Newsletter

Volume 4, Issue 1, January 2014

# mechanical Aspire

Achievements in Sports, Projects, Industry, Research and Education

## Feature article 1- All about Nobel Prize

"The research programmes of SSN Institutions should motivate the students and the faculty to rise to the level of Nobel Laureates."

Padma Shree Dr.Shiv Nadar

This can happen only if we remember this vision all through our life.Remembering is possible when we keep in touch with whatever we want to remember. Aspire will ensure we keep in touch with this Vision, by learning something on Nobel Prize every month, all through 2014.

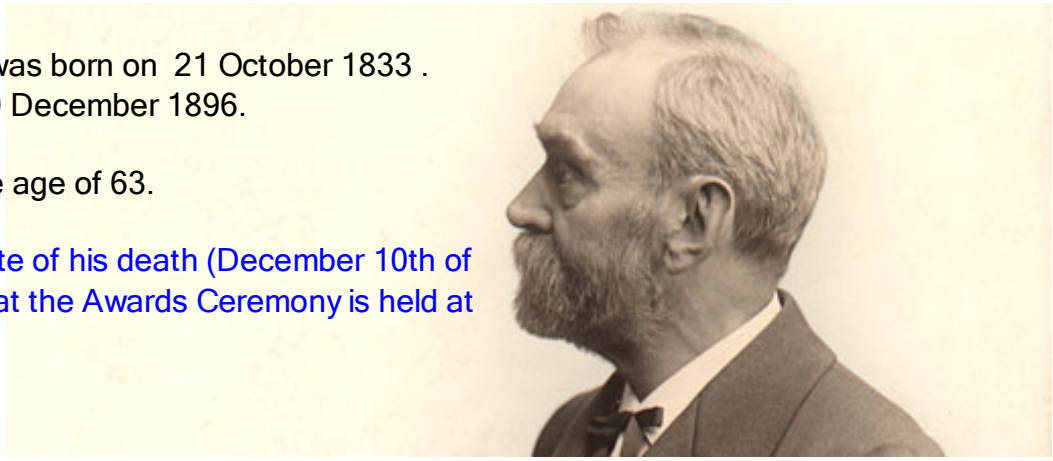
December is the month of Nobel Prize awarding Function. It is quite apt to learn more about the instances that lead to the establishment of the Nobel Prize. The life of Alfred Nobel as a creator is even more fascinating. The First Part is dedicated to understanding the instances that lead to the establishment of Nobel Prize.

### Part 1- The circumstances that lead to Establishing the Nobel Prize

Alfred Nobel was born on 21 October 1833 .
He died on 10 December 1896.

He died at the age of 63.

It is on the date of his death (December 10th of every year) that the Awards Ceremony is held at Stockholm.



## Alfred Nobel as an Inventor:

During his life Nobel issued 350 patents internationally and by his death had established 90 armaments factories. All this was because of his discovery of the potential of explosives!

At the time, the only dependable explosive for use in mines was black powder, a form of gunpowder. A recently discovered liquid compound, nitroglycerin, was a much more powerful explosive, but it was so unstable that it could not be handled with any degree of safety. Nobel in 1862 built a small factory to manufacture nitroglycerin, and at the same time he undertook research in the hope of finding a safe way to control the explosive's detonation.

In 1863 he invented a practical detonator consisting of a wooden plug inserted into a larger charge of nitroglycerin held in a metal container; the explosion of the plug's small charge of black powder serves to detonate the much more powerful charge of liquid nitroglycerin. This detonator marked the beginning of Nobel's reputation as an inventor as well as the fortune he was to acquire as a maker of explosives.

In 1865 Nobel invented an improved detonator called a blasting cap; it consisted of a small metal cap containing a charge of mercury fulminate that can be exploded by either shock or moderate heat. The invention of the blasting cap inaugurated the modern use of high explosives.

Nitroglycerin itself, however, remained difficult to transport and extremely dangerous to handle. So dangerous, in fact, that Nobel's nitroglycerin factory blew up in 1864, killing his younger brother Emil and several other people. Undaunted by this tragic accident, Nobel built several factories to manufacture nitroglycerin for use in concert with his blasting caps. These factories were as safe as the knowledge of the time allowed, but accidental explosions still occasionally occurred.

Nobel's second important invention was that of dynamite in 1867. By chance, he discovered that nitroglycerin was absorbed to dryness by kieselguhr, a porous siliceous earth, and the resulting mixture was much safer to use and easier to handle than nitroglycerin alone. Nobel named the new product dynamite (from Greek dynamis, "power") and was granted patents for it in Great Britain (1867) and the United States (1868). Dynamite established Nobel's fame worldwide and was soon put to use in blasting tunnels, cutting canals, and building railways and roads. In 1875 Nobel invented gelignite, more stable and powerful than dynamite, and in 1887 patented ballistite, a forerunner of cordite.

## The Trigger for Nobel Prize-an error by a Newspaper:

In 1888, the death of his brother Ludvig caused several newspapers to publish obituaries of Alfred in error. A French obituary stated "Le marchand de la mort est mort" *("The merchant of death is dead").*He was disturbed to see how the world would see him after his death. To change this , he decided to do something good- that can be associated with his name and that is how the idea of investing all his earnings for awards to people who did something good to mankind -the Nobel Prize- came up!

## The Famous Will of Alfred Nobel:

On 27 November 1895, at the Swedish-Norwegian Club in Paris, Nobel signed his last will and testament and set aside the bulk of his estate to establish the Nobel Prizes, to be awarded annually without distinction of nationality. After taxes and bequests to individuals, Nobel's will allocated 94% of his total assets, 31,225,000 Swedish kronor, to establish the five Nobel Prizes. This converted to GBP £1,687,837 at the time. In 2012, the capital was worth around SEK 3.1 billion (USD 472 million, EUR 337 million), which is almost twice the amount of the initial capital, taking inflation into account.

"The whole of my remaining realizable estate shall be dealt with in the following way: the capital, invested in safe securities by my executors, shall constitute a fund, the interest on which shall be annually distributed in the form of prizes to those who, during the preceding year, shall have conferred the greatest benefit on mankind. The said interest shall be divided into five equal parts, which shall be apportioned as follows:

one part to the person who shall have made the most important discovery or invention within the field of physics;
one part to the person who shall have made the most important chemical discovery or improvement;
one part to the person who shall have made the most important discovery within the domain of physiology or medicine;
one part to the person who shall have produced in the field of literature the most outstanding work in an ideal direction;
and one part to the person who shall have done the most or the best work for fraternity between nations, for the abolition or reduction of standing armies and for the holding and promotion of peace congresses.

The prizes for physics and chemistry shall be awarded by the Swedish Academy of Sciences; that for physiology or medical works by the Karolinska Institute in Stockholm; that for literature by the Academy in Stockholm, and that for champions of peace by a committee of five persons to be elected by the Norwegian Storting.

It is my express wish that in awarding the prizes no consideration be given to the nationality of the candidates, but that the most worthy shall receive the prize, whether he be Scandinavian or not."

Prize for Economics added later!

In 1968, Sveriges Riksbank (Sweden's central bank) established the Prize in Economic Sciences in Memory of Alfred Nobel, founder of the Nobel Prize. The Prize is based on a donation received by the Nobel Foundation in 1968 from Sveriges Riksbank on the occasion of the Bank's 300th anniversary. The first Prize in Economic Sciences was awarded to Ragnar Frisch and Jan Tinbergen in 1969.

The Prize in Economic Sciences in Memory of Alfred Nobel is awarded by the Royal Swedish Academy of Sciences, Stockholm, Sweden, according to the same principles as for the Nobel Prizes that have been awarded since 1901.

Personal Life of Alfred Nobel: How can anyone allot 94% of one's assets, if he had a family? Yes, Alfred Nobel did not have a family. He was alone all his life, even though there are stories about his love that ended in failure.

Alfred Nobel was a great poet and creative writer. A lady wondered that Alfred is a Riddle. In response, he wrote a long poem (running to 14 printed pages!).. Some lines from that poem....

I looked to man for friendship, and to woman
For what should be a closer friendship – love.
In both I was deceived for I had chosen
Not with discernment as becomes a man,
But upon trust, the foolish boy I was.

I have not shared the pleasure of the crowd,
Nor moved in Beauty's eye Compassion's tear,
But I have learned to study Nature's book
And comprehend its pages, and extract
From their deep love a solace for my grief

Hard hitting are his words when he says he never had a friend in a man or a woman but he learnt to observe Nature and seek solace for his grief!

Those who want to read the most emotional poem Riddle in full, (around 14 pages) can visit the link

http://www.nobelprize.org/alfred_nobel/biographical/articles/erlandsson-2/riddle.pdf

## Feature article 2- e-learning from Corporate websites

Corporate websites have a lot of learning material. Here are a few examples..

Every car maker dreams of how the future of transport would be and they propose a possible future theme of how their cars would be deigned to meet the Future needs. For example, if fossil fuel is depleting, then alternate fuels and electric power, wind power etc will have to be used.
How cars will be designed to use such fuels becomes a concept. Using such futuristic concept, each car maker designs and makes one working model for display in auto shows that happen around the world. This is a fierce competition for showcasing Innovations by car makers.

Discover how concept cars are made by Renault at the following link

http://renault.co.in/DiscoverRenault/ConceptCars.html

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### Danfoss has exams and certification for Refrigeration courses...

Their website page on Training and Education reads as ..

"On this page you can find various training materials and programs regarding refrigeration principles, how products work and valuable hints that can assist you in your daily work.


We have divided the material into three areas, multimedia with animations and video clips, documents and articles for downloads and Danfoss training programs.

A training program is a collection of self-study courses of different levels of difficulty gathered within a comprehensive program which builds your learning path on the subject you are interested in.

All trainings programs are available exclusively from our online training platform: Danfoss Learning. Access to the platform and the programs is entirely FREE OF CHARGE! " Explore the links..

http://learning.danfoss.com/English/About/About+Danfoss+Learning/
http://www.danfoss.com/India/BusinessAreas/Refrigeration+and+Air+Conditioning/EducationAndTraining/

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## Info to Alumni | Campus Update | Info from Principal

"We are happy to inform that our college ISTE Chapter has been selected for the award of Best ISTE Chapter in TN & P Section. This is indeed a milestone to SSN College of Engineering. This award was given away in the ISTE Annual Convention held at Tatyasaheb Kore Institute of Engineering & Technology, Warananagar, Dist. Kolhapur (Maharashtra) during December 19-21, 2013.

Dr. V. Kamaraj, Prof. & Head/EEE is the Chairman of ISTE Chapter of SSN and he has organised and conducted monthly meetings under the auspices of SSN ISTE Chapter for about six years.

Our hearty congratulations to him and other faculty members."

## Info to Alumni

## Campus Update-Sports Action!


Dr. Saratchandra Memorial Staff Cricket Tournament was organised by Sri Ramachandra University, Porur, Chennai. For this year, Staff teams from 32 Colleges had enrolled for the Tournament. SSN College of Engineering Staff team comprising of Mr. Ebenezer. D, Dr. Senthil Kumar P, Mr. Vinob Chandar. R, Mr. NavaneethaKrishnan, Mr. Nagendran. K, Dr. Alphin.M.S, Mr. Harshavardhan. K , Mr. Ramachandran, Dr. Sachin G, Dr. Sunderaswaran R, Dr. Balaji P, Mr.Devasirvatham, Dr.Mahesh V and Mr. Balasubramanian.A , had played the match against Sri Ramachandra Medical College on 08 December 2013.

The match was delayed due to weather condition and the number of overs was reduced to 16. SSN Team gave a target of 109 to the opponent which includes the quick knock of 24 runs with 5 boundaries by Mr. Ebenezer. Sri Ramachandra medical College team was all out for 58 runs marking a big win for SSN Staff Team. SSN staff team has won the first match against Ramachandra medical College in Sarath Chandra staff cricket trophy. Mr. Ebenezer's three boundaries in one over was the highlight of the match.

## Department Update

## External Recognition

Dr. S. Vijayan, has been appointed as Chairman for the mechanical board for the central valuation of Anna University.

Dr. S. Vijayan, delivered an invited talk on “Taguchi multi objective optimization case studies” in the FDP “Design of Experiments and Optimization Techniques” organised by SVCE. (16 – 21 Dec. 2013)

Dr M.S.Alphin delivered an Invited Lecture in two days workshop on "Dimentions of Research" Conducted by Adhi College of Engineering and Technology, Kancheepuram (13 Dec. 2013)

Dr. N. Lakshmi Narasimhan - Delivered an invited talk on "Free Convection" in the FDTP programme organized by the Department of Energy Studies, Anna University. (12 Dec. 2013)

Dr.D.Ananthapadmanaban has been invited to be on the Technical Commitee of ACTA-2014 International conference to be held in Thailand during June14th to 17th,2014.

Dr.D.Ananthapadmanaban has completed a review for the Indian Journal of Science and Technology

Prof.V.E.Annamalai presented an invited lecture on "TRIZ-an under utilised tool for Innovation" at the Seminar on "Leveraging Innovation" conducted by CII (Confederation of Indian Industries, Chennai. (18 Dec 2013)

CII Confederation of Indian Industry

## The Hindu speaks on SSN Student...


Vishnu Varatharajan, III yr mech, has been featured in an article titled 'Earn while you Learn', which is published in 'The Hindu' e-paper dated 01/12/13. Read more at the link below

http://www.thehindu.com/features/education/college-and-university/earn-while-you-learn/article5408381.ece

## Research Activity

Dr. N. Nallusamy presented a technical paper entitled "Exp. study on spray characterisitics of diesel and biodiesel for various chamber pressures in a constant volume chamber" in 4th International conference on Advances in Energy Research organized by IITB, Mumbai (10 - 12 Dec. 2013)

Dr.K.S.Vijaysekar and Prof.V.E.Annamalai participated in the International Conference on “Sustainable Innovation and Successful Product Development for a Turbulent global market”, conducted by PDMA,USA at IIT Madras. Prof.V.E.Annamalai presented his paper on "Strategies for managing product development during turbulent times" (16-17 December 2013)

Dr.K.S.Vijaysekar has been approved as a Research Supervisor for Anna University.

Dr.S.Rajkumar

Dr. N. Lakshminarasimhan,
Dr. S. Rajkumar and
Dr. A. S. Ramana attended
Symposium on Future Sustainable Energy Systems-Indian and German Perspectives
Organized by IGCS, IITM, Chennai.
(05 Dec. 2013)

Dr.A.S.Ramana

Dr. N. Lakshmi Narsimhan got a research paper published in the International Journal of Refrigeration 36 (2013), 2091-2096. The title of the paper is "Studies on the performance of a small reciprocating compressor with different nitrogen-hydrocarbon mixtures".


Dr.AKL

The research paper by Kaushik Balaji and Dr M.S.Alphin , titled “Computer Aided Human Factors Analysis of Industrial Vehicle Driver Cabin to Improve Occupational Health” has been accepted for presentation for the OCCUCON 2014 - International Conclave on Occupational Health conducted by Indian Association for Occupational Health to be held in Goa during 11-14 Feb 2014.

The research paper titled “Mechanical and Metallurgical Properties of AISI304” , authored by Mr Arun Mani, Dr.Ananthapadmanaban and Dr.AK.Lakshminarayanan has been accepted for presentation in ICONS-2014 International Conference to be held at IGCAR,Kalpakkam

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## Industrial Visit

Dr. B. Anand Ronald and Mrs. R. Rajeswari visited WHEELS INDIA Ltd. arranged by IITM - PALS initiative (03rd Dec. 2013)

Dr.Ananthapadmanaban visited Hyundai Motors for Industrial Visit as a participant of FDP programme on Mechatronics (04 Dec. 2013)

Prof.V.E.Annamalai, Prof.N.Nallusamy and Dr.N.Lakshminarasimhan attended Technova 13-an exhibition on projects handled by TCS and discussed with their Technical Team for possible areas of interaction with the EIS (Engineering and Industrial Services) team (20 Dec. 2013)

Dr. N. Lakshmi Narsimhan - Visited GrundFos India Ltd., Chennai, organized through PALS-2013 an IIT Alumni Initiative. (11 Dec. 2013)

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## Networking

Dr. N. Lakshmi Narasimhan attended the second PALS (Pan Alumni Leadership Series, IIT Madras) 2013 Executive committee meeting at the IIT Madras Alumni Club Office, Chennai. (14 Dec. 2013)

## Faculty Development Programs Attended

Dr. R.Prakash and Dr. S. Rajkumar, attended a Intensive Training Programme on "CFD" at Dept. of Mechanical Engineering, VIT University, Chennai (23 - 27 Dec. 2013)

Dr. R.Prakash, Dr. D.Ananthapadmanaban, attended a AICTE sponsored Faculty Development Training Programme on "Mechatronics" at Dept. of Mechanical Engineering, SSN College of Engineering, Chennai (2 - 15 Dec. 2013)

Dr. B. Anand Ronald, attended a Faculty Development Training Programme on "ME 2026 Unconventional Machining Processes" at Dept. of Production Technology, MIT campus, Anna University, Chennai (4 - 11 Dec. 2013)

Dr. N. Nallusamy - Delivered an invited talk on "Electronic Engine Management Systems"- in the AICTE Sponsored FDP on Mechatronics, Organized by the Dept. of Mechanical Engg at SSN College of Engineering. (14 Dec. 2013)

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## Faculty Development Program Conducted

Dr.K.S.Jayakumar

Mr.K.L.Harikrishna

Dr.K.Rajkumar

Dr.K.S.Jayakumar, Mr.K.L.Harikrishna and Dr.K.Rajkumar organised a two weeks FDP on Mechatronics during December 2-15, 2013.This was sponsored by AICTE. Forty three participants from various engineering colleges in Tamil Nadu attended the programme. Faculties who have specialization in Mechanical, EEE, ECE and EIE have attended the programme.

Dr. Ravichandran, Scientist, CVRDE, Chennai has inaugurated the programme. There were thirty four sessions among which twelve sessions were laboratory oriented.

Experts from industry, IIT's, NIT's, have delivered lecture. Hands-on training on electronic circuits, PLC programming, Labview, microcontroller programming, sensors, hydraulic and pneumatic circuits have been given to the participants.

Participants engrossed in the
Hands on training session with Dr.Muthuselvan

**Our sincere thanks to other dept faculty who handled several lecture sessions as below, during this FDP.**

| S. No | Date & Day | Sessions (S) | Lecture Topic | Speaker Name |
|---|---|---|---|---|
| 1 | 06.12.2013 Friday | 1 | Digital Signal and Analog Signal Conversion Methods | Mr. Shajith Ali, Asst. Prof, Dept of EEE, SSN College of Engg |
| 2 | | 2 | Working with ADC, DAC and Multiplexer -Demonstration | Mr. Shajith Ali, Asst. Prof, Dept of EEE, SSN College of Engg |
| 3 | 09.12.2013 Monday | 1 | Electrical Switches and Its Applications | Dr. N. B. Muthuselvan, Assoc.Prof, Dept of EEE, SSN College of Engg. |
| 4 | | 2 | Working with Electrical Switches & Actuators -Demonstration | Dr. N. B. Muthuselvan, Assoc.Prof, Dept of EEE, SSN College of Engg. |
| 5 | 10.12.2013 Tuesday | 1 | Signal Conditioning – Operational Amplifier & Filters | Mr. V. Vaithianathan, Asst.Prof, Dept of ECE, SSN College of Engg. |
| 6 | | 2 | VLSI Design Methodologies | Mr. V. Vaithianathan, Asst.Prof, Dept of ECE, SSN College of Engg. |
| 7 | | 3 | Working with Operational Amplifier & filters -Demonstration | Dr. M. Balaji, Assoc.Prof, Dept of EEE, SSN College of Engg. |
| 8 | 12.12.2013 Thursday | 1 | Medical Electronics | Dr. V. Mahesh, Assoc.Prof, Dept of Bio Medical Engg, SSN College of Engg |
| 9 | 13.12.2013 Friday | 1 | Controllers in Mechatronics Systems | A. Balasubramaniam, Asst. Prof, Dept of EEE, SSN College of Engg. |
| 10 | | 2 | Understanding Microcontrollers | Dr. M. Balaji, Assoc.Prof, Dept of EEE, SSN College of Engg. |

Mr.U.Sajith Ali

Dr.N.B.Muthuselvan

Mr.V.Vaithianathan

Dr.M.Balaji


Dr.V.Mahesh

Mr.A.Balasubramanian

Industrial visit to Hyundai Motors was arranged and participants have gone through automated and robotized production line of cars such as spot welding, painting and assembly operation.

The participants feed back was very positive. They appreciated the truly interdisciplinary nature of he program.

# From Internship to International Conference


Radheesh of Final Year reflects on his experience with an Internship.....

Here I would like to share the experience towards my desired area of interest. It has been almost a year, since my venture towards the CFD (Computational Fluid Dynamics) started. With the help of Dr.Gnanasekaran's reference, I approached the Thermal Turbomachines Laboratory at IIT-M to meet Mr. Rajesh Kumar Panda (PhD Scholar) who took me to the world of Computational Fluid Dynamics. I am very much thankful to him, since he shared his PhD level problem with me in order to work for the prestigious ASME Gas Turbine India Conference. Since Aerospace Propulsion is my desired field of interest, where the Turbomachines seem to be the heart of the system, it encouraged me to work with complete interest.

The objective of this project is to study the Film Cooling performance on the pressure side of a Gas Turbine blade using Computational methods. Also the guidance from our Professor. Gnanasekaran helped in learning the basics of Heat Transfer & Fluid Mechanics in a passionate manner.

Along with the support of my classmate Girish, the work was completed by four months and once after satisfying the reviewer comments our paper titled **"Computational Study On Pressure Side Film Cooling and Flow Structure" Paper ID GTINDIA-3696** was selected for its Final Publications in the Proceedings of ASME. The essence of this, was the opportunity to undergo a Project Internship at the Thermal Turbo machines Laboratory of IIT Madras under the guidance of Professor Dr.B.V.S.S.S.Prasad, who is a veteran in this Gas Turbine Heat Transfer research area. The Conference was held on 5th & 6th of December 2013 at CSIR-NAL, Bangalore.

It gives me immense gratitude to thank my guides for their valuable support and I am proud to tell that this was the only Student Paper presented along with big shots from R&D sectors like GE, NAL, Siemens etc.

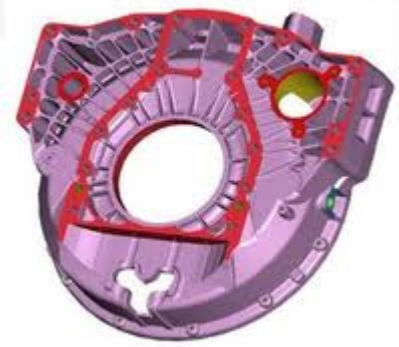
At the end they took us for the facility tour at National Aerospace Laboratories (NAL) - Propulsion division, where we got mind blown by the real sight of massive supersonic test rigs of Combustion chamber and other engine components. At last it was a wonderful experience at NAL which was one of my dream place to work with.

This experience has ignited my research interest for my Masters program. ------*Radheesh*

## Industry News

Pranav Prakash of Final Year writes...

Sundaram - Clayton Limited

Sundaram Clayton Limited (SCL), which had come to recruit from our department in the third week of December, is a part of the USD 5 billion TVS group of companies and is one of the leading suppliers of aluminium die castings to both automotive and non-automotive sectors in the country. The air brake actuation systems that they manufacture virtually dominate the segment with over 90% market share.

Gokul V.S. and I had spent last December at their plant in Padi. They are specializing in die casting. They own and operate over a hundred die casting machines, including PDC (pressure die casting), GDC (Gravity die casting) and LPDC (Low presure die casting). But the biggest infrastructural investments are made not for the casting machines themselves but for the quality equipment. Spectroscopes and optical microscopes ensure quality of the castings while a state-of-the-art CMM imported from Germany would put even the most sophisticated devices to shame.


SCL manufactures aluminum pressure die castings for heavy commercial vehicles, passenger cars and two wheelers. The product range includes flywheel housing, gear housing, clutch housing, filter heads, air connectors, lube oil cooler cover assembly, filtration module casting, turbo charger, compressor cover assembly, charge air pipe, intake manifold, cover coolant duct for the truck segment. Cylinder head, case transaxle assembly, oil pan, chain case, cylinder head cover, adaptor oil filter, fuel pump housing, fork gear shift, starter housing, A/C compressor housing for passenger cars. Crank case, cylinder head, cylinder barrel, wheel hub for powered two wheelers and brake equipment valve bodies. SCL can produce castings ranging from 0.25Kg to 25Kg in PDC, from 0.25Kg to 24Kg in GDC, and from 2.5Kg to 18Kg in LPDC.

In the past, they've won both the **Deming Prize** as well as the **TPM Excellence Award** for their practices. In addition to their TQM techniques, lean manufacturing practices, once made famous by Toyota, are something they pride themselves on. The company is presently looking to expand both in domestic and international fronts whilst simultaneously focusing on maximizing cost reduction in order to keep their profits up, in spite of a drop in demand and a tough economy. Ms.Lakshmi Venu, the daughter of TVS Motor Chairman and MD Venu Srinivasan, is the Director-Strategy at SCL has been given the responsibility of exploring business opportunities.

See their step by step process for complaint elimination in the case of oil leak in Crank case at the link

http://www.docstoc.com/docs/142123404/Presentation-on-Customer-Complaint-Elimination

Mohammed Musthafa Sheriff, of 2013 batch, is now pursuing his Masters in Penn State University. He shares his views and offers some tips for current students of SSNCE.

Info From Alumni

I would like to thank you for the recommendation letters you had provided during my application process because of which I am able to pursue my Master's in Pennsylvania State University.

I have completed one semester and I am finding that hard to believe because it has been a roller coaster ride with many positives and negatives. Not many people know about this university or rather are confused about it's location so let me tell you a little about the university.

Pennsylvania state university is a public university located in State College. It is a university town. The campus where I am studying is called University park and it is the main campus. The university has a number of programs right from medicine to law. Engineering is a specialty of Penn State as they have very good Mechanical and Industrial and Chemical departments. The funding situation right now is bad in the Industrial department alone as even some of the Ph. D students are not funded. But if anyone wants to pursue Masters or Ph.D in Mechanical engineering, it is a good option as all and I mean all the master's students are funded and they also receive a stipend of $1,500 per month.

The programs here are designed such that one has to carry out research even while taking the M. Eng option. But the amount of research work carried out is less when compared to the M.Sc. option. The courses are geared more towards practical learning and certain courses do not even have final exams but have a project and the grades are awarded based on the project work.

I am pursuing my Master's in the Industrial and Manufacturing dept. I have taken up the M. Eng option but the M. Sc. Option is still open for me and I plan to take it up if I can get a good advisor. One good thing about the Industrial department is half of the professors are from India especially Tamil Nadu and they were very understanding and helpful during the first few weeks of the semester. I am pursuing courses in the field of Supply Chain and Manufacturing. The job scenario in Penn State is good but one needs to work extra hard to get a job as I am seeing and learning from my seniors.

There are certain things which I feel one can do during their summer holidays before arriving in the US. I did not do some of these and I wished I could have done.

- **Learn the basics of Matlab**. No matter which course you pursue, one should know matlab. Every undergraduate knows matlab and one is considered below average if they do not know matlab. I had a manufacturing course this semester which involved a project and I ended up learning matlab for creating a GUI.
- **Research about the department thoroughly** by asking people who are pursuing their degrees in that particular university.
- **Have some idea of what kind of courses** you are interested in but at the same time be flexible enough as you may end up changing your specialization.
- **Try to do an internship for at least a month** as it definitely helps during job fair. IPT's(In-Plant Trainings) are useless and they do not add value at all.
- **One needs to learn cooking** before coming here in order to survive. I learnt it the hard way as I burnt and undercooked a lot before I got the hang of it.
- I do hope I see some juniors from the mechanical department in Penn State next year. Wishing everyone associated with the department a prosperous new year.

----------Mohammed Musthafa Sheriff

| Amazing Innovations 1 | Folding knife in the size of a credit card |
|---|---|

Attention-sixth sem guys-can you think of something like this for Design & Fabrication Project?




The CardSharp has the same footprint as a typical plastic credit card. Make that 3 credit cards stacked on top of each other. The one piece case / handle of the CardSharp is made of a light weight flexible polymer called Polypropylene and the knife blade is made of surgical stainless steel.

The design is pretty clever. The blade is protected (as are your fingers) by the surrounding plastic case and the bevel on the blade itself. No matter how you rub your fingers across the blade area, you won't be cut while it's in this folded state.

To turn it into a knife, you have to do a bit of origami. First you have to open the lock, which is the ridged button in the lower corner shown above. When you can see the Green stripe, you know the CardSharp is safe to put in your wallet. You can open the lock by pinching the button between your thumb and index finger and rotating it until the blade is free. Then you pivot the Blade up and the sides fold around it to create the handle.

You're probably thinking that after many times of folding and unfolding, that the plastic hinge will eventually break. According to Iain Sinclair, they are living hinges that are guaranteed for life. 5 plastic studs on one side of the handle, snap into the other side to keep the handle securely formed. The result is a 5.5 inch long knife (from blade tip to handle end). The blade itself is about 2.25 inch long. There is an option to laser engrave your name on the knife!

Several years ago, designer Iain Sinclair launched the Cardsharp, a razor-sharp stainless steel knife folded into a credit card-shaped package. The knife combined real-world function with sleek, aesthetic design. Late last year, Sinclair updated the knife into the Cardsharp 2.

An evolutionary update, version 2.0 of the Cardsharp includes a stiffer polypropylene build and a child-proof safety lock. The knife packs 2.5 inches (6.5 cm) of stainless steel cutting surface into its own card-like sheath. A series of three folds is all it takes to turn the device from card to knife.

The Cardsharp4 makes use of a 2 mm-thick aluminum casing, which Iain Sinclair says adds robustness and strength. The updated knife also has a two-stage Zytel locking mechanism to prevent accidental opening. The new design adds a little weight compared to past models, but at 24 g (less than an ounce), it won't exactly be cumbersome.

watch the magical design at http://www.youtube.com/watch?feature=player_embedded&v=XuhBPWmGf0c
*http://the-gadgeteer.com/2012/09/26/iain-sinclair-cardsharp-2-credit-card-utility-knife-review/*

## Amazing Innovations 2

### Pollution of dye colouring avoided by colouring the food of silkworms

Like most other fabrics, silk is colored with dye. Unfortunately, the dyeing process results in wastewater laden with toxins. Now, scientists from the National Chemical Laboratory in India are developing an alternative. They're feeding dye to silkworms, which in turn are producing pre-colored silk fibers.


The researchers sprayed or dipped mulberry leaves in seven types of azo dye, which is the dye family most commonly used in the food and textiles industries. Those leaves were then fed to *Bombyx mori* silkworms.

Of the seven dyes, it was found that three ended up making their way into the worms' silk, causing it to take on the color of the dye. None of the dyes appeared to affect the worms' health.

This isn't the first time that silkworms have produced colored silk after eating dye, although the type of dye used in previous efforts was reportedly too expensive for commercial use. Azo dyes, by contrast, are relatively cheap.

A paper on the research was recently published in the journal *ACS Sustainable Chemistry & Engineering*.

**DOI:** 10.1021/sc400355k, Publication Date (Web): October 28, 2013.

(Uptake of Azo Dyes into Silk Glands for Production of Colored Silk Cocoons Using a Green Feeding Approach)
http://pubs.acs.org/doi/abs/10.1021/sc400355k

## Amazing Innovations 3

### Aim, Shoot, get to know your food....

http://www.youtube.com/watch?v=kcNj1DknDpg&feature=player_embedded

Figuring out whether the fries on your plate contain traces of trans-fat, or if those celery sticks are truly pesticide-free can be tricky, if not impossible. That's why Isabel Hoffmann along with mathematician Stephen Watson set out to create TellSpec, a hand-held device that you can simply point at a food item, to identify what's in it. Not only does the device warn you about chemicals, allergens and ingredients you'd rather avoid, it'll also help you figure out food sensitivities and track your vitamin intake. The goal, the company says, is to help people make clean food choices by letting them "check their food as easily as they check their mail."

"We want to promote healthier eating, alert those who have allergies and educate consumers by telling them exactly what's in their food – beyond what the label says," Hoffman explains.

The device utilizes a small Raman spectrometer, a unique cloud-based algorithm and a simple smartphone app. Scanning a food item on the plate or in a shopping aisle is as simple as aiming TellSpec at it and pushing a button. It beams a low-powered laser at the item and analyzes the reflected light waves to identify the chemical makeup of the food.

This data is uploaded to the analysis engine which processes the information, compares it to reference spectra, interprets the results with the help of a database, and downloads the results to the user's smartphone.

Hoffman states that the device can successfully identify foods and their ingredients approximately 97.7 percent of the time after scanning the food's surface. More info at

http://tellspec.com/howitworks/


## Innovation Challenge - 1 | PALS-IIT Alumni Club Innovation Challenge

PALS Innovation Challenge is a Project Competition to identify and support promising young innovators who dedicate themselves to solving the India's most pressing problems with their innovative ideas.

**Problem Statement**

India today is burdened with a multitude of problems; there is immense scope for application of technology at the grass-root level and brilliant technological solutions for the same. The PALS Innovation Challenge invites entries that impact India. The problem and its solution need to be mentioned very clearly by the team. The solutions need to be implementable and the teams have to demonstrate a working prototype for the final round with a clear Business Plan to commercialise the innovation. For more details, contact mech office.

## Innovation Challenge - 2 | Valeo Innovation Challenge

Deadline 14 February , 2014
Top Award *$100,000*

To coincide with the 2013 Frankfurt Motor Show, Valeo is launching a global challenge calling for design entries that will help build smarter and more intuitive cars by 2030.

Students from engineering, technical and science schools and universities from around the world will have the opportunity to develop daring and revolutionary solutions for the future, as well as win a top prize of $100,000. The 20 projects selected for the prototyping phase will receive funding.

The Group plans to recruit over 1,000 engineers and technicians per year over the next three years. It therefore aims to educate students about the challenges offered by professions in automotive technology. Play an active role in automotive innovation: design the product or system that will create smarter & more intuitive cars by 2030 and develop daring solutions that will revolutionize the future.
Watch the video at https://valeoinnovationchallenge.valeo.com/

## Forthcoming Events

The meeting on Advanced Characterization Techniques for Engineered Nanomaterials,(ACTEN-2014) will be held at Sathyabama University, Chennai-600119,Tamilnadu,during January 30th and 31st, 2014.**Registration fee :Rs.1500 for students and Rs.2000 for Faculty.**Contact deansathyabama@gmail.com

Dr Prasad Patnaik BSV, Dept. of Applied Mechanics,IITM invites nominations for STTP "Modern Control Perspectives in Solid and Fluid Mechanics", scheduled to be held from 18th to 22nd Jan.2014.(**No Charge basis).**

**Turbo Expo 2014: Student Poster Session!** The ASME International Gas Turbine Institute is announcing the first ever Student Poster Session to take place at ASME Turbo Expo 2014. A €500 check will be awarded to the best poster in the undergraduate student category and the graduate/PhD student category. All posters will be reviewed and approved through an abstract submission process. Poster Abstracts due March 1, 2014. Details at go.asme.org/IGTI

## Corporate Voice 1

While we learn technologies in college, once inside a work environment, it is how we behave with others that makes or breaks our career. Many good corporate bosses invest their time in teaching their team mates on various aspects of good behaviour and Self-Development. Mr.R.Ramakrishnan, President, Mytrah Energy (India) Limited, is an ardent writer who reads a lot and shares a lot on Self Development. Aspire will carry a series of his select articles, all through 2014.

## On Ego

The first major thrill after one learns cycling is to take both hands off the handlebar when the cycle is still in motion. More than the act itself, it is the fact that others notice you doing it that is important. In fact, eyes, wander with longing to see if others have noticed you perform the act. Standing on the footboard of a bus or train is considered a demonstration of great courage during adolescence. The craving is not to perform the act, but to get noticed.

Everyone goes through this phase of life where the ego drives one to do anything and everything only to get noticed and recognised. It is a phase when good is good only when it gains attention, and ironically, even good is bad if it fails to attract attention. The ego survives on gaining attention. But then, one must outgrow that phase of life.

By its very nature, ego needs feeding; and hence it's a perpetual beggar. The problem with ego is that when ego is fed, you struggle with a superiority complex, and when ego is starved you suffer from an inferiority complex. Either way, it robs you of your peace of mind. When ego comes everything else goes. When ego goes, everything else comes.

**How many precious relationships have been lost in order to satisfy one ego?**

**While you should have dropped ego and saved the relationship, you ended up dropping the relationships and saving ego. Ego is never worth the losses.**

How many golden opportunities have been missed while you were busy servicing your ego? Every moment is heavy, every situation is nerve-racking, every interaction is tense…an ego-filled heart is always walking on fire. Never can there be a moment of marriage between ego and ease.

A crow carrying a piece of meat found itself being chased by all the other birds. It dropped the piece of meat, and all the birds went after the meat. Now, alone in the sky, the crow remarked, "In losing that piece of meat, I gained the freedom of the skies."

There is enormous freedom in letting your ego go. So, let go.

----------R.Ramakrishnan