

RAJALAKSHI NEWS

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Insight: 3D Printing in Medical Industry

Highlights

- ♣ The vehicles designed and fabricated by students won various awards in Hybrid vehicle Challenge and E Baja by SAE India
- ♣ SuprBa orientation Workshop
- ♣ Fresher's day

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3D printing in medicine has been skyrocketing. And the list of objects that have already been successfully printed in this field demonstrates the potential that this technology holds for healthcare

Tissues with blood vessels: Researchers at Harvard University are making great progress in bio printing blood vessels, a crucial step towards printing tissues with a blood supply. They designed a custom-built 3D printer and a dissolving ink to create a swatch of tissue containing skin cells interwoven with structural material that can potentially function as blood vessels.

Low-Cost Prosthetic Parts: Researchers at the University of Toronto, in collaboration with Autodesk Research and CBM Canada, used 3D printing to quickly produce cheap and easily customizable prosthetic sockets for patients.

Drugs: A TED talk describes a prototype 3D printer capable of assembling chemical compounds at the molecular level. Patients would go to an online drugstore with their digital prescription, buy the blueprint and the chemical ink needed, and then print the drug at home.

Tailor-made sensors: scans of animal hearts to create printed models, around which, stretchable electronics were wrapped. The silicon device can be peeled off of the printed model and attached onto a human heart for a perfect fit. The next step is to enhance the electronics with multiple sensors, including those that measure acidic conditions to detect blocked arteries.

Medical Models: A group of researchers

printed models of cancerous tumors to aid discovery of new anti-cancer drugs and to understand how tumors develop, grow.

Bone: Professor Susmita Bose, of Washington State University, used 3D printer to bind chemicals to a ceramic powder, creating intricate scaffolds that promote the growth of bone in any shape.

Cranium Replacement: Team of Dutch surgeons at the University Medical Center in Utrecht replaced the entire top portion of a 22 year-old woman's skull with a customized printed implant made from plastic. This story has been replayed in China, Slovakia

Synthetic skin: Researchers had developed a printer that can print skin straight onto the wounds of burn victims. With the ability to scan a wound, the printer can then fabricate the

appropriate number of skin layers to fill the wound.

Organs: An industry announced the commercial launch of their bio printed liver assays, 3D printed liver cells that able to function for more than 40 days. While, at the moment, the product is used for testing new pharmaceuticals, within a decade we will be able to print solid organs such as liver, heart, and kidney.

Hundreds of thousands of people are waiting for an organ donor; imagine how such a technology could transform their lives. 3D printing is just one of the many revolutionary technologies currently being used in healthcare.



Research Projects in Progress

- ◆ **Dr.K.Ravindra**, Professor and HoD was granted with a twelve lakh worth AICTE-RPS research project on 'Development of High Strength Polymer Matrix Composites Reinforced with Metallic Glass Particulates' in 2014. Another UGC-MRP 4 Lakh worth research project of Professor K.Ravindra on 'Fabrication and Characterization of Nano Al₂O₃ reinforced Magnesium Metal Matrix Composites' received in 2014.
- ◆ **Professor K.Srinivas** received an 8 lakh worth UGC-MRP research project on 'Tool Condition Monitoring Based on Acoustic Emission Techniques' in 2015. This project is in progress.
- ◆ **Dr.K.Ravindra** was granted with a forty thousand worth, Institution of engineers UG2015029 Project 'Design and Fabrication of 3D Printer'. This project is also in progress.

Seminar Conducted:

Prof.Dr. V.Chittaranjan Das and **Assoc.Prof.Dr.C.Srinivas** conducted a DST Sponsored National Seminar on 'Development of Tools using Biomaterials for Medical Applications' (DTBMA-2015) 18 -19, Sept 2015.

Paper Publications:

1. A research paper on 'Tribological Properties of Aluminium Metal Matrix Composites (AA7075 Reinforced with Titanium Carbide (TiC) Particles)' authored by **Asst.Prof. V.Ramakoteswara Rao**, N.Ramanaiah and M.M.M.Sarcar, was published in the International Journal of Advanced Science and Technology, Vol.88, pp.13-26, Jan 2016.
2. A review paper on 'A Review on Properties of Aluminium Based Metal Matrix Composites via Stir Casting' authored by **Asst.Professors V.Ramakoteswara Rao, and J.Rangaraya Chowdary** was published in the International Journal of Scientific & Engineering Research, Vol. 7, Issue 2 ,pp.742-749, Feb-2016.
3. A research paper on 'Tribological Properties of Aluminium Metal Matrix Composites (AA7075 Reinforced with Titanium Carbide (TiC) Particles)' authored by **Asst.Prof. V.Ramakoteswara Rao**, N.Ramanaiah and M.M.M.Sarcar was published in the International Journal of Applied Science and Engineering, Vol.14(1),pp.27-37, Feb 2016.
4. A research paper on 'Integrated production – Inventory-distribution optimization in a multi-echelon supply chain' authored by T.V.S.R.K Prasad, **Prof.K.Srinivas** and **Assoc.Prof.Dr.C.Srinivas** was published in the Manufacturing Technology Today Vol 14, issue 12, ISSN 0972-7396, pp-16-21, Feb 2016.
5. A research paper on 'Decentralized Production Planning in Multi-echelon Supply Chain Network using Autonomous Agents' authored by T.V.S.R.K Prasad, **Prof.K.Srinivas** and **Assoc.Prof. Dr.C.Srinivas** was published in Proceedings of the International Conference on Trends in the Industrial and Mechanical Engineering, during Feb 4-6, 2016 held at MANIT Bhopal.

Staff room

6. A research paper on 'Integrated Production – Inventory-distribution Optimization in a Multi-echelon Supply Chain' authored by T.V.S.R.K Prasad, **Prof.K.Srinivas** and **Assoc.Prof. Dr.C.Srinivas** was published in the Proceedings of the International Conference on industrial Engineering, held at SVNIT,Surat in Feb 2016.
7. A research paper on 'Design of Machine Layout in Flexible Manufacturing Systems' authored by Assoc. Prof. **Dr.C.Srinivas** was published in the International Journal of Trend in Research and Development, Vol 3,Issue 2, ISSN 2394-9333,pp-612-614,Feb 2016.
8. A research paper on 'Use of the grey relational analysis to determine optimum drilling cutting parameters of Al-6063th multi performance characteristics' authored by M.N.S.Mounish and **Assoc. Prof. Dr.C.Srinivas** was published in the International Journal of Trend in Research and Development, Vol 3,issue 3, ISSN 2394-9333,pp-218-223,March 2016.
9. A review paper on 'A Review on Mechanical and Tribological Properties of Metal matrix Composites' authored by **Asst.Prof. V.Ramakoteswara Rao**, N.Ramanaiah and M.M.M.Sarcar, was published in the Journal of Polymer & Composites, Vol. 4(1), 2016, pp.16-26, March 2016.
10. A research paper on 'Optimization of Surface Roughness, circularity deviation and selection of different Aluminium alloys during drilling for automotive and aerospace industry', authored by **Asst.Prof. Reddy Sreenivasulu** and Ch.Srinivasa Rao was published in the Independent Journal of Management & Production (ISSN:2236-269X) Volume 7,No2, pp 413-430, April - June 2016.
11. A research paper on 'Overview on Burr Formation, Simulation and Experimental Investigation of Burr size based on Taguchi Design of Experiments during Drilling of Alluminium 7075 Alloy', authored by **Asst.Prof. Reddy Sreenivasulu** and Ch. SrinivasaRao was published in the AKGEC International Journal of Engineering and Technology (ISSN: 0975-9514) Vol.7,issue No1,pp 24 – 30, Jan- June 2016.
12. A research paper on 'Design Optimization of IC engine Rocker-arm using Taguchi based Design of experiments', authored by **Assoc.Prof. Dr. G.Chaitanya ,Asst.Prof. Reddy Sreenivasulu** and Ch SrinivasaRao was published in the AKGEC International Journal of Engineering and Technology, Vol.7,No1, ISSN: 0975-9514 pp 38 – 42, Jan-June 2016.
13. A research paper on 'Thermodynamic Analysis of Air Cooled Gas Turbine used in Marine Applications', authored by **Assoc.Prof. K.Balaprasad, Asst.Prof. V. Tara Chand**, I. N. Niranjana Kumar,Prof.K. Ravindra and V. Naga Bhushana Rao was published in the International Journal of Thermal Technologies, Vol.6, Issue No., pp 32-39, March 2016.
14. A research paper on 'Modeling and Simulation of Nano and Multiscale Composites', authored by **Assoc.Prof. Dr.B.Ramgopal Reddy** and

15. A research paper on 'Effect of Epoxy modifiers (Bagasse fiber / Bagasse ash / Coal powder /Coal Fly ash) on mechanical properties of Epoxy / Glass fiber hybrid composites', authored by **Assoc. Prof. Dr.B.Ramgopal Reddy** and Raffi Mohamed, was published in the International Journal of Applied Engineering Research (IJAER, ISSN 0973-4562, Vol. 10(24), pp. 45625-45630. March 2016.
16. A research paper on 'Design of Ventilation and Air Conditioning for 50 Ton Bollard Pull Utility Tug Built for Indian Navy' authored by **Asst.Prof. K. Lakshmi Chaitanya and Professor K. Srinivas**, K. Jagadish Chandra Bose was published in the Journal of Refrigeration and Air Conditioning, Heating and Ventilation, Vol 3, Issue 1, ,pp23-31, March 2016.
17. A research paper on 'Modeling of Surface Roughness for AISI 52100 steel in WEDM by design of experiments', authored by **Prof. Srinivasarao.G**, Suneel.D, Santhi priya.P, was published in the International Journal of Engineering Research & tech, Vol. 5, No.5,pp.234-239 April 2016.
18. A research paper on 'Optimization of machining parameters for EDM operations based on central composite design and desirability approach', authored by **Prof.Chittaranjan Das. V**, was published in the International Journal of Advanced Science, Vol. 2 No.3, pp 117-124, April 2016
19. A research paper on 'Response surface Methodology and Desirability Approach to Optimize EDM Parameters' authored by **Prof.Chittaranjan Das. V**, was published in the International Journal of Hybrid Information Technology, Vol.9, No.4, pp. 393-406, April 2016.
20. A research paper on 'Investigation on Influence of drilling parameters on Thrust force and Torque - Based on Design of Experiments', authored by **Reddy Sreenivasulu Asst.Prof.** was published in the International Journal of Scientific & Engineering Research, Volume 7, Issue 6, pp 53-56, June-2016.
21. A research paper on 'A research paper on 'A Review on Effect of Adding Additives and Nano Additives on Thermal properties of Gear Box Lubrication', authored by **Dr.N.V.V.S.Sudheer Assoc..Prof.** was published in the International Journal of Applied Research ISSN 0973-4562, Volume 11, No 5, pp 3509-3526, April 2016.
22. A review paper on 'Enhancement of Microstructure and Mechanical Properties of Al Alloys – Review', authored by Suresh Babu K, **Dr.N.V.V.S.Sudheer Assoc..Prof** and M.Maruthi Rao and was published in the International Journal of Science, Engineering and Technology Research (IJSETR), ISSN: 2278 – 7798, Vol 5, Issue 4, pp 1129 -1143, April 2016.
23. A review paper on 'Possibility of Using Refrigerant Blends In the Existing Refrigerator & AC Systems: A Review', authored by

Students Corner

24. A research paper on 'Performance Analysis of A Single Cylinder Four stroke Diesel Engine Using Sunflower Oil as a Bio-Diesel Blend : An Experiment ', authored by Anusha Peyyala ,**Dr.N.V.V.S.Sudheer Assoc..Prof.** was published in the International Journal of Innovations in Engineering and Technology (IJJET), Vol. 7, issue 1,ISSN: 2319 – 1058, pp-647-656,June 2016.

Paper Presentations in Conferences

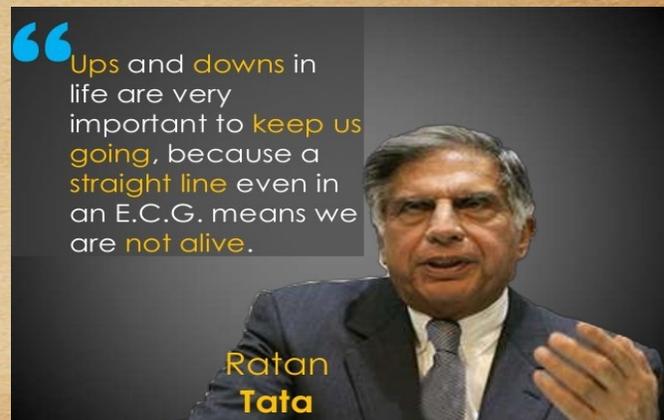
1. **Mr. Reddy Sreenivasulu Asst.Prof.** presented a paper on 'Prediction of surface roughness in end milling operation of Aluminium 6351-T6 alloy using Taguchi methodology' in the National Conference on Design and Manufacturing for Product Life Cycle (DPLC-2016) organized by Department of Mechanical Engineering, BITS Pilani, Hyderabad during March 19 – 20, 2016.
2. **Mr. Reddy Sreenivasulu Asst.Prof.** presented a paper on 'Influence of drilling parameters on thrust force and torque during drilling of Aluminium 7075 Alloy' in a National Conference on Recent Trends in Mechanical Engineering (NCRTME-2016) organized by Department of Mechanical Engineering JNTUH, Hyderabad during April 28th – 29th, 2016.

Conferences/ Workshops Attended

1. **Dr. B. Ramgopal Reddy Assoc.Prof.** attended a one week AICTE-QIP short term train-

ing programme on 'Advanced Composite Materials', organized by the Department Mechanical Engineering, Coimbatore Institute of Technology (CIT), , during 4-11 Jan 2016.

2. **Dr.B.Ramgopal Reddy, Dr.C.Srinivas Assoc.Professors and D.Sameer Kumar, J.P.Karthik Asst. Professors** attended a three day Workshop on 'Advanced Vibration Analysis – MATLAB Hands on Sessions' ,organised by the Dept of Mechanical Engineering ,JNTUniversity , Kakinada during 3- 5 March 2016.
3. **Mr. Sk.Md.Hasheer, V.Tarachand Asst. Professors** attended a two day National workshop on 'Recent advances in I.C Engines' conducted by Department of Mechanical Engineering , VR Siddhartha Engineering College,during 31 March to 1 April 2016.
4. **Dr.V.C.Das** attended a three day workshop on 'National Disaster Management' organized by NDRF at ANU,during 24-26 May,2016.
5. **Dr.V.C.Das** attended a one day National



Students Corner

Results Analysis:

Year	Total Ap-pear ed	Total Pass	Pass %
IV/IV B.Tech (VIII Semester)	192	189	98.43
III/IV B.Tech (VI Semester)	211	182	86.25
II/IV B.Tech (III Semester)	211	155	73.46
II/IV B.Tech (IV Semester)	204	135	66.18
I/IV B.Tech (I Semester)	174	115	66.09
I/IV B.Tech (II Semester)	174	110	63.21
I/II M.Tech (II semester)	13	13	100

SUPRBA 2016

SAE India Collegiate club of RVR&JCCE organized a two day workshop 'SuprBa 2016–Orientation Workshop" on Supra and Baja SAEINDIA student competitions from other active Collegiate Clubs, in Association with SAE India, Hyderabad Division, on 11th

march. In the presidential speech, Dr. K. Basavapunniah told that this type of event is being organized for the first time in the state of AP and advised students to learn procedures and testing skills required to participate in events. Mr. Y.Srinivasa Rao, Head, SAE India, Hyderabad Division, spoke about the lessons to be learnt from failure" thereby to develop investigative research on failure modes of the engineering design. He had also suggested the students about various aspects to be considered in design and fabrication of the vehicle to be sported in SAE India events, Dr. Gururaj Telesanf from ARCI, HYD, Mr. Balaji Navaneethan from Brakes India Ltd. Chennai, Ms. Anitha Varma, Cyient-Hyd, and Pradyumn Patidar from AVEVA Solutions India LLP, HYD in their speeches dealt about various tips and technologies that are useful tin design and fabrication fo vehicles, they had also motivated the students about the wish of our Prime Minister ot fulfill the objective of "Make in India". About 186 of students, apart from 10Faculty advisors, across AP and Telangana Engineering Institutions, have attended this program, in addition to the internal participants of 174 RVRJCians.

Principal, Dr. A. Sudakhar said that RVR students won many prizes in the events SuprBa& Baja organized by SAE India earlier. Dr. K. Ravindra Head of Mechanical Engineering and others present.

Students Corner

HVC 2016 Hybrid Vehicle Challenge



ISIE– Hybrid vehicle challenge is the Asia’s largest vehicle challenge for the Engineering and Diploma students. Their objective is to develop interest among the engineering students towards alternative power sources, these which are the future of automobiles. The Falcon Racers—Team of 30 students from Mechanical Engineering Department, designed and fabricated a hybrid vehicle (powered by both IC engine and Battery) to compete with 16 teams in the Hybrid Vehicle Challenge (HVC-2016) competition, organized by the Imperial Society of Innovative Engineers (ISIE), at Bhopal during January 24-27, 2016. The Falcon Racers vehicle secured runner up position in the Skit Pad Event.

E Baja 2016



Another passenger Electrical Vehicle E152 (3 Seating capacity) had been designed and fabricated by a team of 22 students from Mechanical Engineering and 3 students from EEE and ECE. This vehicle stood second in the cost event and overall static Event in the E– BAJA 2016, organized by the Society of Automotive Engineers (SAE-India) during Feb 17-21, at Indore



Dr K. Srinivasu, Principal, taking a ride on ATV,

other vehicles in picture : ATV 31, HVAC 27, Electric vehicle EV183, Go kart, ATV fabricated by students.

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