Newsletter

Volume 9, Issue 6, June 2019

SSN

Aspire

Mechanical Engineering

Achievements in Sports, Projects, Industry, Research and Education

All About Nobel Prize- Part 66

Charles Kuen Kao

FATHER OF FIBRE OPTICS

Charles Kuen Kao is known as the "father of fibre optic communications" for his discovery in the 1960s of certain physical properties of glass, which laid the groundwork for high-speed data communication in the Information Age. Before Kao's pioneering work, glass fibres were widely believed to be unsuitable as a conductor of information because of excessively high signal loss from light scattering. Kao realized that, by carefully purifying the glass, bundles of thin fibres could be manufactured that would be capable of carrying huge amounts of information over long distances with minimal signal attenuation and that such fibres could replace copper wires for telecommunication. He shared the 2009 Nobel Prize in Physics with Canadian physicist Willard S. Boyle (1924-2011) and American scientist George E. Smith (1930-), co-inventors of the charge-coupled device, which is used to convert optical information to an electrical signal. Fibre optics and charge-coupled devices made possible the broadband communications on which contemporary medical informatics and electronic publishing depend, as well as specific imaging devices in ophthalmologic equipment and microscopes.

Kao was born on November 4, 1933, in Shanghai, China. As a boy, Kao studied Chinese classics at home with a tutor and learnt English and French at an international school in Shanghai.

In 1948, Kao's family moved to Hong Kong, where he completed his secondary education at St Joseph's College in 1952. He then went to England, where he did his undergraduate studies in electrical engineering at Woolwich Polytechnic (now the University of Greenwich). In 1965, Kao was awarded the PhD degree in electrical engineering from the University of London, after which he worked as an engineer for Standard Telephones & Cables at its research center in Harlow (England). In 1966, he and British engineer George Hockham proposed that fibres made of ultra-pure glass could transmit light for distances of kilometres without a total loss of signal. In 1970, the first practical fibre-optic cable was successfully produced.

In 1970, Kao joined the Chinese University of Hong Kong, founding the Department of Electronic Engineering. He moved to Roanoke, VA, in the United States in 1974 and worked as Chief Scientist and later as the Director of Engineering of ITT Corporation, the parent company of Standard Telephones & Cables. A number of key patents related to fibre optics were filed during this time. In 1982, Kao was named ITT's first Executive Scientist and moved to Connecticut, where he also served as an adjunct professor at Yale University. In 1987, Kao returned to the Chinese University of Hong Kong as its Vice-Chancellor. He retired in 1996 and served as visiting professor and in various honorary positions thereafter.

In 2004, Kao was diagnosed as having Alzheimer disease. He died in Hong Kong on 23 September 2018 at the age of 84.

Kao received many awards besides the Nobel Prize, including the Faraday Medal in 1989, the Alexander Graham Medal in 1985, the Marconi Medal in 1985, and many honorary degrees from universities and colleges worldwide.

A stamp honouring Charles K. Kao was issued by Hong Kong in 2010. In recognition of his invaluable contributions, the fibre industry holds an annual celebration known as “Gimme Fibre Day” on November 4, his birthday, which is celebrated widely around the globe.

Source:
https://www.nobelprize.org/prizes/physics/2009/

Info to Alumni- Campus Update

On May 7, 8 and 9, 2019, a MATLAB training program for the HCL team was organized by Dr S. V. Albal. Dr K. S. Vijaysekar of the Mechanical Department helped co-ordinate the program. Dr S Somasundaram (Associate Prof/Mech) and Dr S Suresh Kumar (Associate Prof/Mech) conducted the training. (more info in the faculty write up section)

On May 11 2019, the SHAPE projects were displayed in SSN –

The Poster Presentation (display of projects) by the participants in SHAPE (SSN Higher Secondary Schools Awareness Raising Programme in Engineering) was held from 10.30 a.m. to 12 Noon on Saturday, the 11th May, 2019 at the second floor of CDC (Career Development Centre). The Valedictory Function was held from 2.00 to 3.00 p.m.

The Internally Funded Projects were reviewed by an external expert on May 13, 2019.

The Second meeting of the Academic Council was held on May 18, 2019, to finalise the syllabi for all programs under the Autonomous stream.

Info to Alumni- Department Update

External Recognition

The Journal of Mechanical Sciences, published by Copernicus, has invited Prof. VE. Annamalai to review a research paper titled, “Intelligent Centerless Grinding: Global Solution for Process Instabilities and Optimal Cycle Design”.

International Journal of Applied Ceramic Technology , published by the American Ceramic Society, has invited Prof. V.E. Annamalai to review a research paper titled "Effect of green state manufacturing variables on scratch behaviors and translucency of CAD/CAM dental zirconia”.

Prof VE Annamalai was invited by VelTech University, Avadi, to conduct an Academic Audit. [21.05.2019]

Dr. K. Jayakumar, Associate Professor has been invited as External Examiner to review M.Tech projects at SRM University, Kattankulathur on 3-5-2019 [03.05.2019].

Dr. K. Jayakumar, Associate Professor reviewed a paper entitled " Mechanical and drilling performance of short jute fiber-reinforced polymer biocomposites: Statistical approach" for the Journal of Composites Part B: Engineering (Elsevier) [27.05.2019].

Dr. K. Jayakumar

Dr.D.Ananathpadmanaban's book entitled Science and Technology of Nanomaterials has been accepted for publication by Lambert Publishing house, Germany. The book covers the syllabus of the subject Nanotechnology offered in the III Semester M.E-Manufacturing stream[12.05.2019]

Dr.D.Ananthapadmanaban

Dr. M S Alphin, has acted as a resource person and delivered a guest lecture in the topic of " Limits, Fits and Tolerances" in Anna University jointly sponsored six days faculty development training programme for the Subject Design of Machine Elements at Easwari Engineering College, Chennai [06.05.2019].

Dr. M.S.Alphin

Dr.R.Vimal Samsingh reviewed a paper for the Journal of IEEE/ASME Transactions on Mechatronics[29.05.2019].

Dr.R. Vimal Samsingh

Our student project on saving occupants of a car when it sinks, has been published in Times of India dated May 20, 2019. Students' design lets sinking car's roof pop open.

https://timesofindia.indiatimes.com/city/chennai/students-design-lets-sinking-cars-roof-pop-open/articleshow/69404315.cms

College Activities

Three students have worked on the following projects in our department, under the SHAPE program. (more info in the student write up section)

1. Design of Simple Household Robots- 2 students (M.Jishnu, B.Prasanna), under the guidance of Dr S. Satheeshkumar.

2. Measurement and Utilization of Solar Thermal Radiation - 1 student (Abhinav S. Krishnan), under the guidance of Dr N. Lakshminarasimhan.

Research Activities

Dr S Suresh Kumar

Dr. S. Suresh Kumar has presented a conference paper titled “Numerical Ballistic Performance of Single and Stacked Aluminium (AL7075) Targets” at National Conference on Advances in Energy Efficient Technologies (NCAEET-2019) held at Marian Engineering College, Trivandrum. [03.05.2019]

Dr.R.Vimalsamsingh published a paper on the title " A Compact Microwave Device for Fracture Diagnosis of the Human Tibia," in the journal of " IEEE Transactions on Components, Packaging and Manufacturing Technology" Volume 9 , Issue 4 , April - 2019 , 661-668 . Co-authors: Dr.Malathi Kanagasabai; Dr Esther Florence [29.05.2019]

Projects Applied

Dr. K. S. Jayakumar, along with Dr. V. Vaithianathan of ECE Department, has submitted a proposal titled “Development of Natural Language Interface for NAO Humanoid robot to make a human-like assistant in an Office Environment”. Fund requested is Rs .29.73 lakhs.

Dr. M. Selvaraj has applied for a project under MATRICS Scheme of SERB. Title “Development of Software for predicting the defect free weld parameters for friction stir welding of aluminium alloy”. Fund requested Rs.6.0 lakhs.

Dr. K. S. Vijay Sekar, Associate Professor submitted an external project proposal titled "Finite element analysis and optimization of material flow stress model parameters for accurate simulation of the machining process" to DST - SERB under MATRICS scheme. Fund requested Rs.6.0 lakhs.

Dr.Arun Vasantha Geethan,HOD, Department of Mechanical Engineering, St.Josephs Institute of Technology and Dr.D.Ananthapadmanaban,Associate Professor, Department of Mechanical Engineering, SSN College of Engineering submitted a project entitled Development of lead free solders to DST-SERB.Funding requested is 15.2 Lakhs [10.05.2019]

Dr. K. S. Jayakumar

Dr. V. Vaithianathan

Dr. M. Selvaraj

Dr. K. S. Vijay Sekar

Info to Alumni- Student Activity

- Rahul B (3rd year) got selected for an internship in Hanon Systems, Earthonomics Engineers [27.05.2019].
- Anirudh PB (3rd year) got selected for an internship at L&T [27.05.2019 - 05.07.2019].
- K Balaji (3rd year) got selected for an internship at Tenneco Automotive India Limited [29.05.2019 - 01.07.2019].
- Navneeth V (3rd year) got selected for an internship at Essilor, Singapore [17.06.2019 - 13.07.2019].
- Rohith N, Shriram S and Shriraamanathan (3rd year) got selected for an internship at Sundaram Clayton [20.05.2019 - 20.06.2019].
- Sathyaseelan S (3rd year) got selected for an internship at Sundaram Fasteners [16.05.2019 - 14.06.2019].
- Saran Prasanth RR and Shibin P (3rd year) got selected for an internship at Fanuc India [20.05.2019 - 20.06.2019].
- Naveen V (3rd year) got selected for an internship at Daimler Commercial Vehicles India [20.05.2019 - 21.07.2019].
- Mohitha U. M. (3rd year) got selected for an internship at IIT-M [13.05.2019 - 22.06.2019].
- Mouliswar (3rd year) got selected for an internship at IIT-M [13.05.2019 - 13.07.2019].
- Pavithra Prabha (3rd year) got selected for an internship at NIT Trichy [16.05.2019 - 15.06.2019].

Apart from this, around 38 second year and 52 third year students have applied for internship program to various industries listed below. The duration of the internship program varies from 10 days to one month.

1	ICF, Chennai	11	Chennai Port
2	Ford Motors	12	Hyundai Motor India
3	Ashok Leyland	13	Skoda (Gurudev Motors)
4	Caterpillar India	14	Sundaram-Clayton
5	Rane Brake linings	15	Royal Enfield
6	Nexa Showroom	16	Carborundum
7	Daimler India	17	TVS Motor Ltd
8	NIOT- Velachery	18	NLC India Ltd
9	Sundaram Fasteners	19	Valeo India
10	Essilor – Eyewear company	20	Fanuc India Private Ltd

Write Up By School Students On SHAPE Programme

SHAPE (**S**SN **H**igher Secondary Schools **A**wareness Raising **P**rogramme in **E**ngineering) is a new program introduced by SSN to familiarise School students on college life.
Three students have worked on the following projects in our department, under the SHAPE program.

1. M. Jishnu and B. Prasanna worked on “Design of Simple Household Robots”, under the guidance of Dr S.Satheeshkumar.

2. Abhinav.S.Krishnan worked on “ Measurement and Utilization of Solar Thermal Radiation”, under the guidance of Dr.N.Lakshminarasimhan.

Mech students were guided and mentored by Ms.R.Rajeswari. The students are sharing their experience.

Dr N Lakshmi Narasimhan

Dr S Satheeshkumar

Ms R Rajeswari

Prasanna (Student of Hindu Senior Secondary School, Adyar) **writes…**

I would really like to share my experience during my internship at SSN. First of all, I really loved the ambient atmosphere of SSN. The faculties with whom I worked were so much interactive. Despite their busy schedules, they managed to spend time with me.

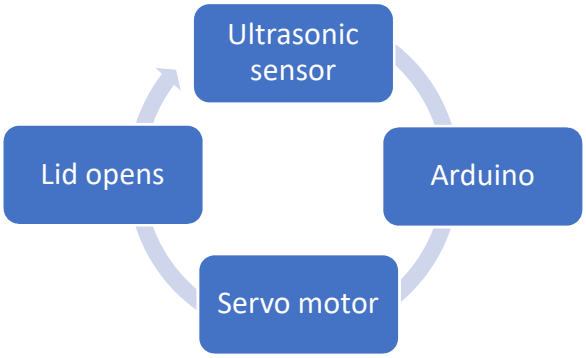
Truly speaking, this is the most-worthy summer vacation I have ever spent. Honestly, I can say, it is the platform for us to explore my hidden potential into the outside world. The project what we did- 'SMART DUSTBIN', inspired me to do more and more projects and what I would like to exhibit to the human society in my future endeavours. At the same time, I am indebted to Dr. Satheesh Kumar and Dr. Rajeswari who inspired me and guided me to complete this project successfully and, last but not least, my fellow student and my friend, Jishnu, who joined with me to finish the project effectively. My sincere thanks to SSN for giving me this wonderful opportunity.

Smart Dust Bin

In this project, we have designed a simple system called Smart Dustbin using Arduino, Ultrasonic Sensor and Servo Motor, where the lid of the dustbin will automatically open itself upon detection of human hand. After setting up the Smart Dustbin and making all the necessary connections, the code is uploaded to the Arduino and 5V power supply is given. Once the system is powered ON, Arduino keeps monitoring for any object near the Ultrasonic Sensor. If the Ultrasonic Sensor detects any object like a hand for example, Arduino calculates its distance and if it less than a certain predefined value, Arduino will activate the Servo Motor and with the support

of the extended arm, it will list the lid open. After certain time, the lid is automatically closed. The main concept behind the Smart Dustbin using Arduino project is Object Detection. This methodology is implemented here, where the Ultrasonic Sensor is placed on top of the dustbin's lid and when the sensor detects any object like a human hand, it will trigger Arduino to open the lid.

A simple but useful project called Smart Dustbin using Arduino is designed and developed here. Using this project, the lid of the dustbin stays closed, so that waste is not exposed (to avoid flies and mosquitoes) and when you want to dispose any waste, it will automatically open the lid.

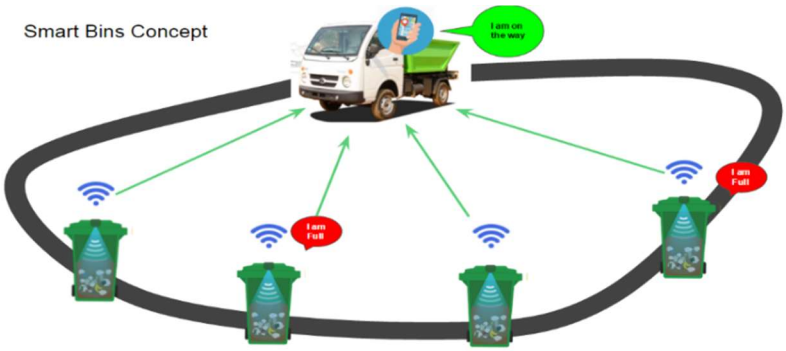


Improvisations

Smart waste management uses devices such as smart dustbins to robotic road cleaners coupled with smart transportation vehicles to clean up the collected and compressed wastes. Smart mobility vehicles are connected with smart dustbins using wifi /cellular connectivity over internet. Smart bins are installed with various types of sensors with specific functions.

Advantages

It saves time and money by using smart waste collection.
~ It decreases traffic flow and reduces air pollution as result of less waste collection vehicles on the roads.
~ It further reduces manpower requirements to handle the garbage collection process.
~ Applying smart waste management process to the city optimizes management, resources and costs which makes it a "smart city".



Limitations

Initial establishment cost is high.
~ Sensor nodes used in the dustbins have limited memory size.
~ Wireless technologies used in the system such as wifi have shorter range and lower data speed.
~ It reduces man power requirements which results into increase in unemployment for unskilled people.

Abhinav (Student of PSBB, Siruseri) **writes…**

Over the course of my internship at SSNCE, I had the opportunity of working on a project in the Mechanical Engineering department on the subject of Solar Thermal Applications. Under the guidance of Dr. N. Lakshmi Narasimhan, I was introduced to the concept of solar thermal radiation, solar-PV systems, solar thermal systems, the basics of radiation heat transfer, and basics of thermal storage.

I also obtained hands-on experience with parabolic dish collectors, solar thermal storage using phase change materials, and solar radiation measurement using a digital pyranometer.

In addition to this, I learnt about the concept of evaporative cooling systems, and observed the working of an evaporative cooling unit that used ambient air to keep the temperature inside a chamber 10^{o}C lower than that of the surroundings .This included wind velocity measurements using a vane-type digital anemometer, and temperature measurements using k-type thermocouples.

Overall, this internship was a great learning experience and I have gained invaluable knowledge from it. I would like to thank my project coordinator Mrs. Rajeswari and Dr. N. Lakshmi Narasimhan for guiding me and assisting me throughout my project. I would also like to thank the management of SSNCE and PSBB Siruseri, for giving me this great opportunity to learn new things.

Introduction

- Due to Global Warming and associated Climate Change, there is a need for harnessing non-polluting sources of energy such as Solar, Wind, Hydro, etc.
- In Countries like India and China, attention is focused on Solar and Wind as potential sources of the future.
- India envisages about 20000-30000 MW of Solar power generation the next few years.
- Large scale Solar Projects are being promoted both by Govt. as well as Private Sectors. JN Solar Mission is an excellent drive for Solar Power Projects in our country. Together with Solar, Solar-Wind Hybrid is considered a promising option for renewable power generation.

Technical Learning (in the Dept. of Mech. Engg.)

- ❑ Theoretical
- Introduction to Solar
- Applications of Solar
- Basics of Solar – PV Systems
- Basics of Solar Thermal Systems
- Basics of Radiation Heat Transfer
- Basics of Thermal Storage

- ❑ Practical
- Solar Radiation Measurement using Digital Pyranometer
- Wind Velocity Measurements using Vane Type digital Anemometer
- Temperature Measurements using K-Type Thermocouples
- Hands on with Parabolic Dish Collectors
- Hands on with Evaporative Cooling Systems
- Solar Thermal Storage using Phase Change Materials

Description of Some Solar Thermal Systems

- Parabolic trough collector: A curved trough focuses sunlight onto a point, and the trough is rotated throughout the day to maximize received energy.
- Dish collector: A large reflective parabolic dish focuses light onto a single point above the dish.
- Power Tower: A large number of mirrors concentrate sunlight on a target on top of a tower.

Readings obtained by measurement of diffuse radiation using digital pyranometer

Measurement of wind velocity in m/s using Anemometer

Collection Efficiency of a Collector

The collection efficiency of a Flat-Plate collector can be assessed in the following manner:
If insolation of 900 w/m^2 falls on a collector of area 1.377 m^2, then the energy collected is equivalent to 700 watts:
Q= η x (I x A)
Q=0.56x900x1.377
Q=700W

We also find the values of solar irradiance with respect to T_{out} and m^o using the formula: $Q= m^*C_p (T_{in}-T_{out})$

Conclusion

- Thus, Solar energy has a vast variety of applications and is extremely valuable asset to humankind in the future.
- It is a non-polluting , renewable source of energy that can be easily accessed in most parts of the world

Faculty write up

Dr. S Suresh Kumar, Assoc Prof/Mech writes…

Workshop conducted by Mechanical Engineering faculty to HCL Trainees

Dr S Suresh Kumar

Three days (May 06 – 08, 2019) MATLAB workshop was conducted by Dr. S. Suresh Kumar and Dr. S. Somasundaram to **HCL Trainees.** The coordinator for the workshop was Dr.K.S. Vijay Sekar.

Dr S. Soma Sundaram

Topics such as, Mathworks Introduction, MATLAB fundamentals, Function calls and complex matrix solutions, Modeling of simple physical systems & Controllers, P,PI & PID algorithm implementation using M script with Automotive & Industrial examples, basics of SIMULINK were covered. Around 16 participants participated. Hands on experience was given to participants to simulate various Mechanical and electrical Engineering systems such as automotive suspension system, spring mass system and DC motor control. During the training program, the trainers observed the real involvement of the participants. Individual participants showed more interest in problem solving, programming and simulation parts using MATLAB and Simulink. The trainers also noted that the participants could able to apply the concept of MATLAB to various problem domains such as electrical (DC motor control), mechanical (vibration problems) and instrumentation.

We express our sincere thanks to Dr.S.V.Albal for providing this opportunity.

Faculty write up

Dr. A K Lakshminarayanan, Asso Prof/Mech writes…

Research Paper Publication

I am happy to inform you that , as an outcome of our international collaborative research work, a research paper titled "Development of High-Fidelity Imaging Procedures to Establish the Local Material Behavior in Friction Stir Welded Stainless Steel Joints" authored by S. Ramachandran**,** A. K. Lakshminarayanan**,** P. A. S. Reed **and** J. M. Dulieu-Barton is published in the journal “Metals” (Clarivate Analytics impact factor: 1.704). *Metals* **2019**, *9*(5), 592;

Link: https://doi.org/10.3390/met9050592

Dr A K Lakshminarayanan

Faculty write up

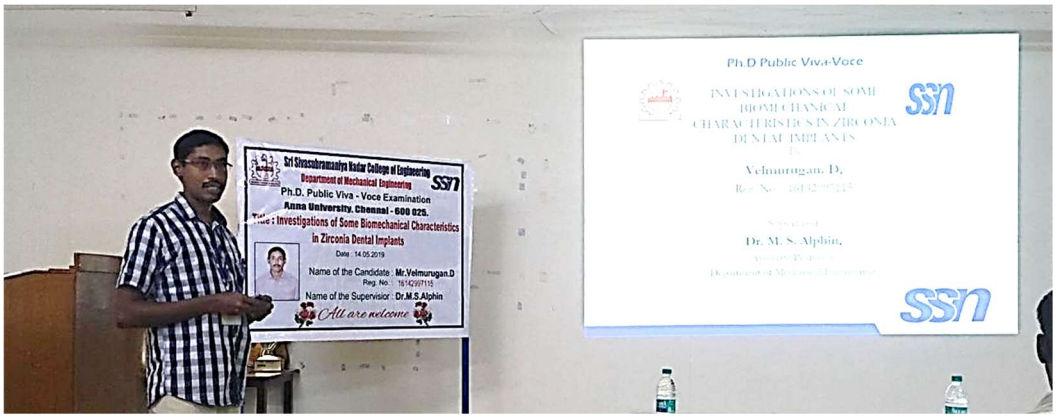
Dr. M S Alphin, Assoc. Prof/Mech writes…

PhD Public Viva Voce

Mr. Velmurugan D, JRF, defended his PhD work in the Viva Voce held on 14 May 2019. His thesis was recommended by experts Panel for award for the Doctorate degree from Anna University. Dr. M S Alphin was his supervisor.

Dr M.S Alphin

Dr. Ramesh T, NIT Trichy and Dr. Joseph Davidson, NIT Warangal were present for the session.



A Lilium's full-sized electric jet flies for the first time

Lilium first emerged in 2016 as an aviation start-up with some very lofty ambitions, revealing plans to develop a five-seat electric aircraft that can take off vertically, switch to horizontal flight in mid-air and cover some sizable distances on each charge. The company has now taken a significant step toward achieving this goal, completing a flight of a full-scale prototype of its Lilium Jet for the very first time.

The aircraft would come down and land on pads stationed around cities and regions, and whisk passengers away to their destination, or close to it, without adding to a city's pollution, noise and traffic on the ground. Rather than the 55 minutes it takes to travel from JFK Airport to Manhattan by car, the Lilium Jet could theoretically deliver passengers in five minutes.

With retractable landing gear, fly-by-the-wire controls and a grand total of 36 electric jet engines, the Lilium Jet is capable of taking off vertically in confined spaces by directing the airflow downwards. It can then shift these flaps to direct airflow over the wings to propel the aircraft forward horizontally. In this state, the jet will apparently be able to travel at 300 km/h (186 mph) and cover 300 km (186 mi) without needing to recharge.

Source: https://newatlas.com/lilium-jet-full-sized-flight/59702/

META-CRAFT INDUSTRIES

From the website:

Meta-Craft Industries is an ISO 9001:2008 certified company, established in 1981.They are manufacturers of sheet metal pressed and fabricated components. They also have expertise in making Dies and tools for sheet metal works. The company commenced its operation in the year 2000. MCI is tier 2 supplier to major Automotive and Electric appliance manufacturers in India. We are specialists in Deep Draw Components & Progressive Tools.

They specialise in:

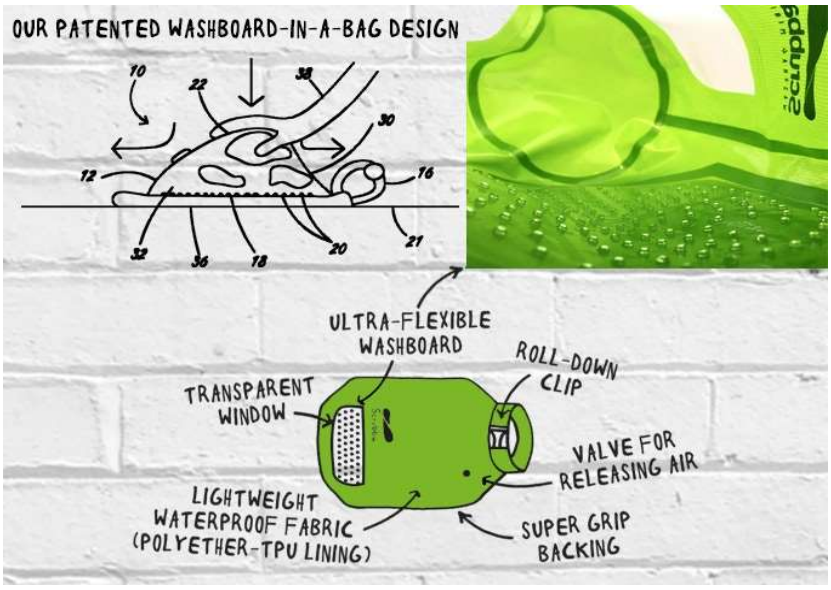
- Tooling Solutions
  - Deep draws
  - Assembly Bracket
  - Close tolerance sheet metal
- Short Run Tools for prototype
- Product and value engineering

Their list of products includes deep draw auto parts, spring seat tools, switch contactor, etc. They manufacture jigs, fixtures, dies, molds, machine tools, cutting tools (such as milling cutters and form tools), gauges, and other tools used in manufacturing processes. Their main headquarters is located in Mumbai.

If interested to work here, mail your resumes to: metacraft09@gmail.com

Amazing Innovation- 117

Scrubba Wash Bag MINI: An Unbelievably Small Washing Machine



In 2012, the original Scrubba wash bag was launched (the world's smallest washing machine) which has provided a convenient way for over 140,000 travellers and campers to pack less and clean their clothes anywhere in just minutes. Weighing just 70g (3 oz.) the Scrubba wash bag MINI is more than 50% lighter than the original Scrubba wash bag and more compact.To clean socks and jocks anywhere, one simply adds water and cleaning liquid, close the bag, remove air through the twist valve and rub the clothes against the washboard for as little as 30 seconds (3 minutes provides a machine quality wash). Then just rinse in the bag and hang to dry. This compactness and economical technology can be a life saver to many.

Source: https://www.kickstarter.com/projects/calibre8/scrubba-wash-bag-mini-an-unbelievably-small-washin?ref=814396&token=70fafe2f

Amazing Innovation- 118

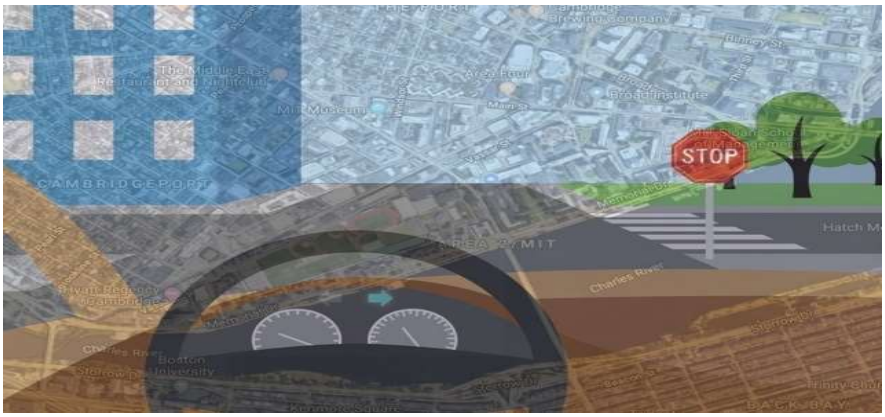
Kymera: faster, lightweight and powerful electric personal watercraft

The latest addition to the Kymera product line – which will include a battery-powered kayak and an electric surfboard, as well as the body board – is billed as "faster and more lightweight than any competing product." The 84 x 40 x 26 inch (213 x 101 x 66 cm) wave rider weighs in, at 70 lb (32 kg) and can split in two for ease of transport in cars, SUVs and trucks – one part tipping the scales at 45 lb and the other at 25 lb.

Source: https://newatlas.com/kymera-k-x2-personal-watercraft/59674/

Amazing Innovation- 119

Bringing human-like reasoning to driverless car navigation



With aims of bringing more human-like reasoning to autonomous vehicles, MIT researchers have created a system that uses only simple maps and visual data to enable driverless cars to navigate routes in new, complex environments. Similarly, to human drivers, the system also detects any mismatches between its map and features of the road. This helps the system determine if its position, sensors, or mapping are incorrect, in order to correct the car's course.

Importantly, the researchers say, the system uses maps that are easy to store and process. Autonomous control systems typically use LIDAR scans to create massive, complex maps that take roughly 4,000 gigabytes (4 terabytes) of data to store just the city of San Francisco. For every new destination, the car must create new maps, which amounts to tons of data processing. Maps used by the researchers' system, however, captures the entire world using just 40 gigabytes of data.

During autonomous driving, the system also continuously matches its visual data to the map data and notes any mismatches. Doing so helps the autonomous vehicle better determine where it is located on the road. And it ensures the car stays on the safest path if it's being fed contradictory input information.

Source: http://news.mit.edu/2019/human-reasoning-ai-driverless-car-navigation-0523

Amazing Innovation- 120

Elegant Iris drawing tool runs rings around other compasses

The design team at Makers Cabinet has brought together a love of engineering, drawing and photography (after a fashion) to create one of the most elegant objects of the year. Dubbed "Iris," this ingenious compass is part objet d'art, part exercise in engineering beauty, and part Spirograph for grown-ups. The Iris, which is currently the subject of a crowdfunding campaign, is set to be a must-have desk object for engineers and design buffs. Sure it's a tool, but it's also meant to be fun. The mechanism at the core of the tool is, as the name suggests, an iris, inspired by the elegance and reliability of the apertures within camera lenses.

Source : https://newatlas.com/iris-drawing-tool-compass/59585/

Alumni Update 1

Sharan Srinivasan, final year, writes as a part of the Alumni Documentation series…

Sharan Srinivasan

I'd like to introduce to you our alumnus, Sailalitha G (2018 batch) who is now pursuing her MS in Robotics and Artificial Intelligence at University of Pennsylvania, Philadelphia. Sailalitha has always expressed a sharp acumen in the field of Robotics even during her time here at SSN. She was an active member of the Robotics Society and involved herself in many activities within the society. She interned at both IIT Indore and IIT Madras, involving herself in projects such as developing a robotic fish and a rehabilitation robot.

Sailalitha G

My interaction with Sailalitha focused on certain aspects like higher education in the US, campus life and mainly about the field of Robotics. Those looking to take up their GRE test must start to prepare well in advance (by the end of 5th semester) and stick to using 1 or 2 resources at the most. To enquire about tuition waivers and details regarding TA and RA positions, one must contact the Head of Administrative Staff of that university. Rather than choosing universities based on their ranks, Sailalitha feels that for the field of Robotics one must select the university based on the faculty available. She says that professors who are actively involved in International Conferences and Organizations such as International Conference on Robotics and Automation (ICRA), International Conference on Intelligent Robots and Systems (IROS), Rehabilitation Engineering and Assistive Technology (RESNA), Conference on Computer Vision and Pattern Recognition (CVPR) are the ones to look out for.

She insists that interested students should equip themselves with adequate programming skills, concepts in Manipulator Kinematics and Machine Learning. Since we are not exposed to any of these techniques and concepts within our Anna University syllabus, it becomes prudent to study these concepts individually. Sailalitha also says that concepts like Control Theory are vital when it comes to the field of Robotics. She feels that students should start an end to end project in one semester instead of a subject related to robotics which would be a great learning experience.

She has done a tremendous amount of research work at her time in UPenn and is now interning at NextStep Robotics, Baltimore, Maryland as a Robotics Software Intern.

Alumni Update 2

Padma Shravan M

I am honoured to be given an opportunity to share my experience through Aspire. I owe my gratitude to all professors who have guided me during my years at SSN.

To the people who don't know me , I'm Padma Shravan M , Mechanical 2017 Pass-out , currently working in Renault Nissan Technology and Business Centre India Private Limited(RNTBCI) , Chennai as an engineer in ABS/VDC team in the Chassis Department for the last 2 years.

About the company – **Renault Nissan**

RENAULT NISSAN

RNTBCI is a Franco-Japanese strategic partnership between automobile manufactures Renault, based in Paris, France, and Nissan, based in Yokohama, Japan, which together sell more than one in ten cars worldwide.

The key Renault Nissan recruitment process includes Aptitude test followed by Group Discussion. Next round includes Technical and HR interview questions where the basics of Mechanical Engineering along with Role specific questions. In addition, projects and internships related topics were questioned in detail.

The last two years of my career have been a great learning curve, which helped me in figuring out what I exactly want and aspire, and also what I am good at. I got to work on a futuristic product in a different culture (Japanese), which enabled me to learn from Japanese people who were experts in such innovative products. Also, I was fortunate to be recognized for my work.

I am no expert and I have not achieved significantly to give advice, but I would like to provide a few suggestions based on my experiences so far.

For all people who have started Engineering, Mechanical Engineering is all about how you understand a concept. People in the industry look for clarity of concepts, knowledge regarding recent developments in the industry and the also a particular product and concept. So, my suggestion to you fellow mechies would be to learn (not by-heart) the concepts.

For all my fellow mechies who will be graduating, remember that the world out there in the industry life is completely different to the college life. So equip yourself to be be positive, principled, pro-active, and productive. Consider any job you get as a journey to learn about yourself, figure out your aspirations. The purpose is to grow as a human being; to discover what you're good at, what you love to do. Also, remember every moment is an opportunity to learn from everyone around you. So ask questions. Try to make as much connections as possible and at the same time, never let go of the friends you have made.

Make full use of the available facilities and professors as they were remarkable in guiding me and many other students who are doing well both in India as well as abroad.

After my two year stint at RNTBCI, I will begin my next phase of life at IIM Kozhikode from June 2019. Feel free to contact me through LinkedIn (PADMA SHRAVAN M).

Thanks & Cheers!

Forthcoming events

Workshop/FDP

June 2019

- Indian Institute of Information Technology Design and Manufacturing(IIITDM), Kancheepuram, Chennai (under Ministry of HRD, Govt. of India) is organizing a short term training program on " Microgrid and Renewable Energy Technologies (MRET) " from 6-11 June 2019.This program is targeted towards UG/PG/Ph.D. students and faculties from academic institutes who have interested in renewable energy technologies. For the further details of the course, please visit the website:
  Brochure at Institute Website
  Course Registration and Contents of the course : Google Form for Workshop Registration
- The Department of Mechanical Engineering, Karpagam College of Engineering, Coimbatore, is conducting one week short term training program on **"**BIOFUELS AND ITS APPLICATIONS IN I.C ENGINES" during June 10-14, 2019 .
- The Department of Mechanical Engineering of Saranathan College of Engineering, Tiruchirappalli, is organizing an AICTE sponsored Two weeks Faculty Development Programme (FDP) titled "Cutting Edge Technology and Contemporary Research in Mechanical Engineering**"** from 10th to 22nd of June 2019.
- Indian Institute of Technology, (Banaras Hindu University) is organizing a course on "**Materials Characterization for Engineers**" from 17.06.2019 to 21.06.2019. The course is open to teachers from AICTE recognized management and engineering colleges. Merit and availability of funds will be taken into consideration while selecting candidates. The complete application should reach to the given address latest by 10.06.2019. Website Links https://www.iitbhu.ac.in/
  https://www.iitbhu.ac.in/contents/institute/2019/event/qip/qip_stc_materials_17june_21june.pdf

Conference

June 2019

- PSG College of Technology, Coimbatore, is organizing an International conference on Fluid Mechanics and Fluid Power (FMFP_2019), during Dec 9 – 11, 2019. Details at http://www.psgtech.edu/fmfp2019/
  Paper submission deadline : **June 14 , 2019**
- The Department of Mechanical Engineering of VRSEC is organizing an AICTE Sponsored International Conference on Advances in Renowned Renewable Energy Technologies (ICARRET)**.** The Conference is scheduled on 23rd & 24th October 2019 in Velagapudi Ramakrishna Siddhartha Engineering College , Vijayawada, AP, India. We humbly invite faculty, Research Scholars, Industry experts to send papers and actively participate in the conference. For more information about the conference log on to **www.icarret.com**. Our submission deadline for abstract is on **30th June 2019.**
- Fourth Edition of *"International Conference on Advances in Materials and Manufacturing Applications (IConAMMA 2019)"* is to be held from 29th – 31st AUGUST 2019 at Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Bengaluru Campus, Karnataka, India. All accepted and registered papers of IConAMMA-2019 will be published in the following SCOPUS indexed Journals:

  1) IOP Science Conference Series: Materials Science and Engineering (MSE) ISSN 1757-899X

  2) Materials Today Proceedings, Elsevier Publications, ISSN: 2214-7853.

1. IConAMMA 2019 Website: http://web-blr.amrita.edu/IConAMMA/index.html
2. Paper Submission Link: https://easychair.org/conferences/?conf=iconamma2019

Submission of full paper by June 30, 2019.

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 (IEEES-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
- The American Society of Mechanical Engineers announces the International Mechanical Engineering Congress & Exposition, to be held during Nov 8-14, 2019. Deadline for abstracts **July 22, 2019**

August 2019

- The Department of Mechanical Engineering of VFSTR (Vignan's Foundation for Science, Technology and Research , Deemed to be University), Vadlamudi, is organizing an International Conference on Emerging Trends in Mechanical Engineering (ICETME-2019). The Conference is scheduled to be held during 8 - 9th November 2019 in VFSTR, Vadlamudi, AP, India. The last date for submission of full-length paper is **30 August 2019**. More information can be had at www.vignan.ac.in/icetme19.

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.
- The Institution of Engineers (India**),** Punjab & Chandigarh State Centre will be organising the International Conference on "Electronics & Communications, Renewable Energy and IoTs: Vision 2040" at Chandigarh**,** during September 07-08, 2019 under the aegis of the Electronics & Telecommunication Engineering Division.
- PPG Institute of Technology, Coimbatore, is organizing AIP International Conference on Inventive Material Science Applications [ICIMA 2019] , during September 25-26, 2019**.**

October 2019

- The Mechanical Engineering Department of The Northcap University, Gurugram will be organizing a two-day International conference titled "4th International Conference on Emerging Trends in Mechanical & Industrial Engineering (ICETMIE-2019)" during October 10 & 11, 2019. There is tie-up with various renowned Journals like:

  1. Lecture Notes in Mechanical Engineering (LNME), Springer
  2. Facta Universitatis, Series: Mechanical Engineering
  3. SAE International Journal of Materials and Manufacturing

  Please see the Conference Website Link: http://icetmie-2019.ncuindia.edu/
  Paper Submission: https://easychair.org/conferences/?conf=icetmie2019

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.ese.iitb.ac.in/icaer2019/conference.html#content1-1g

- 64th Congress of Indian Society of Theoretical and Applied Mechanics (ISTAM -2019) will be jointly organised by School of Mechanical Sciences and School of Basic Sciences (Mathematics), IIT Bhubaneswar during the period 9th-12th December, 2019.
  About ISTAM: https://istam.iitkgp.ac.in/#!/pages/home
  About IIT Bhubaneswar: http://www.iitbbs.ac.in/istam/

- Sardar Vallabbhai National Institute of Technology (S.V.N.I.T.),Surat, Gujarat, is organizing the 5th International Conference on Industrial Engineering (ICIE 2019) during December 12- 14, 2019. Details at http://icie2019.com

- Amrita Vishwa Vidyapeetham, Coimbatore, is organizing an International Conference on Advanced Materials SCICON '19 during December 15-17, 2019. Details at http://scicon.in/ Abstract submission by 31-July. Selected papers will be published in Scopus Indexed Journal

Challenges/Contests

Information shared by Dr.Chitra Babu, HoD, CSE

June 2019

- IITM Incubation Cell, in partnership with Boeing invites applications for **Boeing's University Innovation Leadership Development (BUILD)** program - *an innovation, leadership and entrepreneurship development program.* This challenge is open to **innovators, students, aspiring entrepreneurs & early-stage startups.**

  Shortlisted teams for BUILD will be mentored by subject matter and industry experts as part of an intensive learning program. **Finalists** will be invited to participate at the Boeing Innovation Day, Boeing campus, Bangalore and will have a chance to win USD 10,000.
  Application deadline - 10 June'19.

- **AnitaB.org India** presents the smartest codeathon of 2019 - **GHCI 19 Artificial Intelligence (AI) Codeathon for Women Students** sponsored by American Express and powered by Skillenza.

  This is a great opportunity to learn and get real-life experience of AI. Participants will also get mentored from experts in this exciting technology.

  The deadline for phase 1 of the codeathon (Team Formation and Ideation) is 10 June, 2019. Further details are available here: https://skillenza.com/challenge/ghci-19-ai-codeathon

  GHCI 19 also offers students the exciting opportunity to make a Poster Submission and you could be a presenter at the conference. Click here to make a poster submission.

Research News from MSP

Dr Muthu Senthil Pandian
SSN Research Centre

1. Call for Core Research Grant is now open

The Call for applications will be notified through the website "www.serbonline.in" and "www.serb.gov.in". The application form along with a proper research proposal highlighting the research work to be undertaken should be submitted online through the website "www.serbonline.in". The selection will be based on the recommendations of Program Advisory Committee (PAC) constituted by the Board. If required, the applicants maybe called for discussion/ presentation.

Website Links:

https://serbonline.in/SERB/emr?HomePage=New
https://serbonline.in/SERB/HomePage.do

2. MATRICS

Science and Engineering Research Board (SERB) initiated a new scheme, MATRICS in the year 2017 to provide fixed grant support to active researchers with good credentials in Mathematical Sciences. The main attribute of the scheme is submission of a simple one or two-page mathematical proposal along with curriculum vitae. The funding provided is 2 lakh plus overheads, per annum for a period of three years. The call for proposals for MATRICS scheme under the new version will be open from **20 May 2019** to **20 June 2019**,5.00pm. Researchers who are eligible can submit their proposals through SERB online portal (www.serbonline.in). To know more about the scheme, kindly visit the link below:

https://www.serbonline.in/SERB/matrics

3. UGC-DAE CSR - Call for Project Proposals for Collaborative Research 2019-2020, UGC-DAE Consortium for Scientific Research (CSR), Kalpakkam

A UGC-DAE CSR Node has been established at Kalpakkam, Tamil Nadu . It has set up comprehensive characterization facilities such as

- Field Emission Scanning Electron Microscope (FE-SEM),
- Focused IonBeam Scanning Electron Microscope (FIB-SEM),
- High Resolution Transmission Electron Microscope (TEM),
- X-ray Photoelectron Spectroscopy(XPS),
- Glancing Incidence X-ray Diffraction (GIXRD),
- 15T Magnetoresistance setup,
- Ball indentation,
- Small punch creep,
- NMR,
- 7T SQUID Magnetometer,
- Raman spectrometer,
- Atomic Force Microscope.

Materials synthesis facilities in terms of Infrared float zone single crystal furnace, High Energy Ball Milling, electron

beam evaporation system, RF Sputter deposition system are available.

Advanced computational facilities are also available. **A 200 KV heavy ion accelerator** has also been installed at the Node. Apart from these, access to advanced physical, chemical and engineering facilities at IGCAR (www.igcar.gov.in) can also be provided through the Node and may be used for collaborative research.
Proposals may be submitted on or **before June 15, 2019**. The application form is available on the website: www.csr.res.in. The proposals will be shortlisted based on the merit of the research proposals and will be called for detailed presentation during June/July 2019.

4. **DST - Call for Workshop Proposals: UKIERI - DST Partnership Development Workshops - 2019-2020**

Application form along with Annexure I (Workshop Proposal), Annexure II (Financial Proposal) and Annexure III (Template for CV for Lead Coordinators) must be submitted on or before **22nd July 2019**

Website Links
http://www.dst.gov.in/callforproposals/ukieri-dst-partnership-development-workshops
http://www.dst.gov.in/

5. **Applications are invited for Post Doctoral Fellowship (PDF) positions in Anna University, Chennai**

The Post Doctoral Fellowships are available in Anna University aims to enhance the research and innovation eco system of Anna University by attracting young exceptionally talented scientists and engineers with diverse backgrounds to work on challenging and frontiers areas. It provides a platform for the development of future science and technology leaders.

ELIGIBILITY

- Ph.D. with first class in the preceding degrees and good academic record throughout are invited to apply within 3 years after completion of their Ph.D.
- At the time of joining, the candidate should submit provisional / Degree certificates of their Ph.D. and other qualifications.

AGE LIMIT

- Candidates should preferably be less than 32 years of age at the time of applying.

The PDFs are eligible for the following :
Fellowship Amount : Rs. 45,000/- Gross per month
Accommodation : HRA 10,000/-
Contingency Grant / Travel : Rs. 1 Lakh per year
Leave : 20 days per year (pro-rate)

The filled in application is to be sent to dircia2011@gmail.com along with the relevant documents.

Website Links

https://www.annauniv.edu/
https://www.annauniv.edu/pdf/pdf19.pdf

Other Department Round Up

SSN CSE Teaching learning practices highlighted in SWAYAM course

Dr Chitra Babu, Head of Department, CSE had recently been interviewed for course content on "Quality Assurance in Engineering Education" by Dr E.S.M Suresh from NITTR who is offering this course on the SWAYAM portal. Dr Chitra's interview was uploaded as part of one of the units in this course. This course is unique as it offers an insight into the importance of quality of engineers based on the recognition of an engineering degree and stresses on approaches that can be employed to determine the quality.

Dr Chitra Babu

The official link of Dr Suresh's, Swayam course is:
https://swayam.gov.in/courses/5199-quality-assurance-in-engineering-education

The video of Dr.Chitra Babu's interaction with the NITTR Prof E.S. M. Suresh can be accessed from our Intranet site:
http://www.ssn.net/twiki/bin/view/CseIntranet/WebHome

Inspiring Life Stories

Inspiring Life story from Jamy Bechler

A few years ago Southwest Airlines hired some consultants to give them advice and help their airline become better. The consultants suggested that Southwest Air charge passengers to check luggage since the competition was doing it and they could make millions upon millions in additional revenue.

Southwest considered this recommendation but, in the process, asked themselves an important question: "Is this what we stand for?" The executives at Southwest went straight to their purpose statement which reads, ***"To connect people to what's important in their lives through friendly, reliable, and low-cost air travel."*** They ultimately decided that charging baggage fees did not fulfill their purpose.

You have, no doubt, seen their advertising campaigns highlighting the fact that bags fly free, and they have gained an even greater market share in the process. Their revenue has grown to new heights.
In fact, they are the only airline that has been profitable every year. Their corporate culture of putting people first and adhering to their core values has played a big part in their financial success.

It is similar to Chick-fil-A being closed on Sundays to give their employees time to be with their families.
These companies stick to their guns when it comes to their core values and what they believe in. Every company and every person – for that matter – says that they believe in something but when push comes to shove, they are willing to do whatever is quickest, easiest, or reaps short-term benefits.

When you truly walk the talk instead of knee jerk reacting or having situational ethics, then you are truly living out your values and increasing your potential for sustainable success. Being inconsistent can lead to distrust and dysfunction. Let's not be a kite or a tumbleweed. That is, don't just go in whichever way the wind blows.

Stick to your principles even if it costs you slightly in the short-term because in the long-run it will be worth it.

Jamy Bechler

Motivational Speaker & Team Consultant

John Maxwell Leadership Coach

(765) 661-2841

JamyBechler.com

Corporate Wisdom 64

The Inverted Organisation

You've seen it before. That standard slide in a Corporate presentation that shows the organization chart. The boss at the top. The vice-presidents below him. Followed by the general managers, and so on. And right at the bottom of that pyramid, the army of foot soldiers who stand and deliver : the company's Salesmen, Executives, Assistants etc.

But that's not quite what I saw one winter morning in Delhi when the company boss Suman Sinha — then the CEO of PepsiCo India — presented the org chart. I saw an upside down organization. In the pre-PowerPoint era of 35mm slides and carousel projectors, you would have instantly thought some rookie trainee would lose his job for inserting the slide upside down.

Suman quickly explained that the upside-down org chart wasn't a mistake. It was deliberate.

"At the top of this organization are our salespeople," he said. "They are closest to our customers, and they know best what this organization needs to do to delight our customers. They decide what we do. Below the sales guys are a bunch of managers whose job is to ensure the salesmen get all the support they need. Below those managers are a set of general managers whose job is to mobilize organizational resources to make sure the sales teams get what they need. Below them are the VPs whose job it is to make sure their functional teams are supporting the sales effort. And do you see that guy at the bottom of the pyramid? That's me, the CEO. My job is simple. I just need to ensure that the entire organization is geared to support the salespeople as they go out serving customers, day after day after day."

Wow! On that single slide, you could see a leader striving to build an organization with a difference. A small change in the org chart made a big difference to the company's culture.

So, if you are looking to create a customer focused organization, you might want to invert your organization too. Make your salesperson the hero. Make the customer your God. In one stroke, Suman created an empowered frontline. Suddenly, the sales folks were all walking a wee bit taller. They loved the attention, and the trust and responsibility that seemed to come with it. And soon enough, commercial teams were getting quicker at processing

the sales team's proposals and their expense statements. Factory teams were taking the sales team's needs — and the customer's complaints — a bit more seriously. The magic had begun.

The change in the org structure — nay, the change in the culture itself — wasn't only about a fancy slide in a presentation. It was a message that Suman ensured was driven home. At a launch conference for the sales team in Lucknow, as Suman got on to the stage to address the team, guess who was seated in the front row? You are right. All the senior leaders who had flown in from the corporate headquarters. Isn't that always the case, in every company, every conference, every city? The salesmen — the real folks for whom the launch conference was intended — were all at the back. Suman quickly got them to swap places. When a sales army is made to feel as special as this one did, you can bet they will do just a little more to make sure they come out winning. And they did.

So, if you are looking to create an empowered, frontline-focused, passionate organization, look no further. Take the first step. Turn your organization upside down.

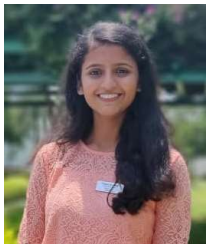
#WishingMostAndMore

Have a great day & wonderful week

R.Ramakrishnan

Group Chairman Office, GMR Group –Delhi

This edition of Aspire was compiled by Vinaya Krishna, with support from Saran Prasanth, Mohitha U, Anupa Sri and Akshay Kanna.



Vinaya Krishna

Saran Prasanth

Akshay Kanna

Anupa Sri

Mohitha U M