



Mechanical Engineering

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All About Nobel Prize- Part 62

Martin Luther King Jr.

For Civil Rights and Social Justice

Martin Luther King dreamt that people would be judged by their personal qualities and not by the color of their skin. In 1964, he had received the Peace Prize for his nonviolent campaign against racism.

Martin Luther King, Jr. was born on January 15, 1929, in Atlanta, Georgia, as the second child of Martin Luther King Sr., a pastor, and Alberta Williams King, a former schoolteacher.

King adhered to Gandhi's philosophy of nonviolence. In 1955 he began his struggle to persuade the US Government to declare the policy of racial discrimination in the southern states unlawful. The racists responded with violence to the black people's nonviolent initiatives.

In 1963, 250,000 demonstrators marched to the Lincoln Memorial in Washington, where King gave his famous "I have a dream" speech. The following year, President Johnson got a law passed prohibiting all racial discrimination.



He was the driving force behind watershed events such as the Montgomery Bus Boycott and the 1963 March on Washington, which helped bring about such landmark legislation as the Civil Rights Act and the Voting Rights Act.

A gifted student, King attended segregated public schools and at the age of 15 was admitted to Morehouse College, the alma mater of both his father and maternal grandfather, where he studied medicine and law.

Although he had not intended to follow in his father's footsteps by joining the ministry, he changed his mind under the mentorship of Morehouse's president, Dr. Benjamin Mays, an influential theologian and outspoken advocate for racial equality. After graduating in 1948, King entered Crozer Theological Seminary in Pennsylvania, where he earned a Bachelor of Divinity degree, won a prestigious fellowship and was elected president of his predominantly white senior class. King then enrolled in a graduate program at Boston University, completing his coursework in 1953 and earning a doctorate in systematic theology two years later.

In the eleven-year period between 1957 and 1968, King traveled over six million miles and spoke over twenty-five hundred times, appearing wherever there was injustice, protest, and action; and meanwhile he wrote five books as well as numerous articles. In these years, he led a massive protest in Birmingham, Alabama, that caught the attention of the entire world, providing what he called a coalition of conscience and inspiring his "Letter from a Birmingham Jail", a manifesto of the Negro revolution; he planned the drives in Alabama for the registration of Negroes as voters.

He was arrested upwards of twenty times and assaulted at least four times; he was awarded five honorary degrees; was named Man of the Year by Time magazine in 1963; and became not only the symbolic leader of American blacks but also a world figure.

At the age of thirty-five, Martin Luther King, Jr., was the youngest man to have received the Nobel Peace Prize. When notified of his selection, he announced that he would turn over the prize money of \$54,123 to the furtherance of the civil rights movement.



Dr. Martin Luther King, Jr. received the Nobel Prize for Peace from Gunnar Jahn, president of the Nobel Prize Committee, in Oslo on December 10, 1964.

Martin Luther King, Jr.'s less than thirteen years of nonviolent leadership ended abruptly and tragically on April 4th, 1968, when he was assassinated at the Lorraine Motel in Memphis, Tennessee.

King's body was returned to his hometown of Atlanta, Georgia, where his funeral ceremony was attended by high-level leaders of all races and political stripes.

He is remembered each year on Martin Luther King Jr. Day, a U.S. federal holiday on the third Monday of January each year.

Source: <https://www.nobelprize.org/prizes/peace/1964/king/facts/>

Watch this **video** on Martin Luther King Jr. <https://www.youtube.com/watch?v=IB0i6bJljw>

QUIZ!!

Secrecy rule

Each year, thousands of members of academies, university professors, scientists, previous Nobel Laureates and members of parliamentary assemblies and others, are asked to submit candidates for the Nobel Prizes for the coming year. Access to information about a given year's candidates and/or nominators is not given until quite a few years have passed, according to the **secrecy rule**. Do you know how many years?

- a) 25 Years
- b) 50 Years
- c) 75 Years

Answer in the last page.

Info to Alumni- Campus Update

Principal Dr.S.Salivahanan writes..

In order to meet present day challenges and opportunities in technical education, we have decided to understand the best practices in top ranking universities globally.

In this context a three-day visit to **National University of Singapore** and **NTU, Singapore** was arranged between 19th and 23rd of Jan 2019, to understand their Best Practices, Model for Research, Development, Education, Training etc.



The team that visited Singapore from SSN comprises the following members:

1. Mrs. Kala Vijayakumar, President, SSN I
2. Dr. S. Salivahanan, Principal, SSN CE
3. Dr. S.V. Albal, Director, SASE
4. Dr. V. Kamaraj, Professor & Head, EEE
5. Dr. S. Radha, Professor & Head, ECE
6. Dr. Chitrababu, Professor & Head, CSE
7. Dr. V.E. Annamalai, Professor & Head, Mechanical

(More details in the faculty write up section)

The visit was very enriching and we learnt a lot. ---VeA

Shiv Nadar University comes up at SSN Campus!



Photo Courtesy: Harshal, 4th Year, Mech

Info to Alumni- Department Update

External Recognition:

Dr.K.S.Vijay Sekar, Asso.Professor has been invited to be a Technical committee member in the 4th International Conference on Frontiers of Composite Materials (ICFCM2019) and the 5th International Conference on Smart Material Research (ICSMR2019), which will be held in The University of Queensland, Brisbane, Australia during November 13-16, 2019. [10.01.2019]



Dr. A S Ramana

Dr. A S Ramana reviewed an article in Energy Conversion and Management (Elsevier) Journal. [17.01.2019]

Dr. K. Jayakumar, Associate Professor, reviewed a research paper titled "Effect of punching on appearance and mechanical properties of leathers", submitted to the International Journal - Journal of Industrial Textiles, published by SAGE Publications. [21.01.2019]



Dr. K. Jayakumar

Dr. A.K.Lakshminarayanan delivered an invited lecture on "Advanced welding processes" to the participants of the national workshop conducted by Indian Institute of Welding at Chennai on 31/01/2019.

Project proposals:

Internal Funded Faculty Project Titled "Design and fabrication of solid-state extrusion setup to produce Mg nanocomposite micro tubes for biomedical stent applications" has been sanctioned on 10/01/2019. Project Amount: Rs. 4.8 Lakh, Duration: 36 months, Project Investigators: Dr.K.S.Jayakumar and Dr.A.K.Lakshminarayanan [10.01.2019]



Dr.A.K.Lakshminarayanan



Dr. K.S.Jayakumar

The project titled "Thermal performance analysis of solar flat plate collector with grooved tubes using aqueous glycol and nanofluids", submitted by Dr.R.Prakash (mech) and Dr.K.Sathishkumar (chem) has been sanctioned an amount of Rs.5.5 lakhs.[10.01.2019]



Dr.R.Prakash



Dr.K.Sathishkumar



Dr.M.Nalla Mohamed submitted a project proposal titled "Investigation on Bio-Inspired Lightweight Energy Absorbing Structures for Automotive Crashworthy applications" under internal funding scheme of SSN Trust. [31.01.19]

Dr.M.Nalla Mohamed submitted a project proposal to ARMAMENT RESEARCH BOARD titled "Development of shear-stiffening gel doped (kevlar/ stf/graphene based) body armour for improving ballistic performance". The funding request is Rs. 30,18,927/-. The co-investigator of the project is Dr. R. VELMURUGAN, Senior Professor (HAG), Department of Aerospace Engineering, Composite Technology Center, Indian Institute of Technology Madras.[31.01.19]

Research

Dr. M. Dhananchezian, Associate Professor's research paper titled "Study on the machinability characteristics of Nicked based Hastelloy C-276 under cryogenic cooling" has been published in the international Journal, Measurement 136 (2019) 694–702. (Elsevier, ISSN: 0263 - 2241, IF – 2.218, SNIP – 1.566, SJR – 0.733).



Industrial Interaction:

Dr. N. Lakshmi Narasimhan, Associate Prof., interacted with Caterpillar company for possible student internship during the 2019 summer. The response received was positive. [02.01.2019]

Dr. N. Lakshmi Narasimhan, Associate Prof., sent resumes of three students (2 UG and 1 PG) for possible internship at Ford, Chennai. This is in response to the initiatives of Mr. Arjun Shyam Sundar (2015 Batch) our Alumnus employed in Ford. [10.01.2019] [\(More details in the faculty write up section\)](#)

Dr. N. Lakshmi Narasimhan, Associate Prof., carried out an Industrial Consultancy for Preethi Kitchen Appliances, Chennai. [16.01.2019] [\(More details in the faculty write up section\)](#)



College activities:

Dr. B. Anand Ronald, Assoc. Prof., was appointed as member of the Squad for SSN Autonomous End Semester Exams. [11.01.2019]

Dr. S. Soma Sundaram, Associate Professor, delivered a talk on CFD workshop on 5th National Conference on Sustainable Trends in Energy and Environmental Resources (STEER 2K19), SSN College of Engineering. [25.01.2019]



Dr. B. Anand Ronald



Dr. Soma Sundaram

DC Meet

The doctoral committee meeting for PhD confirmation was conducted on 30/01/2019 for Mr. Rajasekaran, full-time research scholar under the guidance of Dr.A.K.Lakshminarayanan.(Asso.Prof/Mech)

Student activity:

Lalith Kishore K, 2nd year, secured 2nd position in hovercraft competition held at IIT Madras [07-01-2019]

Bharath V, 4th year, won the inter year men's squash competition [23-01-2019]

Report for Workshop on Design and Development of E-Mobility Vehicles

The SAE chapter of SSN College of Engineering and Imagine to Innovate – a startup company jointly organized a two-day workshop on “Design and Development of E-Mobility Vehicles” during 26th and 27th Dec, 2018 at the Department of Mechanical Engineering, SSN, Chennai.

Imagine to innovate (I2I) is an MSME,ISO certified successful startup under startup India, which conducts automotive competitions like the Asian E-Bike Challenge which is Asia's Largest Electric Bike Challenge. The objectives of the workshop were to impart working knowledge to students for designing and developing electric vehicles in-order to participate in national and international competitions.



The workshop was handled by Mr. Subhash Pilla, Mr. Chaitanya and Mr. Vamsi Gangadharan from I2I and Mr.Sankeet from ORAAS Educational Organisation. The first day was handled by Mr. Subhash Pilla and Mr.Sankeet and they taught the students about the different electrical components in E-Mobility vehicles and the market status of the current Electric and Hybrid Vehicles in the world. The session gave the students valuable insight into the different power sources available and the possible future technologies.

The second day was handled by Mr.Vamsi Gangadharan. He started with the basics of both two-wheeler and four-wheeler vehicle dynamics and then moved on to the design procedure and the required calculations for building an E-Mobility vehicle. The workshop was interactive and professional.

The knowledge gained during this workshop will help the students design and fabricate an E-Mobility Vehicle on their own to participate in the E-Bike competitions. I sincerely thank I2I, ORAAS and SSN College of Engineering for conducting this workshop.



Benchmarking Singapore Institutions

The Management of SSN suggested that a team from SSN visit Institutions that have already reached top positions in Global ranking.

National University of Singapore (NUS) and Nanyang Technological University (NTU) are two Institutions that are in the top 15 category. So, we were advised to visit Singapore Institutions.

President, Principal, Dr.Albal and HoDs of EEE,ECE,CSE and Mech visited NUS, NTU and Newcastle University between Jan 19 and 23.

There were several learnings for us, which we will be discussing with all HoDs and charting out an action plan-for both SSN and for the SNU, Chennai.

NUS- has a special program for first year students called Engineering Principles and Practice (EPP), that helps them to understand what is engineering, through some hands-on sessions.

NUS offers a second major in Design, offered by the innovation and Design Program (iDP). This program has been able to turn out many startups.

NTU has a special program to attract Indian talent-and that is called NTU India Connect. Every year, they encourage 150 interns to do projects there. They receive around 2000 applications from India. This internship serves as a gateway to higher studies there.

Both NUS and NTU encourage direct Ph.D from B.E. One has to finish Ph.D. within five years and no extension possible. Two publications in Journals are a norm.

NUS has introduced a concept called "Active Learning"- with students sitting around tables, discussing in teams and solving problems assigned, in three hour sessions. This happens typically with thirty or less students. NTU does a similar action, under the name tutorials.

NTU does "Small Group Teaching" for some subjects-wherein the faculty uploads all material in advance and then spends relatively less time in person-he attends only one or two hours per week for doubt clearing.

Newcastle University is relatively new in Singapore and they are actively involved in collaborating with Singapore Institute of Technology. The mech dept runs a Marine engg program.

We will seek ways and means to leverage on the contacts developed and the practices we have seen. Prof.Kamaraj , HoD of EEE took the pain of meticulously arranging the meetings, through his contacts.

Our Chairman, Mr.R.Srinivasan, was kind enough to host a dinner for us on Sunday.



Industrial Interaction

Consultancy with Preethi Kitchen Appliances, Chennai.

(Jan 16, 2019)

Post our MOU with Preethi Kitchen Appliances (PKA - acquired by Philips India), Chennai, the interactions have been healthy and encouraging. Recently, Dr. NLN was approached by the company for a specific technical task on certain products that are under development. The work was officially carried out under "industrial consultancy" by NLN.



Alumni Gesture

Dr. NLN writes...

**Arjun Shyam Sundar (2014 Batch)
Ford Technologies, Chennai.**

Dear All,

As a placement faculty coordinator for our department, I am pleased to share my appreciations on behalf of our department to our beloved Arjun Shyam Sundar (2014 Batch) for his initiatives on arranging student internship with Ford Technologies, Chennai. He has referred three resumes to the company for possible internship opportunity. His gesture is appreciated with due regards!!



**Industrial Internship at Caterpillar - Resumes Shortlisted
Note of Thanks to Dr. KSV and Dr. SSK!
(Mock Interview on Jan 28, 2019)**

Dr. NLN writes...

Post the request from Dr. NLN to Caterpillar, the company has agreed to have about five resumes of 3rd Year Mech, considering them for a summer internship. About 17 resumes from interested candidates were received following the announcement through the 3rd year Placement Coordinators.

A personal request was made to Dr. K. S. Vijay Sekar, Associate Prof/Mech and Dr. S. Suresh Kumar, Associate Prof/Mech to select suitable 5 from the 17 candidates. On Jan 28, 2019, both of them took a great effort conducting a mock face to face interview with all the 17 students.

As informed well in advance to the candidates on the selection process, Dr. KSV and Dr. SSK were very happy to see the level of preparations the students have made for the mock interview process. Kudos to all the students. Finally, based on the merit score, five students were short listed and those resumes shall be sent to Caterpillar for the next stage of the selection process.

As a placement Coordinator of the department, I am extremely happy to share my Thanks to Dr. KSV and Dr. SSK for the efforts they have put in amidst their schedules. My special Thanks to all the four 3rd Year Placement Coordinators whose efforts have been commendable from the very beginning day of their induction into the placement activities of their batch. My sincere thanks to the Department for the kind support.

Report on SSN Alumni meet- Tribute 2019
By Murali T.S, Sharan Srinivasan and Swathi Subramanyan

The grand alumni meet of SSN, "Tribute 2k19" was held on Jan 5th. This time around we witnessed a foot fall of close to 500 - 550 alumni roughly with even some of them from the 2000 batch showing up. The number of mechanical alumni who registered were close to 30.



In terms of batches, the highest number of alumni were seen from the batches of 2016 followed by 2018 and 2015. This year we organized successful events such as A Bash which was an alumni networking event. Here, the participants were part of a group discussion and interacted in length about the work culture and opportunities that existed in their companies. From the feedback the team received, this was the most liked and successful event.

Another highlight of this event was the revealing of the distinguished alumni award. The CEO of Behindwoods, Manoj Nirmala Sreedharan was honored with it this year for his perseverant and pioneering work in the movie industry review segment.

The event also brought in two stand up comedians Jagan and Manoj from Evam Standup Tamasha who made the crowd laugh their heads off. The day ended with a movie screening in the international hostel where the alumni were accommodated for the night stay. Other events such as treasure hunt and sports were also organised. Continuing with our tradition of planting tree saplings, we had alumni from the 2015 batch plant a sapling at the event.



The alumni also had quite a few goodies to take back as memories from the event. They all received an SSN badge, calendar and T shirts. The 2004, 2009 and 2014 batches had their 15th, 10th and 5th re-unions respectively this year.

The batch of 2009 pledged an amount of Rs.4.5 lakhs for the benefit of the college.

We received an overwhelming response from the alumni who all had a great time rekindling old friendships and memories. Tribute 2k19 was indeed an unforgettable event.



Murali T.S



Sharan Srinivasan



Swathi Subramanyan

Student write up

Placement Write-up

Wood Group

- Manickavel M

Final Year Mechanical Engg

Wood Group PLC is a multinational energy services company with its headquarters at Aberdeen, Scotland. It acquired Amec Foster Wheeler in 2017.

It provides a range of engineering, production support and maintenance management services to energy and industrial sectors all over the world. On 22nd January 2019, the Wood-oil and energy company came to our college campus for recruitment.



The first round was a pen and paper test which included both technical and aptitude questions. In the technical round, questions were more related to our project.

I felt they were equally interested in my Internal Funding Project and my role in it. The results were announced by night. Overall, the recruitment team looks for students with a lot of confidence and a willingness to learn new things.



I want to thank my parents, Placement Officers, department faculty and Student Placement Coordinators and my beloved friends.

Student write up

Placement Write-up

HCL Technologies

Suyam Prakash

Final year Mechanical Engineering

I got selected in the HCL Technologies recruitment drive that took place at SSN College of Engineering on 19th December 2018.



The placement process consisted of three rounds out of which the first one was an APTITUDE ROUND which lasted for 1 hour. In the test, easy aptitude questions were asked and technical questions were asked, testing core knowledge.

Out of 12 people, 5 were selected for the TECHNICAL INTERVIEW process. It was a basic interview round consisting of mechanical questions based on my requested area of interest. The Interviewer was friendly and asked about my Project which was within my area of interest.

Following this was the HR round where three of us attended it. The interviewer asked me to tell me about myself from which various personal questions were asked.

Overall, it was a very smooth process and I would like to thank the Management, Placement officers and Placement coordinators for aiding in my success.



Placement Write-up

MRF -Maintenance Dept.

- Prannoy K, V Harish
Final Year Mechanical

We were recruited as Graduate Engineering Trainees in the Maintenance Department of MRF.

The placement process consisted of six rounds. The 1st round had questions from subjects related to Mechanical and Automobile.

The 2nd round had questions on aptitude, logical reasoning, verbal ability and psychometry.

In the 3rd round, we were asked to choose an existing problem that was related to maintenance and production planning and were given 15 minutes to come up with a plan to resolve it. The 4th round was the Group Discussion(GD). 5th and 6th rounds were the Technical and HR interviews.

Prannoy K writes...

The topic I was given for GD was "EDUCATION SYSTEM IN INDIA". The GD lasted 20 minutes. In the Technical interview, the questions were mainly from my areas of interest, projects and inplant training. The HR interview was about family background, previous failures in placement processes and about our project.

Knowing the company well regarding their research, development programs and products they manufacture will give you an idea about the process. Choosing an area of interest which correlates with your project or inplant training will help you answer the questions better.



Suggestions:

- Be Confident.
- Have a positive outlook throughout.
- Be thorough with what you add on your resume.

All the Best!

V Harish writes...

The one thing I got to know about MRF was that they expect students who stay in their company for a long time. They try to find out, in the interviews if you have any plans of leaving for masters. There were eliminations only in the first technical round. Hence it is important to clear the first round. In the following rounds, they tested our aptitude and our attitude through a psychometric test. After this 'Day Task Scheduling' round was conducted followed by a GD.



My suggestions to students:

1. Have a good understanding of your projects and its applications.
2. Be strong in the core mechanical subjects like manufacturing, material science, thermodynamics and power plant engineering.
3. Be calm and composed during the HR interview.
4. Prepare 2 or 3 areas of interest (preferably materials and manufacturing which most companies expect) well in advance.

Student write up

Placement Write-up

MRF R&D

Ashok Kumar P A, S.Vishal Dayalan
Final Year Mechanical

We got placed in MRF for Research and Development role.
The rounds were as follows:

1. Online technical (if cleared will move on automatically to next round or else logged out)
2. Online Aptitude test
3. Psychometry test
4. Task prioritizing
5. Group Discussion

Based on the performance of these rounds, candidates were shortlisted for maintenance role and among them three were shortlisted further for R &D.



Vishal Dayalan



Ashok Kumar

Ashok Kumar P A writes...

I was called for R &D pool campus interview. There were candidates from Anna University (CEG and MIT), NIT Warangal and Manipal University as well. Initially there was GD once again to test our confidence level followed by technical and HR interview.

The panel asked questions from Engineering mechanics, Strength of materials. I was also asked to explain my final year project. They expected me to explain things technically.

Key Points:

- Basics concepts in Strength of Materials, Engineering Mechanics, Manufacturing technology (Try to remember all processes along with application).
- Try narrowing down your area of interest by choosing specific topics in a subject which lowers the range of questions asked.
- Be prepared for explaining your project within your knowledge limits as questions will be raised from your own explanations.
- Good communication skill.
- Try to create a first impression by adding something unique about you.
- Make sure to justify your answer by writing equations or drawing images in paper provided (In R&D they definitely want you to do so).

S.Vishal Dayalan writes...

Things you should know:

About tyre manufacturing
About the company
Atleast two strong core subjects
Your projects in the undergraduate period

Tips:

Be confident
Answer to the point
Showcase you desire for learning
And most importantly BE PREPARED



Boeing shows off new transonic wing concept



Boeing has taken the wraps off of a new ultra-thin wing concept designed to improve the performance of transonic aircraft traveling at speeds of Mach 0.8 (593 mph, 955 km/h). The latest version of the company's Transonic Truss-Braced Wing (TTBW) can fly higher and faster than previous iterations thanks to its optimized support truss and adjusted wing-sweep angle.

We hear a lot these days about the return to commercial supersonic air travel and even the advent of hypersonic flight, but the real cutting edge in aerospace engineering at the moment is in transonic flight. Almost all flying outside of military circles takes place in the subsonic realm. That is, speeds under Mach 0.8 (609 mph, 980 km/h). However, in the highly competitive world of commercial passenger and freight hauling, that's not quite good enough.

You might be asking yourself, if the speed of sound is Mach 1 (767 mph, 1,235 km/h), why is subsonic below Mach 0.8? The reason is that the realm between Mach 0.8 and Mach 1.2 (913 mph, 1,470 km/h) is what is known as transonic. That is, the range of speeds just before breaking the sound barrier, and just after that's marked by an increase in air resistance and other factors that can be rough on an airframe.

Ideally, engineers would like to get as close to transonic as possible without pushing the sound barrier, but it's far from easy. That's because it isn't a matter of the whole aircraft going from subsonic to transonic. As one approaches the transition point, some parts of the plane will be over the limit while others will be below it. An example of this is prop-driven fighter planes at the end of the Second World War that would suddenly start to shake themselves apart because they were flying so fast their faster-spinning propellers were breaking the sound barrier.

According to Boeing, the TTBW was originally designed to operate in a range of Mach 0.70 to 0.75 (519 to 556 mph, 835 to 895 km/h), but the new truss, wing sweep, and integrated design allows for better speed and altitude performance by creating a thin, foldable wing with a span of 170 ft (52 m).

The purpose of this is not only to produce a better wing for transonic flight, but also one that is more eco-friendly. It was developed as part of NASA's Subsonic Ultra Green Aircraft Research (SUGAR) program, which aims at creating sub and transonic aircraft that are 71 decibels quieter than current FAA noise standards, have a 71-percent reduction in nitrogen oxide emissions, and burn 70 percent less fuel.

Source: <http://www.boeing.com/features/2019/01/spreading-our-wings-01-19.page?sf205320177=1>

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From their Website:

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Amazing Innovation- 101

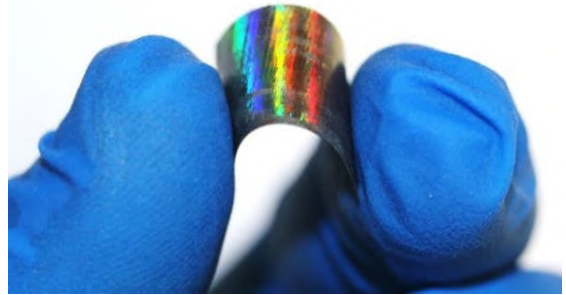
"Metallic wood" makes nickel as strong as titanium, but five times lighter

A new technique has been used to turn ordinary metals into "metallic wood" with a greatly improved strength-to-weight ratio. By manipulating materials at the atomic scale, scientists from the University of Pennsylvania's School of Engineering and Applied Science, the University of Illinois at Urbana–Champaign, and the University of Cambridge claim to have created a sheet of nickel that is as strong as titanium, but up to five times lighter.

Led by James Pikul, Assistant Professor in the Department of Mechanical Engineering and Applied Mechanics at Penn Engineering, the new study looked at new ways to take metal and give it the porous structure that gives wood its strength.

So far, the test metal has been in the form of foils that are about a square centimeter in area. Also, it's a very expensive process. However, the goal is to develop an infrastructure that would allow greater quantities of the material to be produced more cheaply through economies of scale. In addition, the team needs to see what the properties of the metallic wood are, such as whether it dents or shatters when struck.

Source: <https://penntoday.upenn.edu/news/metallic-wood-has-strength-titanium-and-density-water>



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Aircraft-inspecting robot successfully climbs a 737

Currently, when aircraft need to be inspected for structural damage, people perform the task manually. While this does provide them with employment, it's also time-consuming, costly, and subject to human error. For this reason, a fuselage-climbing robot is being developed to do the job.

Known as the Vortex Robot, the device is the focus of the ComplInnova project, which involves five European research groups.



The plan is that the four-wheeled robot will ultimately be able to wirelessly and autonomously move across the entire outside of an airplane, using integrated sensors such as thermal cameras and ultrasound units to search for defects. In some cases, it would also be able to use drills, lasers or other onboard tools to perform repairs.

The current prototype was recently trialled on a Boeing 737 airliner, by a team from Sweden's Lulea University of Technology at Britain's Cranfield University. Utilizing a powered air suction system on its underside, the Vortex Robot was able to climb all of the plane's smooth surfaces regardless of their curvature or inclination, moving in any orientation.

Notably, it was even able to move across the transitional area where the wing meets the fuselage.

Source: <https://www.ltu.se/research/subjects/control/Robotar-kan-skota-inspektion-av-flygplan-1.183702?l=en>

Amazing Innovation- 103

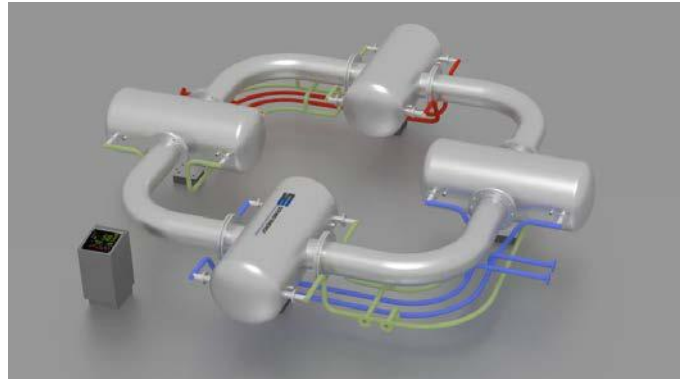
Electricity-free air con: Thermoacoustic device turns waste heat into cold using no additional power

Beginning with the principles of the Stirling engine, SoundEnergy's THEAC thermal acoustic engine takes heat – either industrial waste heat or solar heat – and turns it into powerful cooling without requiring any other power source. This completely renewable technology could prove highly disruptive.

The THEAC system uses no mechanical moving parts, no refrigerants, no CO₂, no precious metals or materials. Instead it uses Argon gas, which is plentiful and has zero global warming potential, and is totally sustainable, relying solely on the energy of incoming heat to produce cold. The technology is also claimed to make about as much noise as a running shower, and is scalable, way up from the company's 25-kW demo unit, which can produce cooling temperatures as low as -25°C.

The SoundEnergy device uses heat differential to create an acoustic wave in an infinite loop tube, and amplifies that wave until it reaches a high intensity. Then, just as the heat differential was converted into a pressure differential, the pressure differential is converted back into another heat differential, this time in reverse.

Source: <https://www.soundenergy.nl/>



Amazing Innovation- 104

Hyundai's Elevate robotic walking car steps out of the shadows

Imagine if an emergency vehicle could not only bring the team of responders to the edge of the disaster zone but actually step right in, striding over top flaming rubble to get responders exactly where they need to be.

And that's the all-new Hyundai Elevate concept, moving through the world on fully articulated wheeled legs that let it climb vertical walls, hop over crevasses, crawl like a reptile and quietly cruise the highway on a sunny day.



In order to achieve this level of mobile autonomy, the Elevate leaves behind conventions like axles and suspension wishbones, replacing them with individually powered wheels mounted to robotic legs. Each leg includes five degrees of movement via integrated vertical and horizontal hip joints, a knee joint, an ankle joint and a rotational steering joint that spins the wheel 360 degrees around a vertical axis. Hub motors in the wheels team to provide propulsive power.

When flat ground gives way to ultra-bumpy rock or rubble, the Elevate can use the height and power of its legs to react, standing tall and clearing large obstacles, crawling along like a reptile, climbing walls up to 5 feet (1.5 m) high, stepping over holes up to 5 feet across or spreading its track to a full 15 feet (4.6 m). In this way, the driver can negotiate terrain that would be deemed impassable for any other auto, defeating obstacles like large boulders, deep snow and steep hills, all while the vehicle body stays completely level.

Source: <https://www.hyundainews.com/en-us/releases/2680>

Alumni Update

Alumni writes (1).....

Exploring Education

Vishal belongs to 2012-16 batch. While in his third year, he started his venture into training "Public Speaking" for school and college students. He is the CEO of Warhorse Innovations. Now, he is aspiring to go for higher studies in Education. As part of the process, he is exploring education, teaching and learning by getting on to the ground. We wish him well in his journey----VeA

Dear all,

I am not sure if you know, but I have embarked on a 4-month journey across India working in various educational institutions to better understand the Indian educational eco-system. Having applied to some of the top schools in the world to study public policy/educational policy, I figured my perspective in education was very narrow and very urban. I suppose that was a consequence of being born, raised, educated and employed in Chennai. I wanted to broaden my perspectives before I go to study and thus chalked out a plan to visit around 12-15 states where I would be working/observing in various educational institutions.



I started off my journey on the 1st of January and headed to a village called Manjakkudi in Tiruvarur District of Tamil Nadu. It is about 25 kilometers from Kumbakonam. The Swami Dayananda Saraswati educational trust has set up a full fledged K-12 school and an arts & science college over there. I had heard a lot about how these two institutions revitalised an otherwise sleepy and idyllic village and was keen to go there. Co-incidentally, one of my students' grandmother is a trustee there and I was able to establish contact with the very dedicated and able principal.

I spent 6 days in Manjakkudi, interacting with students, teachers, parents, the principal and with a few members of the administration. I spent a good amount of my time taking a few classes for the students of classes 9-12 on goal-setting and nurturing a growth-mindset.

These interactions served two purposes, a) I had heard from the principal that these students are highly ambitious but lack the confidence to come out of their shell b) I figured interacting with them as a teacher and a friend would help me gain the perspective I was looking for. The enthusiasm and the hunger to do well in these students was really heartwarming.

I also later found out that Wipro has a business service center here with an employee count of over 160. The head of the business center told me that their attrition rate is as low as 3%. He also told me that this is a viable business option for large firms and MNCs because setting up such units in tier-4 towns not only invigorates the local economy, but also makes sound financial sense because the cost to the company is a lot lower.

Manjakkudi is also a very scenic village with acres and acres of paddy being grown on all sides. After school, I spent my evenings cycling to a spot I found where I was surrounded by 4 sides by paddy and could see a magnificent sunset.



LEG 2: KOCHI MUZIRIS BIENNALE



From here, I next went to Kochi for the Kochi-Muziris Biennale. The Biennale is India's largest art festival and what a spectacle it was. I spent 5 days just devouring art from 10am-7pm everyday. There were exhibits from over 95 artists and more than 120 art installations in some amazing locations in the charming locale of Fort Kochi. I have been to Fort Kochi a couple of times before but this was the first time I have gone for the Biennale and what an

experience it was. The theme of the festival was “towards a non-alienated life” and the curator, Anita Dube has spent years and travelled to 32 countries to bring together all these artists and their art for the festival. The art primarily concentrated on the themes of perspective, slavery, anti-heteronormativity, LGBTQ pride, pain, modern-day technology. There even was an art installation doing a tribute to mosquitoes. For me, the Biennale was a sound learning experience. I primarily understood perspective and expression. People have expressed their perspectives in such ways that it unlocks different things in your mind altogether. I realised that appreciating art is a good trait to have for a policy maker because art helps you understand other perspectives and helps you build a 360 degree vision.



Alumni writes (2).....

Thamil Mani (2015 Batch) writes .. (to Dr.N.Lakshminarasimhan, Asso.Prof,Mech)

Dear Sir,

I am glad to inform you that I've got PhD admission at IIT-Bombay for Jan 2019 batch in the Mechanical Engineering Department. My project is under Prof.Sandip K Saha and it is a DST funded project.

I'll always remember the Fluid Mechanics that I first learnt in your class that has driven me all the way here. Thank you for everything. I'll come and visit you in college during the vacation time sir.



Forthcoming events

Workshop/ Faculty Development Programs

February 2019

- The School of Mechanical and Building sciences, VIT CHENNAI, is organizing DST-SERB Sponsored 2-Day National Workshop on "Contemporary issues on Advanced Materials for Noise and Vibration Applications during **1st and 2nd February 2019**.
- Society of Manufacturing Engineers (SME-VIT), Vellore feel glad to invite you to our Hands-on workshop on COMPUTATIONAL TECHNIQUES FOR ENGINEERS. This workshop is going to be conducted on **9th and 10th of February 2019**, In the Campus of Vellore Institute of Technology, Vellore.
<http://info.vit.ac.in/events-vit/cte-3.0/apply.asp/>
- **SSN Incubation Centre** is conducting an Entrepreneurship Awareness Camp for Engineering and MBA students from **11th February to 13th February 2019** at EEE Seminar Hall, SSN Campus. The camp is sponsored by Entrepreneurship Development Institute of India, NSTEDB,DST.

The camp will consist of talks and presentation by experts on topics of entrepreneurship, idea generation, incubation, fund raising, marketing skills, basic accounting for startups among others. Entrepreneurs from different fields will be sharing their experiences with the participants. A field trip to a leading industrial organisation is also arranged on one day.

- Center of Excellence for Mechatronics and Automation of Dr. Mahalingam College of Engineering and Technology (MCET) is organising a three day training programme on "Pneumatics" during **13-15 February 2019**.
- IIW-IIT Madras-Fronius are jointly organizing a two day workshop on "Advanced Welding Methodologies for Automotive & Power Industries" on **15th & 16th February 2019** at IIT Madras.
- Department of Mechanical Engineering of SSNCE is organizing a One Day Workshop on "Electrical Discharge Machining" on **16th February 2019** (Saturday).
- Department of EEE, Kongu Engineering College, Erode is organizing a CSIR (Council of Scientific and Industrial Research) sponsored two days National Seminar on "Emerging Advancements in Smart Materials Applications" during **21-22 February 2019**.
Details: <https://goo.gl/8vMSMt>
- Bannari Amman Institute of Technology, Sathyamangalam is organising a workshop on Industrial Robotics during **26-27 February 2019** at Industrial & Mobile Robotics lab, Department of Mechatronics.
Target group: I, II, III year engineering students from Mechanical, Aerospace, Aeronautical, Automobile, Electronics and Communication and polytechnic students from Mechanical background.
Confirm your participation by registering on <https://goo.gl/forms/GxI3hwGy7R1JaWUw2> by 23rd Feb, 2019.

March 2019

- Department of Mechanical Engineering at National Institute of Technology Calicut is organizing a six days GIAN course on "Advances in Combustion Modeling" during **4th to 9th March 2019** for students, research scholars, faculties, scientists and industrialists.
The last date of registration for this course is **1st February 2019**.
<http://www.nitc.ac.in/GIAN/GIAN-ADVANCES-MODELING.pdf>
- Department of Mechanical Engineering Mepco Schlenk Engineering College (Autonomous), Sivakasi, is organising a three day workshop on Conceptual Discussions and Practical Exposure on NDT Testing and Metal Inspection in collaboration with SRI SAI NDT Institute Pondicherry from **14th to 16th March**.

February 2019

- CIPET is conducting the 10th International conference Advances in Polymeric materials, with a theme of "Innovations in Polymeric product development and manufacturing" from **8 to 10 February, 2019**.
- Amity University in collaboration with International Solar Alliance (ISA) is organizing the International Conference on 'Efficient Solar Power Generation and Energy Harvesting' (An Industry – Academia Meet) from **12th - 14th February 2019** at Amity University, Noida.
- NTPC Ltd. is organizing the International O&M Conference- Indian Power Stations 2019 (IPS-2019), on **February 13-14, 2019** in Raipur, Chattisgarh, India.
- The Department of Chemical Engineering of SSNCE is organizing the 4th International Conference on "Recent Advancements in Chemical, Environmental and Energy Engineering (RACEEE 2019)" during **14th and 15th February 2019**.
Interested participants can send their abstract to raceee2019@ssn.edu.in.
Further details can be found from the site <http://www.ssnraceee2019.com/>
- The National Conference on Recent Advances in Mechanical Engineering – RAME 2019 is being organized by the Department of Mechanical Engineering, Sriram Engineering College, Chennai on **28th February, 2019**.
- ASME is organising IMECE - International Mechanical Engineering Congress and Exposition during Nov 8-14 2019. Abstract submission must be by **Feb 25 2019**.

March 2019

- Department of Mechanical Engineering of Bannari Amman Institute of Technology is organizing a two day International Conference on Materials, Manufacturing and Machining (ICMMM 2019) from **8– 9 March 2019**.

For more information visit www.icmmm19.com
- Department of Mechanical Engineering of SSNCE is organizing the Second International conference on "Sustainable Energy Resources, Materials and Technologies (ISERMAT 2019)" from **March 14-15, 2019**.
- The Department of Mechanical Engineering, National Institute of Technology Delhi (NITD) (an autonomous institute under the aegis of MHRD, Govt of India and an institute of national importance) is organizing 1st National Conference on Advances in Mechanical Engineering (NCAME) on **March 16, 2019**.

A detailed information has been uploaded on the following link:
<https://sites.google.com/nitdelhi.ac.in/ncame2019/home?authuser=0>
<https://easychair.org/cfp/NCAME-2019>

April 2019

- Department of Mechanical Engineering- SSNCE is organizing the International Conference on Mechanical Engineering Design (ICMechD2019) during **18-19 April 2019**. The deadline for abstract is **28 February 2019**. All accepted papers for the conference will be published in refereed Springer journal.
Website: <https://sites.google.com/ssn.edu.in/icmechd>

July 2019

- The 1st International Conference on Mechanical Power Transmission (ICMPT 2019) will be held at IIT Madras Campus, Chennai, India during **11-13 July 2019**. More information is available at ICMPT 2019.
- The 11th International Exergy, Energy and Environment Symposium (IEEEES-11) is organised by the Department of Automobile Engineering, SRM Institute of Science & Technology, Chennai, INDIA, during **14-18 July 2019**. More info: <http://www.srmuniv.ac.in/ieees-11>

September 2019

- The Department of Chemical Engineering of SSNCE is organizing the First International Conference on Recent Trends in "Clean Technologies for Sustainable Environment (CTSE-19) during **26-27 September 2019**. Details in conference website- www.cleantechssn.com.

December 2019

- Department of Mechanical Engineering of the Indian Institute of Science (IISc) Bangalore, is conducting The International Conference on Industrial Tribology during **1-4 December 2019**. Complete details of the event at- <http://tribologyindia.org/>.
- Indian Institute of Technology (IIT) Bombay, is organizing the 7th International Conference on Advances in Energy Research (ICAER). The conference will be held from **10th to 12th December 2019** at VMCC, IIT Bombay.
Website- <http://www.esi.iitb.ac.in/icaer2019/conference.html#content1-1g>

Challenges/Contests

February 2019

- Gnanamani Educational Institutions wish to host an entrepreneurship contest for instilling and igniting the spirit of entrepreneurship among the youth, through "Business Idea Challenge" contest. This contest will definitely help to identify people with creative and viable business ideas that could be converted into successful dynamic Enterprises by creating employment and wealth. Applications are invited for the contest from **10th January to 28th February**. The best viable ideas selected will be given cash prize and support with a host of business development services. For more details please visit: www.gct.org.in.

May 2019

- Fentress Global Challenge: In line with the speculative nature of the competition, participants should seek to improve every dimension of the airport terminal building. All entries should delve into one or more broad topic related to airport architecture and the future of aviation such as mobility, urbanization, globalization, technology, flexibility, security, project feasibility, and passenger experience in 2075.

For more details, visit <https://fentressglobalchallenge.com/competition-brief>

Last date for submission: 31 May 2019

Group Info

Attention- B.E and M.E. students interested in higher studies



Dr.J.Venkatramani, Chairman for Post Graduate Studies, Department of Mechanical Engineering, Shiv Nadar University (Gr Noida). writes...

Perhaps you might be aware that we are a **fully established research university** with a focus on multidisciplinary research and student-centric environment. Our focus and emphasis on high-quality research can be substantiated from the fact that we offer one of the **highest stipend in our country**, namely, **Rs 16000 pm for M Tech students and Rs 35000 pm for Ph.D. students**.

As a part of team mechanical engineering, we are in the process of **recruiting potential candidates for M Tech, PhD programs**. We would be much grateful if you can **share this information** with all your **B Tech and M Tech students** who share a similar inclination and urge them to contact me at the **earliest**. We are **also looking for** bright individuals to work as **Research Assistants** for a short period of time. We typically pay around **20-25 thousand rupees** a month for the same. The candidate is expected to publish in high-quality journals and in turn, attenuate their career towards higher degrees such as Ph.D.

To that end, we would like to interact with your students, by coming in person to mechanical department at SSN and present about SNU. I would like to do the same in Feb'19. I would be presenting a part of our research activities for about 20 minutes, followed by interaction with students for 10 minutes.

A meeting will be arranged at SSN campus, on Feb11th, for a face to face discussion with Dr.JV ----VeA



Dr. Muthu Senthil Pandian
SSN Research Centre

1. MNRE - Invitation of Project Proposals for R&D Demonstrations

MNRE invites project proposals from R&D Organisations/Institutions, Universities and Industries, etc. actively engaged in Research, Development and Demonstration (RD&D) in areas of **New & Renewable Energy relating to Solar Photovoltaic, Solar Thermal, Waste to Energy, Wind Energy, Hydrogen & Fuel cell, Energy Storage and Small Hydro.**

A. Solar Thermal

Indigenisation of solar reflector material with the following characteristics: High solar reflectivity, Good outdoor durability under the harsh Indian environmental conditions, Robust and good mechanical resistance

B. Solar Photovoltaic

1. Indigenous PV cell technology with globally competitive cost and performance.
2. Cutting edge manufacturing techniques for indigenous cell and module manufacturing.
3. Emerging PV technologies including Copper Zinc Tin Sulphide (CZTS), Multi junction solar cells, Organic solar cells & Perovskites

C. Waste to Energy

1. Standardization of Technologies for conversion of Waste into bio-fuel/electricity with reliable performance at economic cost

D. Wind Energy

- i. Development of Materials, techniques and Technologies for off shore wind
- ii. Modelling & Simulation including big data and artificial intelligence to improve weather forecasting and system management
- iii. Small wind turbines with storage options
- iv. Cost reduction of components, BOS and systems

E. Hydrogen & fuel Cell

1. Increasing efficiency and indigenous content of electrolytes
2. Indigenous development of Type II and Type IV cylinders as well as Hydride and Carbon materials
3. Development of Hydrogen distribution networks through pipelines and dispensing stations.

F. Energy Storage

1. Batteries for Grid storage at economic cost and improved cycle life
2. Standardisation of controls and interfaces to allow flexible operation
3. Simulation and modelling for evaluation of storage requirement for different applications including grid support, ancillary services, e-mobility and peak shifting etc. so that appropriate technology and capacity choices could be put implemented for each scenario.

G. Small Hydro

Modular turbines with reduced weight & higher conversion efficiency at lower cost.

- The detailed guidelines and formats for the following are available on the MNRE Web Site (mnre.gov.in) (under drop down menu of <Programmes / Technology>, click <Research, Development & Demonstration> and then click <R&D Formats>

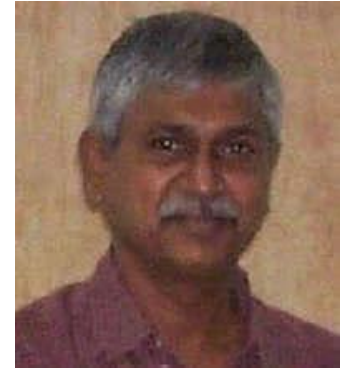
Website Link: <https://mnre.gov.in/>

Did you know that at Harvard, the most popular and successful course teaches you how to learn to be happier?

The Positive Psychology class taught by Ben Shahar attracts 1400 students per semester and 20% of Harvard graduates take this elective course.

According to Ben Shahar, the class - which focuses on happiness, self-esteem and motivation - gives students the tools to succeed and face life with more joy.

This 35-year-old teacher, considered by some to be “The Happiness Guru”, highlights in his class 14 key tips for improving the quality of our personal status and contributing to a positive life.



Mr. Kishore Babu
Schwing Stetter

1. Thank God for everything you have. Write down 10 things you have in your life that give you happiness.
2. Practice physical activity. Experts say exercising helps improve mood. 30 minutes of exercise is the best antidote against sadness and stress.
3. Breakfast. Some people miss breakfast for lack of time or not to get fat. Studies show that breakfast gives you energy, helps you think and perform your activities successfully.
4. Assertive. Ask what you want and say what you think. Being assertive helps improve your self-esteem. Being left and remaining silent creates sadness and hopelessness.
5. Spend your money on experiences. A study found that 75% of people felt happier when they invested their money in travel, courses and classes.
6. Face your challenges. Studies show that the more you postpone something, the more anxiety and tension you generate.
7. Put everywhere nice memories, phrases and photos of your loved ones. Fill your fridge, your computer, your desk, your room of beautiful memories.
8. Always greet and be nice to other people. More than 100 inquiries state that just smiling changes the mood.
9. Wear comfortable shoes. If your feet hurt you, you become moody, says Dr. Keinth Wapner, President of the American Orthopaedics Association.
10. Take care of your posture. Walk straight with your shoulders slightly backwards and the front view helps to maintain a good mood.
11. Listen to music. It is proven that listening to music awakens you to sing and make your life more and more happy
12. What you eat has an impact on your mood. Do not skip meals, eat lightly every 3 to 4 hours and keep glucose levels stable. Avoid excess white flour and sugar. Eat everything!

13. Take care of yourself and feel attractive. 70% of people say they feel happier when they think they look good.

14. Fervently believe in God. With him nothing is impossible!

Take aways from the above lines: Happiness is like a “remote control”. We lose it every time, we go crazy looking for it and many times without knowing, that we are sitting on top of it!

Thanks & Regards –

Kishore Babu

HR - Department

SCHWING Stetter India Private Limited

Corporate Wisdom 62

Value of hardships

A man had one very beautiful daughter. When the daughter was ready for marriage, the father sent news around town that all the eligible young men should come to compete in a test which would determine who was fit to marry his daughter.

On that day, all was set, all the able-bodied young men came out. Some came with paper and biro and others with cutlasses and swords.

The rich man took them to his swimming pool and addressed the men: “Any of you who can swim from one end of this swimming pool to the other would marry my daughter.

In addition, I'll give him 15 million dollars, a car and a house so they can start life well. I shall be waiting to meet my son-in-law at the other end. Good luck!”

As the young men, all very excited at the prospect of winning, started taking off their shirts, a helicopter came over the pool and dropped alligators and crocodiles into the pool. Immediately, all the men turned back and started wearing their shirts again. Disappointed, some of them said, "That's crazy, let's see who would marry that girl, no one will".

All of a sudden, they heard a splash in the pool. Everybody watched in amazement as one gentleman waddled across, expertly avoiding the alligators and crocodiles.

Finally, he made it to the other side. The rich man could not believe it. He asked the young man to name anything he wanted but the man was still panting uncontrollably.

Finally, he got back to his senses and made a request saying, "SHOW ME THE PERSON WHO PUSHED ME INSIDE THIS POOL!"



Moral

1. You don't know what you are capable of doing until you are PUSHED! Meanwhile, the Crocodiles were Rubber Crocodiles.
2. Those seeking to push you into the jaws of alligators and crocodiles may have helped you to reach your promised land!!!
3. Sometimes it takes going through the bad moments to bring out the BEST in us.
4. Trials are raw materials for Triumphant Testimonies... The push might take different dimensions: some people needed to be sacked before realizing their potentials and reaching their goals in life.

I WISH YOU WILL GET A DIVINELY INSPIRED PUSH in your life.

God Bless you as you accept the Push to go for the fulfilment of your purpose in life.

- ☐ P- Persist
- ☐ U- Until
- ☐ S- Something
- ☐ H- Happens

#WishingMostAndMore
R. Ramakrishnan

Answer to **QUIZ!!** (2nd page) : b) 50 years

This edition of Aspire was compiled by Nitin Joy, with support from Sowmya K, CT Alagappan and Srivasupradha R



Nitin Joy



Sowmya K



CT Alagappan



Srivasupradha R