M, 3rd year • Nptel course on "Electric Vehicles and Renewable Energy"
		FINAL YEAR
5)	24/11/2021 28/11/2021	Akash S,4th year • Neural Networks and Deep Learning – Coursera • Robotics: Aerial Robotics - Coursera
6)	13/11/2021	Sandhya Vidyashankar,4th year Presented a paper titled "Low-cost Robot for Autonomous Disinfection of Corridors" in the 5th International IEEE Conference on IOT in Social, Mobile, Analytics and Cloud (I-SMAC)

7)	24/11/2021	Mohammed Riaz Khan K N , 4th year • Placed in WOOD
8)	29/11//2021	Pranesh Rajasekaran,4th year • 12th YouTube video launch
9)	13/11/2021	Bowsica S,4th year • Placed as Senior Executive in SRF Limited
10)	15/11/2021	Dhanush Raj D,4th year • Placed in HCL
11)	18/11/2021	Sakthivel E,4th year • Got placed in HCL
12)	13/10/2020	Mohan Muraleeswaran, 4th year • Placed in CTS
13)	24/11/2021	Krishnanand M,4th year • Got an offer from the company Wood.
14)	04/11/2021	Ronald J, 4th year • Tata Consultancy Services (TCS)
15)	18/11/2021	K R Sai Kishore,4th year • HCL Technologies
16)	24/11/2021	A Sabareesh, 4th year • Placed at Wood PLC
17)	24/11/2021	Skanda Vijay V,4th year • Placed in Wood
18)	27/08/2021	Sangeeth R,4th year • Placement at TCS Ninja

19)	19/11/21	Karthikrajan J,4th year • Placed In Wipro. In this process there are online assessment and interview round and I cleared it and got an offer
20)	20/10/2021	Deepak Babu R,4th year • Placement in CTS
21)	20/10/2000	Chandrapraban U,4th year • Placed in CTS
22)	12/11/2021	S. Harshitha,4th year • Placed in Trane Technologies
23)	02/11/2021	Sairam M,4th year • Placed in CTS
24)	20/11/2021	Chenchu Ram Vakati,4th Year • Placed in Wipro
25)	02/11/2021	V U Karthik,4TH YEAR • Placed in HCL
26)	21/11/2021	Venugopal S,4th year • Placed in Wipro
27)	19/11/2021	Karthikeyan M D,4th year • Placed in Wipro after completing my interview

PON AYAPPAN .A ,III-Year, writes....



This is Pon Ayappan from third year mechanical. I would like to share my experience on the NPTEL course that I took up recently; i.e; "APPLIED THERMODYNAMICS FOR ENGINEERS". It comes under the category of Mechanical Engineering, Energy systems, and Propulsion

The course began on 26th July,2021. They started with the Review of thermodynamic principals. It covered all the basics that is required to proceed deep into this course.

They taught the concepts using powerpoint presentations and each video lasting upto 60 minutes. The problems were pretty easy and the solutions were uploaded on time . At the end of every week, an assignment was to be submitted . After the end of 12 weeks of teaching, they uploaded a final PDF which covers everything that they taught throughout. For the exam, I referred to this PDF and morevoer, I went through a book , "Cengal and Boles Thermodynamics: An Engineering Approach".

The exam was quite challenging. However, the overall course was interesting and I learnt plethora of concepts based on thermodynamics. It is defenitely a useful course for mechanical engineers.

SHARAN V , IV-Year Writes...

This is Sharan V, final year mechanical engineering. I would like to share my placement experience with Hyundai Motor India Ltd. The recruitment was done for the role of Graduate Engineer Trainee in Production and Manufacturing. The entire process consisted of 5 rounds. The first three rounds (Online Assessment, GD, Presentation round) were conducted virtually and the last two rounds (Technical and HR interviews) were conducted in person at our college. This was a pool campus process as there were students from Sathyabama Institute as well.

Round 1: AMCAT Online Assessment:

There were 6 sections: Verbal, Logical, Domain, Quantitative Aptitude, Work Competency and Psychometric assessment. Duration of this round was a little more than 2 hours. This was a relatively easy round, and one could easily clear this round. The technical questions were from SoM, FM, Manufacturing, Thermodynamics, and Heat transfer.

Round 2: Group Discussion:

59 students were shortlisted for the GD. We were split into 6 batches and each batch had around 9-10 students. The topic for us was "Is technology making us less human?". Everyone was given the chance to put forth their points in a minute and each person also had to give a summary of their points at the end. 27 people got shortlisted for the presentation round.

Round 3: Presentation Round:

This is a round where you will be presenting 3 slides in under 3 minutes. On the first slide, you will have to talk about yourself without repeating stuff from your resume. The next slide should be a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) of yourself or your career. I did about myself. The last slide is about why Hyundai should hire you. In this round, your communication skills are tested, and it is important that you must complete this round in under 3 minutes. The HR conducting this round was stopping some people who were going beyond the time limit. It is important that you speak concisely and effectively in this round.

Round 4: Technical Interview:

From around 27 who attended the presentation round, 18 people got shortlisted for the technical interview which was conducted in person. There were 2 people in the panel. For me, the technical interview lasted for around 35-40 minutes and questions from core mechanical engineering were asked. They test our basic understanding of the concepts. After my self-introduction, I was asked about my areas of interest and the questions further were asked from those. At one point, I was asked to draw the third angle projection representation and a drill bit diagram representing the terminology. Most of the questions were from **automobile engineering and strength of materials**. They made sure that I was not interested to pursue higher studies.

Round 5: HR interview:

5 people got shortlisted for the HR interview. There were 3 HRs in the panel. My interview lasted for around 45-50 minutes. They asked me to introduce myself without repeating the resume. In this round, you must be open as they would like to know you deeper. They asked me my family background, why I am interested in mechanical engineering. Most of the questions were common HR questions.

Examples:
1. Give me 3 reasons you'll reject yourself.
2. How would your friends describe you?
3. Challenging situations I faced and how I overcame that.
4. Would you lie for the company.
5. A job can be completed in a shorter time if it's not done as per SOP but takes a longer otherwise. Which would you prefer and why?
6. Any questions for us.

Once the HR interview got over, we all were waiting and surprisingly they called me alone for a second HR interview. This lasted for around 10 minutes. They asked me to describe a work environment where I'll not fit in. Then, I was asked what I'll do if I didn't continuously get the appreciation I deserve while working.

Finally, at around 8.00 pm at night, they came out to announce the results. **3 people were given the final offer. It was truly a one-of-a-kind experience.**

CHENCHU RAM VAKATI ,IV-Year, writes...

Round 1: Online Assessment

The assessment was conducted in AMCAT platform. The test consisted of Aptitude, Programming and Essay writing. The difficulty level of this test was easy to medium. Programming was asked from the basic concepts. One can use any programming language (C, C++, java, python, etc.)

Round 2: Business Round (Technical + HR Round)

The business discussion round consisted of both Technical and HR round and there was only one interviewer. Since I am from Mechanical background, only the basic questions were asked. I have listed down a few here

1. Introduce Yourself
2. Are you willing to relocate?
3. What is OOPS?
4. Questions in OOPS concept
5. Write syntax for inheritance (For this one they asked to share my screen and write in notepad)
6. Why IT being Mechanical?
7. Any Backlogs?
8. Explain your current final year Project.

This was the end of all the rounds. It was a good experience.

SNEHA S, IV-Year, writes...

I am Sneha from Mechanical final year. I would like to share my experience of the placement process of HCL company.

The selection process for HCL was straightforward. We had an online test where we were tested based on our technical knowledge. We had questions from all the core subjects, ranging from 2 to 10 questions depending on the subjects. In total we had 50 questions in 90 minutes.

Post the test, a shortlist was sent. Shortlisted students received emails for interviews the next day. The interviews were HR based, where the questions were primarily regarding our projects, attitude, and one's willingness to relocate. The interviews were crisp and short. Selected students received emails the next day.

It was a good experience.

BOWSICA S,IV -Year writes...

Hi everyone! I recently got placed in SRF Limited and would like to share the experience with you all. The selection process went on for about a week in a relaxed pace through the following four rounds:

Round 1: Online test

The first 30 minutes was for aptitude questions (30 questions approx.), followed by another 30 minutes of domain questions(48 questions). The aptitude questions were of a low difficulty level and the domain questions were of a medium difficulty level. The domain test had most of its questions from basic thermodynamics, fluid mechanics and HMT, all of them focusing on the theory parts of the subjects and basic formulae therein. The results were announced that day itself and we were provided two days' time to prepare for the HR and technical rounds.

SRF
We always find a better way

Round 2: HR interview

The round began with self-introduction, followed by stating my strengths and weaknesses, things I wished to improve about me, the efforts I am putting in for those improvements, things about the past I wished to change, the most disappointing moment of my life, the happiest moment of my life, what change a trusted friend or family member frequently asks for, in me. I was also asked to talk about all the projects I've done so far in college and the internships I have undertaken and why I chose mechanical engineering as a career path. The round ended in 30 minutes, followed immediately by the technical interview.

Round 3: Technical interview

I was asked to choose two topics from the mechanical domain I was very comfortable with. I chose thermodynamics and strength of materials. Firstly, I was asked for three major concepts that covered the entire subjects. Then we discussed about the concepts behind the basic laws and wet and dry bulb temperatures, all application oriented. In strength of materials, we discussed the stress and strain curves for different materials, and I was asked to compare the tensile strengths of aluminium, mild steel, and stainless steel. We then talked about mechanical drives and why so and so drives have so and so applications. We also discussed about lubricants and their types and their differences in viscosity. Finally, I was asked to talk about a situation where I had to solve a problem and Mechanical Engineering came in handy. This interview too ended in 30 minutes. The results were announced the same day itself and we were provided another two days' time to prepare for an interview with the CEO.

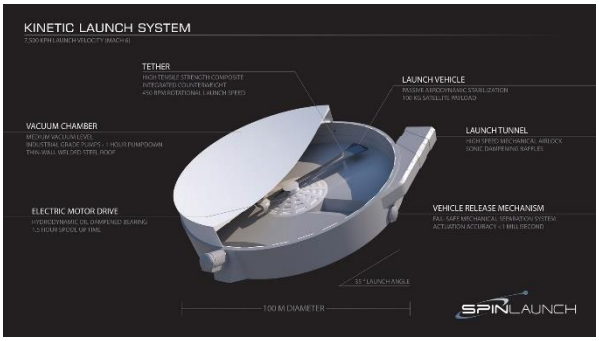
Round 4: CEO interview

The CEO was an engineering graduate from IIT, Roorkee and we were baffled with what we should prepare for that round. But this round was the easiest as we only had a normal chat, but as a CEO and an interviewee. As soon as he came in, he said that the first five minutes were completely mine and to talk whatever I wanted and that he wouldn't interrupt. I spoke about myself, my college life, ambitions in life and the projects I've done here in college.

Overall, the whole selection process was a great experience and since everything was done online, we happily took the tests and interviews at the comfort of our homes.

Mech Marvel

Spinning Rockets Right Round Into Space



Of the many novel methods that have been proposed to replace conventional rocket launch systems, SpinLaunch must be the most eye catching one. The California based company has a giant centrifuge-based system that spins up a small rocket to hypersonic speed on the ground. Once released, the final design calls for the rocket to shoot up in the air, and only turning on more conventional chemical propulsion when it's well on its way to orbit. They performed a successful test flight of the system just last month, where the projectile was launched tens of thousands of feet after the centrifuge accelerator (91 meters tall), running the projectile through a vacuum chamber on a rotating arm, pushed the 3-meter rocket aloft from Spaceport America in New Mexico at roughly 20% of the accelerator's full power capacity. While the full-scale system is still under design work, SpinLaunch plans to reduce the size, complexity and cost of the rocket when compared to the competition.

For further reading here is an article, and the company's website that has a video of the launch.

Corporate Story

Log9 Materials

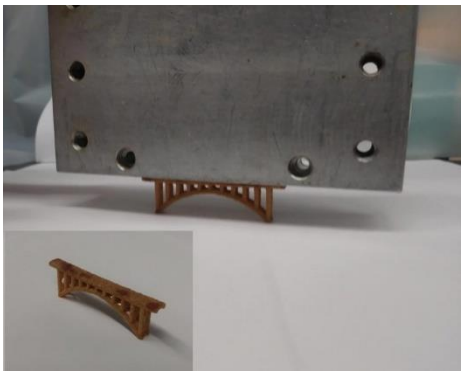
In wake of the recently concluded COP26, the push towards clean energy has never been more relevant. Log9 Materials, an IIT Roorkee incubee is on a mission to make clean global energy; through its core focus on Graphene nanotechnology to develop advanced energy storage technologies from electrode materials, cell to pack level. Their technology ranges from advanced Lithium-Ion Batteries, Aluminium Fuel Cells, Rapid Charging Two and Three Wheelers to Graphene Filtration Media.

The founders say their batteries have 9x charging time, life and performance irrespective of the vehicle platform. As the Electric Vehicle (EV) market grows in India, Log9 is attracting much attention – with oil giant Petronas making a huge investment. They aim to commercially launch and scale its fast-charging lithium-ion battery technology and invest in developing manufacturing capabilities for cells and battery packs. Inking partnerships with various players in this domain, Log9 looks to be set for exponential growth just like in its moniker.

If you're interested, do check out their Website and LinkedIn for news and openings.

Amazing Innovation 203

Polymer Makes Super Strength 3D Sand!



Researchers at the US Department of Energy's Oak Ridge National Laboratory designed a novel polymer using polyethyleneimine to bind and strengthen silica sand, used in binder jet additive manufacturing. It enables sand structures with intricate geometries, exceptional strength and is also water soluble.

The binder jet printing process is cheaper and faster than other 3D-printing methods used by industry and makes it possible to create 3D structures from a variety of powdered materials, offering advantages in cost and scalability. The printer head jets out a liquid polymer to bind a powdered material, such as sand, building up a 3D design layer by layer. The study demonstrated a 3D-printed sand bridge that at 6.5 centimetres can hold 300 times its own weight, a feat analogous to 12 Empire State Buildings sitting on the Brooklyn Bridge. This opens applications in manufacturing, tooling and construction. Here is the Journal Paper for further reading.

Amazing Innovation 204

Fuel From the Atmosphere!

Engineers at ETH Zurich engineers have demonstrated a pilot system that can generate fuel from sunlight and air. The device captures carbon dioxide and water from the atmosphere and uses solar energy to convert them into syngas (fuel gas mix of CO and H2). Syngas is converted to essentially carbon-neutral liquid fuel emitting only the same amount of carbon dioxide that was originally removed from the air during combustion. The gas itself can be collected and used or sent to a third unit for conversion to liquid hydrocarbon fuels such as kerosene and methanol. The system consists of three units: a direct air capture unit, a solar redox unit, and a gas-liquid unit. A parabolic concentrator concentrates sunlight 3,000 times on the solar thermal reactor, creating a temperature of 1,500 ° C. Inside the reactor is a ceramic structure made of cerium oxide that absorbs oxygen from incoming carbon dioxide and water to produce syngas.

To test the concept, researchers installed a small 5kW pilot system on the roof of the building. Running 7 hours a day in intermittent sunlight, the device was able to produce 32 ml of methanol daily. They are now looking at possible ways to sustainably scale up production. Here is the Journal Paper for further reading and a Video of the mechanism.

Alumni Write-Up

Ashwin Raja – Mech16 Alumnus

Our 2016 alumnus Ashwin Raja has acceded to the eminent role of senior project planner in the tech giant Apple Inc. Ashwin passed out with top honours, first class with distinction and a gold medal from SSN. During his college days he was an active quizzer, an avid SAE and EDC (Entrepreneurship Development Club) member. After graduation, Ashwin went on to pursue master's degree in Management Science from the prestigious Columbia University in New York. He took on the role of a student consultant at Imperative fund during his study, helping formulate investment strategy for a $25M social impact investment fund aimed at alleviating poverty in Latin America. Later, Ashwin joined the luxury brand-Louis Vuitton as a consultant analysing sales and developing solutions for sell-through of high value products at retail stores. Passing out with flying colours from Columbia, he became an analyst at Wayfair before his recruitment into **Apple**. His career serves as an inspiration to millions, and we wish him success for his future endeavours!

Dr. Venkatakrishna Janakiraman- Mech11 Alumnus

With the future of the automotive sector being touted as Electric, several innovative companies have sprung up. At the forefront of this revolution stands Tesla and our 2011 alumnus, Venkatakrishna has joined this esteemed corporation. Venkatakrishna served as the student President of the Mechanical department during his study in SSN and graduated as one among the first class. He obtained his graduate degree in Mechanical Engineering from the renowned Ohio state university. Setting his focus towards gear and drivetrain design, Venkatakrishna obtained his Doctorate from the same university. As graduate research associate, he developed a power flow and efficiency model for multi-stage planetary gear train. Upon his entry into the industry, he took up the role of an engineering analyst at Romax technologies and was soon promoted to Senior Mechanical Engineer. Next up, Venkatakrishna became a part of Nikola-a leading manufacturer of heavy-duty commercial vehicles as a lead engineer. Based on his strong performance in this role, Venkatakrishna was promoted to the position of technical manager. With his passion and perseverance, Venkatakrishna has ultimately started his work in Tesla as drive systems engineer.

Research news & Forthcoming events

Project Proposal Submission

Allergy and Infectious Diseases Research Last date for submission of the project proposal: **07-Dec-2021** https://www.grants.gov/web/grants/search-grants.html
Science for Nature and People Partnership (SNAPP) Last date for submission of the project proposal: **10-Dec-2021** Login | SNAPP (snappartnership.net)
Sophisticated Analytical and Technical Help Institutes (SATHI) Last date for submission of the project proposal: **10-Dec-2021** https://dst.gov.in/sites/default/files/asc_0.pdf
India Philippines Joint Call for R & D Proposals Last date for submission of the project proposal: **17-Jan-2021** India Philippines Joint Call for R & D Proposals | Department Of Science & Technology (dst.gov.in)

Conference with Scopus/SCI Publication

4th International Conference on Computing and Communication Technologies (ICCCT 21) Sri Sairam Engineering College, International Conference, Chennai, Tamil Nadu 16th - 17th December 2021 https://iccct21.org

Accepted papers will be published in Journal indexed in various databases such as, **SCOPUS, Clarivate** etc.

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Inspiring Life Stories

Moving Mind

Two men were arguing about a flag flapping in the wind.

"It's the wind that is really moving," stated the first one.

"No, it is the flag that is moving," contended the second.

A Zen master, who happened to be walking by, overheard the debate and interrupted them. "Neither the flag nor the wind is moving," he said, "It is the MIND that moves."

Moral: It is all in the mind. It has both the problems and the solutions too.

Source: 10 Short Zen Stories - Sofo Archon

Pic source: Rugged Breed : KEEP YOUR MIND MOVING

Corporate Wisdom

From the desk of Ramki -– Aspire to Inspire

Happy Morning

I was reading a book and there was a mention about Captain Sullenberger and an incidence which evinced interest in me.

Captain Sullenberger was the pilot who became an instant hero that fateful morning in 2009 when he landed an aircraft with 155 people on board on the river Hudson. And now, a new movie, Sully, re-creates that event, capturing the drama and the dynamics of decision-making under pressure. As you might recall, two minutes after the plane took off from La Guardia airport that day, a bird hit caused both its engines to lose power. The co-pilot was in command at take-off, but the moment Captain Sully saw the gaggle of geese in front of the windshield and heard the shuddering sound of both engines shutting down, he instantly took charge of the plane. He considered returning to La Guardia, landing at a nearby airstrip, but when both options didn't seem workable, he decided to land the aircraft on the Hudson. Within 208 seconds of the engines malfunctioning, the plane landed on the river – and all 155 lives were saved.

What is it about a leader that enables such bold decision making? In My view Captain Sully's action is an example of a trait that is being viewed as a useful predictor of leadership success: learning agility.

Put simply,

- Learning agility is knowing what to do when you don't know what to do.
- Learning agility is, in essence, what you learn through experience in the school of hard knocks.
- While it may not itself be easy to acquire, there are two other simple lessons that leaders can take away from Captain Sully's heroics.
- First, when the Captain discovers they have a crisis on their hands, his instinctive response is to say "My aero plane".
- Two simple words, but immensely powerful from a leadership standpoint. He doesn't look for someone to blame. He doesn't panic. He doesn't complain about the birds. When a problem occurs, when results aren't what you might expect, when business appears to be in trouble, how do you respond?
- Do you look at your colleagues and try and pinpoint who is to blame?
- Do you distance yourself from the problem and leave a struggling team-mate to resolve the crisis all by himself?
- Do you blame it on the environment – the birds? Or do you, like captain Sully, take ownership?

As a Leader you owe it to your team – and to yourself – to take charge, and to be seen to be in charge, when a crisis hits. Good leaders are quick to take control. The "My aero plane" attitude in problem situations is something all leaders would do well to adopt. And then, after Captain Sully miraculously lands the plane on the Hudson and all passengers are safely evacuated, the waiting TV crews hail the Captain as a hero and give him credit for saving so many lives. But Captain Sully gives credit to his co-pilot Jeff Skiles, and to the three air hostesses – Donna, Sheena and Doreen – who held their nerve and did a fantastic job. He even thanks the ferry operators and the chopper crews for their help. "They did it!" Two simple statements that encapsulate two stellar traits of good leaders. They take ownership in a crisis. And when the job is done, they attribute the results to the team's efforts.

Now, here's the interesting bit. It is not as if there aren't enough leaders who say "My aero plane!" and "They did it!" It's just that they sometimes get the order wrong! When a crisis hits, they blame others: "They did it!" And when success is achieved, they take ownership: "My aero plane!" As a leader, maybe a good idea to learn to say those two phrases, often. "My aero plane." And "They did it." And yes, remember when to say which one too!

#WishingMostAndMore
Have a great week & Wonderful day !
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