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AkShipth

SRINIVAS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF AERONAUTICAL ENGINEERING

April 2019
VOLUME 3
ISSUE 3

What's Inside?

From H.O.D.'s desk:

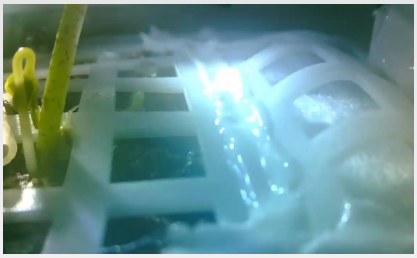
The third volume and issue of "Akshipth" is here with plenty of information about the activities and achievements of the department during the current semester. Indeed! The student teams have done remarkably well at intercollege and national level events. The department has secured one more university rank for the second consecutive year and expected to continue the same feat in the coming years also. On behalf of the Institution and the Aeronautical Engineering Department, I congratulate Ms. Monisha for securing 8th rank to the university, a proud moment! With the semester coming to an end very shortly, the final year students need to re-plan their project work and be ready for the exhibition. And finally, not to forget to exercise your voting franchise during the upcoming Loka Sabha Election 2019, being responsible citizens of India!

- Dr. Ramakrishna N Hegde

GLANCE THE TRENDING!!!

Opportunity, also known as MER-B (Mars Exploration Rover – B) or MER-1, and nicknamed Oppy, is a robotic rover that was active on Mars from 2004 to 2018. Launched on July 7, 2003, as part of NASA's Mars Exploration Rover Program, it landed in Meridiani Planum on January 25, 2004, three weeks after its twin Spirit (MER-A) touched down on the other side of the planet. With a planned 90 sol duration of activity (slightly more than 90 Earth days), Spirit functioned until it got stuck in 2009 and ceased communications in 2010, while Opportunity was able to stay operational for 5111 sols after landing, maintaining its power and key systems through continual recharging of its batteries using solar power, and hibernating during events such as dust storms to save power. This careful operation allowed Opportunity to exceed its operating plan by 14 years, 46 days (in Earth time), 55 times its designed lifespan. By June 10, 2018, when it last contacted NASA, the rover had traveled a distance of 45.16 kilometers (28.06 miles).

The Indian Space Research Organization (ISRO) launched an imaging satellite Microsat-R along with a student payload **'Kalamsat'** from its spaceport in Sriharikota, Andhra Pradesh, on January 24. The 46th flight of Polar Satellite Launch Vehicle (PSLV-C44) launched Microsat-R and Kalamsat from the first launch pad of the Satish Dhawan Space Centre at Sriharikota on January 24.



China revealed a cotton seed had sprouted on a lunar lander and become what was possibly the first plant life to grow on Earth's nearest neighbor, scientists ended the experiment when they shut down power remotely. The seeds were contained inside a special container situated in China's Chang'e 4 probe, which became the first successful mission to the far side of the moon on January 3rd. The first plant to be grown on the moon by humans is likely dead already, Chinese scientists said.

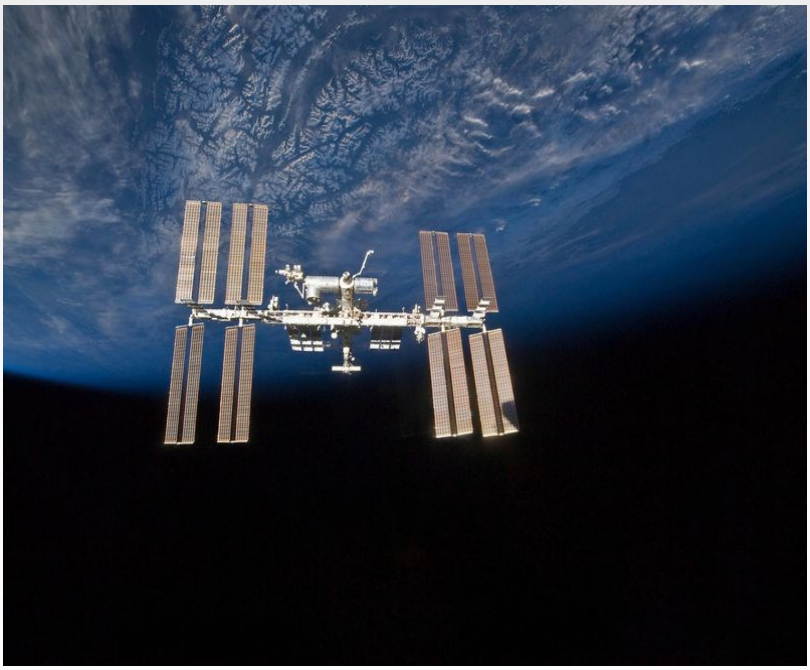
The Indian Air Force (IAF) on Saturday (February 16) carried out a mega exercise in Pokhran, Rajasthan, involving almost all variants of its fighter jets and attack helicopters, in a fire power demonstration near the border with Pakistan. The exercise came two days after 40 CRPF personnel were killed in a suicide attack in Kashmir's Pulwama by Pakistan-based terror group Jaish-e-Mohammed (JeM). In the Vayu Shakti exercise, the IAF showcased fire power capability of indigenously-developed platforms like Light Combat Aircraft (LCA) Tejas, Advanced Light Helicopter (ALH) and efficacy of the Akash surface-to-air missile and Astra air-to-air missile.

Facts and Myths...

- Indian Air Force was established on 8 October 1932.
- Sir Thomas Walker Elmhirst was the first Commander-in-Chief of IAF (1947 TO 1950).
- Siachen Glacier is the highest Air Force station in the world at height of 22000ft.
- IAF is the 4th largest Air Force in the world after USA, Russia and China.

One of the most basic myths is that most of the people believe that the doors will open anytime while flying. This may be the result of numerous action movies which shows these kinds of stuff but usually its not the fact. Practically, the doors of every jet are locked against tons of pressure and no normal person can think of opening them. So this myth is totally unbelievable.

Turbulence and bad weather create many unpleasant and uncomfortable moments but that doesn't mean that it can lead to crashing or accident of the planes. Bad weathers are the part of flying and it can happen anytime but if you believe that it can lead to serious damage to planes then you are wrong. Before flying, you must know how to stay calm and relax during the turbulence.



Sixteen nations were involved in the construction of the International Space Station, ISS: Russia, The United States, Canada, Japan, Belgium, Brazil, Denmark, France, Germany, Italy, The Netherlands, Norway, Spain, Sweden, Switzerland, and The United Kingdom. Sixty-five miles per hour may be a pretty standard speed limit on highways here on Earth, but up in orbit, the ISS travels a whopping 5 miles-per-second. That means the station circles the entire planet once every 90 minutes. The ISS is the single most expensive object ever built. The cost of the ISS has been estimated at over $120 billion. Made up of hundreds of major and minor components, the ISS is the largest manned object ever put into space. The ISS has a pressurized volume of 32,333 cubic feet, the same as a Boeing 747. It's four times larger than the Russian space station MIR and five times larger than the U.S. station Skylab.

THE MYSTERIOUS CODE WHICH IS YET TO BE DECODED!!!

Aviation Humor

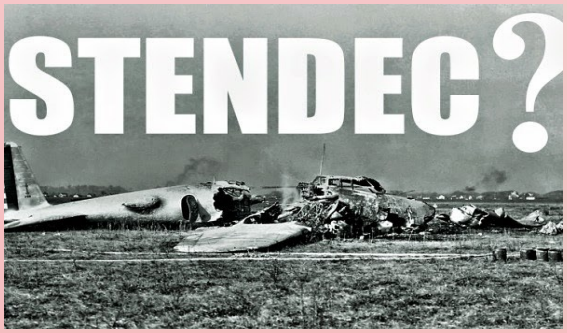
Did you forget? Lost Malaysian plane hasn't been found yet.

It was a story borne out all too often in the annals of aviation disasters. An aircraft finds itself off-course and in the clouds with zero visibility, and worse, surrounded by mountain peaks that can't be seen. That's what happened on 2nd August, 1947, in the Andes Mountains of western Argentina. An Avro Lancastrian passenger aeroplane of British South American Airways with 11 people on board struck a mountainside in zero visibility while descending toward what it thought was Chile. All aboard were presumed killed, with the crash not even being confirmed until more than fifty years later when its wreckage was finally found.

By themselves, the basic facts of what happened to British South American Flight CS-59 are tragic but not especially mysterious. The cause of the crash was a controlled flight into terrain. The mysterious part is what came over the radio just before the crash. In those days, long distance communication was by Morse code. Just before the disappearance, a last message was heard in Morse code i.e., "STENDEC".

The Chilean Air Force ground controller asked him to repeat that, and pilot sent it twice more, STENDEC, STENDEC. and that was the last anyone ever heard of Flight CS-59. The mystery of the word STENDEC took its place among the great unsolved cases so beloved in the lore of urban legendry. Theories even extended to UFOs, with some people proposing the cryptic message must have been some kind of warning about the plane's abduction by a giant alien craft. Even aviation medical experts have gotten into the fray, suggesting that the crew may have been suffering from hypoxia.

All kinds of people have made all kinds of guesses about what STENDEC might have meant. None of them are very



convincing. Most interesting is that the letters are an anagram of DESCENT, and Flight CS-59 was certainly on its descent. Did pilot simply mis-key the letters of DESCENT? no radio operator would ever communicate in such a way, and certainly not repeat it twice more when told that it was not understood.

I see no reason to link the mis-keyed, misread, or made-up transmission with the crash. The only thing connecting them is that they happened within a few minutes of each other, but the crash is simply not missing any explanations requiring an interpretation of STENDEC. Consider it an unsolved little titbit from history, but one whose significance is almost certainly limited to the interest it holds as a puzzle.

- Venkatesh Rajput
6th Sem BE (AE)

Aero India Air show 2019

Aero India is a biennial air show and aviation exhibition held in Bangalore, India at the Yelahanka Air Force Station. It is organized by the Defense Exhibition Organization, Ministry of Defense .

The first edition of the air show was held in 1996. During the Aero India Show, many manufacturers and service providers from the Indian aerospace and aviation industry meet the potential buyers of their products. After 1996, the 4th edition of the air show took place in 2003. About 176 exhibitors from 22 countries all over the world came to grace the show. In the year 2005, more than 380 participants came to the Aero India show's 5th edition. In this show, many military and civil aircraft as well as aerospace products were displayed. The 2007 Aero India show was held at Air Force Station, Yelahanka, Bangalore. The 7th edition was held from 11 to 15 February 2009, and included 592 exhibitors from over 25 countries. The eighth edition started on 9 February 2011.

In recent years, the Aero India has emerged as one of the world's most important and also largest military aviation exhibitions. The Mikoyan MiG-35 and F-16IN *Super Viper* were unveiled for the first time at the 6th and 7th editions of Aero India respectively.

61 metal birds, including HAL's indigenous

products Light Combat Aircraft *'Tejas'* will soar high in the city's skies. On static display will be HAL's Light UtilityHelicopter (PT-1), Light Combat Helicopter (TD-2), Advanced Light Helicopter (Rudra) and ALH MICU (Medical Intensive CareUnit).

However, the event will be shrouded by the tragic death of an Indian Air Force (IAF) pilot from its aerobatic team Surya Kiran during the rehearsal earlier Tuesday. Two British-origin Hawk advanced jet trainers collided and crashed mid air during a rehearsal session.

- Jeet S. Makadia
6th Sem BE (AE)

Recent Developments in Turbo Machinery Component Materials for Aero Engine Applications

In the recent years the development of turbo machinery materials performance enhancement plays a vital role especially in aircraft air breathing engines like turbojet engine, turboprop engine, turbo shaft engine and turbofan engines. Especially the transonic flow engines required highly sophisticated materials where it can sustain the entire thrust which can create by the engine.

In the present trend the aeromechanical propulsion industry response for turbo machinery sector like steam turbines, gas turbines engines and –stationary turbines and all air breathing engines, aircraft engine starting device turbochargers are also consistently developing due to increasing global necessity for vitality and flexibility. These turbo machinery components need to develop in keeping environment safe, constrain in usage of oil, gas and coal together in producing the levels of carbon dioxide, nitrogen oxide levels to be maintained according to the international air standard environment within the defined safety marginal levels. Thus, it is required to produce the environmental free highly sophisticated effective turbo machinery structures.

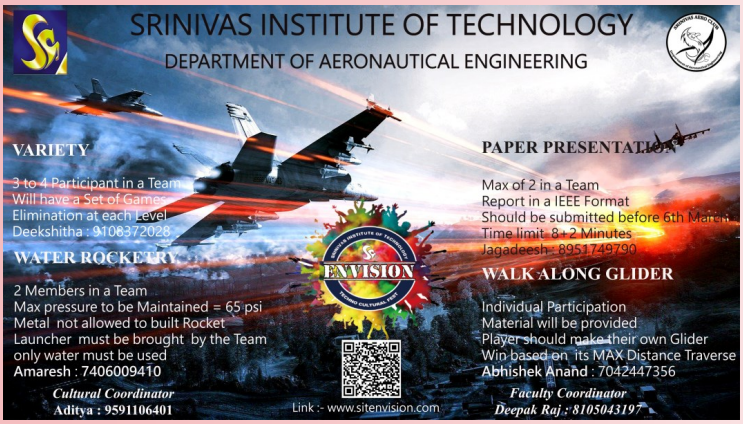
Especially in aeronautical propulsion industry, the turbo machinery components like fan, axial flow compressor, centrifugal compressor and turbines required to handle large amount of mass flow of air and hot gas at higher velocities. Therefore the turbo machinery components required to have characteristics like, to hold maximum temperature, maximum clear-cut strength and uniform resilient resources. Machining of these component edges really too difficult to cut by method of conventional methods. Conventional methods has drawback that it takes more metal removal rate, low precession due to great cutting forces leads to more tool cost due to more wear subsequently low process efficiency. Therefore, use of economical and highly sophisticated technologies is of more interest.

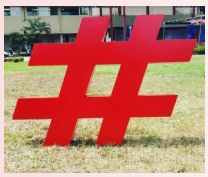
The aircraft engines prefer more Titanium and Nickel based alloys. The temperature capability of these composite materials improved continuously through different manufacturing techniques and new alloy composition. Single crystal materials gives much better properties compare to polycrystalline materials as it gives superior creep properties and also best suitable for high temperature applications like aero engines. The use of such advanced titanium and Nickel based composites (used in aero engine turbines and compressors), matrix composites (especially polymer matrix composites used in aircraft turbofan engines) required the more sophisticated advanced manufacturing strategies.

All the aircraft turbofan engines have additional features like after burner with bypass provision to increase propulsive efficiency. These additional features enhance the thermal effectiveness, the enhancement further can improved by incorporating blade cooling materials, maximum temperature resilient and low weight carrying materials like single crystal, smart graded materials, ceramic materials and ceramic matrix metal materials. Nickel based alloys gives more predominant outcomes in improvising thermal efficiency and propulsive efficiency in turbofan engines. Additionally light weight material engine structures, aerodynamic shaped smart trailing edge structures require more sophisticated techniques which also improves the thrust development and high efficiency enhancement.

- Prof. Jagadeesh B
Assistant Professor
Dept. of Aeronautical Engineering
SIT, Mangaluru

ENVISION 2K19

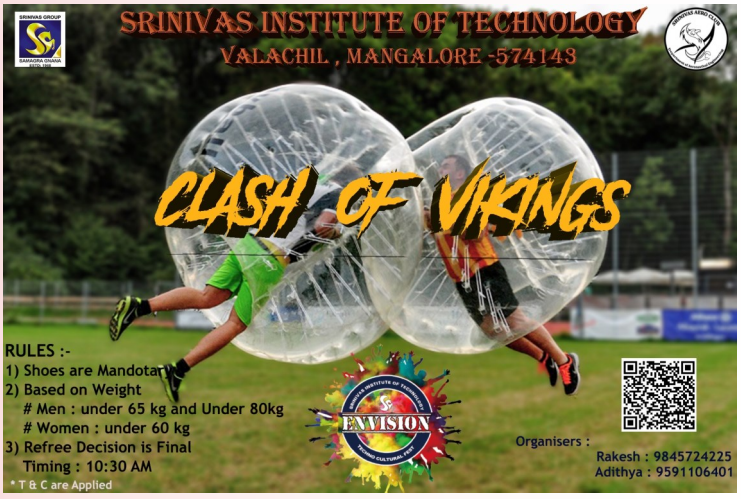




A Mega Techno-Cultural national level fest held at Srinivas Institute of Technology. The Department of Aeronautical Engineering had organised 4 events: Variety (Technical Treasure Hunt), Paper Presentation, Water Rocket, Walk along Glider and a Grand event Clash of Vikings. Students from various departments of SIT and also from different colleges had actively participated in the events making it a very successful one.

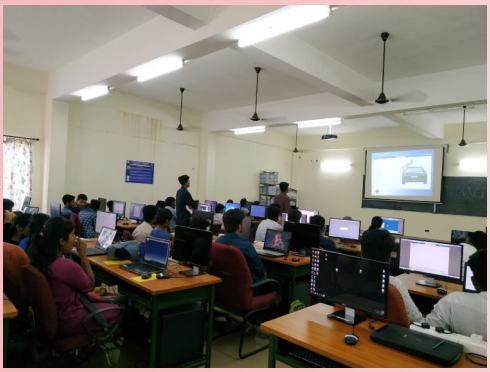
Srinivas Aero Club

@srinivasaeroclub



Centre of Excellence

Workshop on 3D Experience and Abaqus was held on 2nd and 3rd April by the Centre of Excellence in association with Department of Aeronautical Engineering. More than a hundred students from various departments participated in the workshop.



T-Shirt designing competition...

T-Shirt designs

Hoodie designs

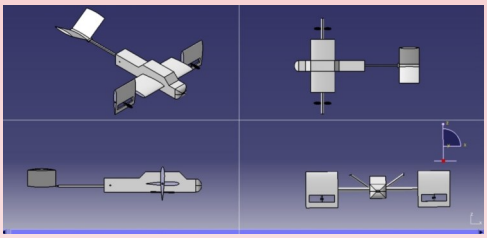
No matter how slow you go, you are still lapping everybody on the couch.

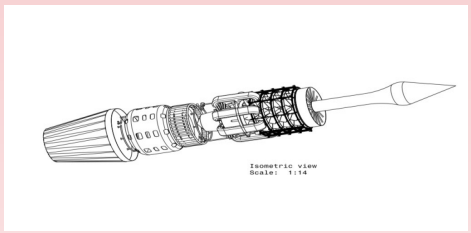
Innovations on the way...

Team of Jeet, Ravi, Tushar, Deepak, Santhosh, Subrahmanya, Yakshith and Dhanush Of 3rd Year AE presented a paper on Bi-Trans-VTOL at Indian Engineering Project Consultancy, a national level engineering project expo at Pune, Maharashtra.

Another team of Ajay, Prasanna, Saatvik, Chaithra, Shipra and Abhilash of 3rd Year AE presented a paper on Integrated Magnetic Aircraft Engine and Won the Best Participation Award with a cash prize at IEPC, Pune.

A third team of Praveena, Kavya, Steve and Swathi prepared a paper on Analysis of combination of Swing Wing with Canard and Tail used in Fighter Aircraft at International trends on Emerging trends in Engineering Science and Management at Ballari and also at Innovation Pavilion, Bangalore.





Political Hastle

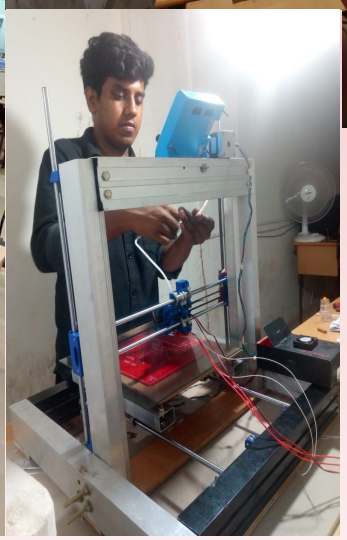
Venkatesh Rajput from 3rd Year AE had participated in 9th Bharatiya Chhatra Sansad in Pune as a college representative, which successively led him to be selected as one of the four Karnataka State Representative at National Student's Parliament held in Kerala. He has also been elected as the Karnataka State Student Co-ordinator by Bharatiya Chhatra Sansad.

UPCOMING ENTREPRENEURS - AIRETARDS

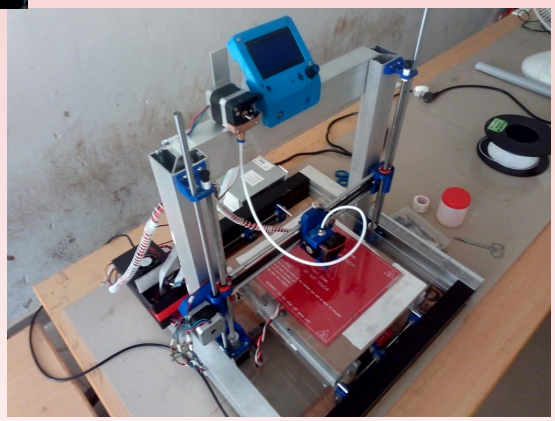
Developing an UAV (Drone)

RC AEROMODELING

The Making of Albatross



And here we have a "3D PRINTER"!!!



Field Visits

Students from Govt. Junior College, Shringeri and Govt. PU College, Puttur had visited the college and the Department of Aeronautical Engineering to gain a basic knowledge about future of the degree in Engineering.

Tiny Technical Tour

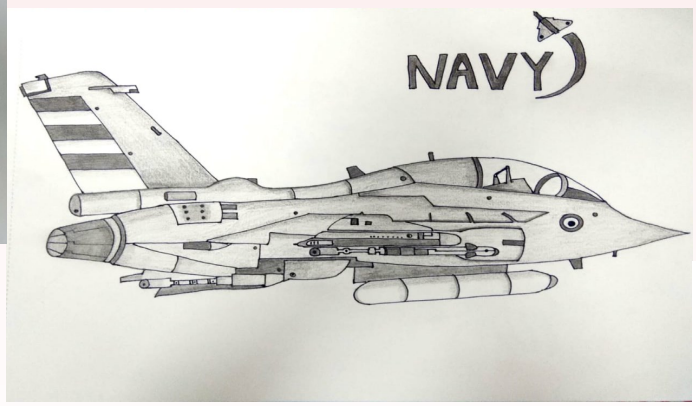
Students of BBA Aviation Management from Srinivas University visited Department of Aeronautical Engineering, S.I.T to add up some technical knowledge into their managerial skills.



SPORTS

Yajna Narayan from 3rd Year AE and Joel Johnson from 2nd Year AE participated in 3rd State level Haji Nabi Shariff Memorial Football Tournament representing SIT and Won the match. They also represented the college in VTU's Inter Collegiate Zonal Tournament and secured the position of Runner up.


Art Gallery

Art by -
Rita Angelina
3rd Year BE (AE)

Placements for Academic Year 2018-19

S. no.	USN	NAME	COMPANY NAME	SALARY PACKAGE
1	4SN15AE012	 Deepti Arahunashi	24(7).ai Heraizen technologies	1.86LPA 2.25 LPA
2	4SN15AE030	S Adithya	Shriram Finance transport company	2.44LPA
3	4SN15AE004	 Akshatha	Kreatio	3.5 LPA
4	4SN15AE044	 Vishishta Mishra	Tata consultancy services	3.36 LPA
5	4sn15ae026	 Poojitha D A	Sunrise Biztech	2.7 - 3 LPA
6	4SN15AE019	 K Rakesh	Sunrise Biztech	3L
7	4sn15ae025	 Pooja M	Usha Armour Pvt. Ltd.	1.9 LPA
8	4SN15AE022	 Mohammed Razin	Shriram Transport Finance	2.4 LPA
9	4SN15AE041	 Varuni Nadiger	[24]7.ai	1.8 LPA
10	4SN15AE017	 Indu Venkat	Capital via Global Research	3.02 LPA
11	4SN15AE011	 Deekshitha H L	Capital via Global Research	3.02 LPA
12	4SN15AE005	Alisha Dcosta	Arkieva	3.5 LPA
13	4SN15AE001	 Abhishek Anand	Infosys	

A Tribute to the Martyred…

For those who sacrificed their lives in the recent Pulwama attack!!

Your Vote is your rightful strength in Democracy!

"Choosing not to vote isn't a rebellion, it's a surrender!"

EVERY VOTE COUNTS...