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Malayala Manorama "CAMPUS SHORT FILM FEST" SEASON 5



process optimization by performing fluid-structure interaction analysis. The entire process involved the use of computational fluid dynamics (CFD) and mechanical simulations to modify the cooling process and to improve the tool life by about 50%.

Validating the Digital Factory Drilling

New digital manufacturing simulation tool such as FastSuite Edition 2 enables significant operations, amongst which a few are listed, hereby:

Simulating is Believing

The Simulation tools are making it easier for manufacturers to optimize the process, visualize the entire production path from metal cutting simulations and factory-floor imaging. With the latest tools, the toolpath designers and manufacturing engineers will be able to fix things, speeding the simulation and verification of metal cutting process.

analysis, composites manufacturing, and others but, is yet to reach its full potential.

Manufacturers are focusing on ongoing trends for spreading the wealth with higher-end simulation tools throughout the design/production chain.

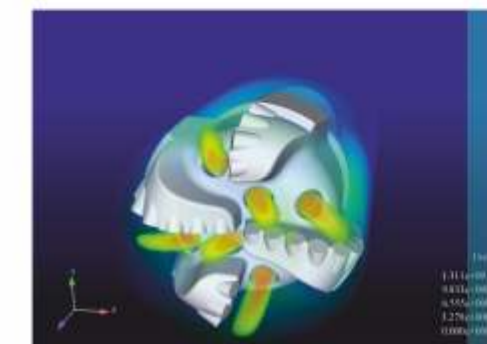
Optimized Drilling

Machine expensive corrosion-resistant materials are difficult on drills, to which researchers used fluid flow and structural analysis tools to analyze the coolest fluid distribution and achieve longer tool life. Right from the inclusion of methods to extend the life of drills for the use, a significant amount of heat transported or directing the coolant fluid into small channels. To understand the complex interaction of drill structure, the research team included simulation tools for

- It helps manufacturers to design factory layout and optimizing product designs.
- It validates manufacturing processes in advance and fastening of the same process, and optimizing designs.
- FastSuite also provides user-friendly functions for integrating new and project-specific components in the layout.
- It uses shared memory to write the simulation data and from which 3D visualization then reads the simulation data.

Therefore, the 3D based simulation software allows validation and visualization of processes and production tasks.

In the end, the involvement of simulation tools can handle customized markets, making of adjustable product structure, and complexity of big orders.



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What is Industry 4.0?



Industry 4.0 relates with the fourth industrial revolution. After, industry 1.0 which refers to mechanization, 2.0 to mass production, and 3.0 to automation, now enter "Internet of Things and Services" is becoming an integral part of manufacturing. Industry 4.0 has the capability to create multiple growth opportunities and competitive advantages for the business locations. According to experts, the companies will experience an increase in productivity by 30 percent using Industry 4.0.

Social Machines

In industry 4.0, intelligent machines will allow sharing of information just like online social networks. The arrival of industry 4.0 has made production more flexible and efficient. Moreover, these social machines communicate directly with all the IT systems enabling uninterrupted flow of information within the company.



Global Facilities



Talking about the production arena, it is a place where machines share data with each other and connect to supplier & customer systems. Therefore, if the supplier cannot deliver the product, the technology works to analyze the capacity utilization and automatically places an order with them.

However, the human effort still plays a critical

role in the production process. The augmented operators can control and monitor within the production network. IT-based assistance systems can extend functions of a real factory.

Smart Products

Every smart product holds information about product status and operating conditions. The data is stored within Radio Frequency Identification (RFID) chips, which provides a virtual copy of each smart product. RFID enables collecting and updating of product information throughout the life of the product as per the requirement, making them smart. These smart products are aware of its type and can tell machines of what shape it needs and or the right color for it.

Virtual Production

Corresponding to the real production arena, the smart factories will have the digital twin for same products and resources. The system makes way for engineers to control and monitor production in real time remotely. Therefore, the digital copy allows virtual simulation throughout the production processes.

The benefits of Industry 4.0 model will outweigh concerns related to production. Health and safety of human workers can be improved, and supply chain can be controlled during manufacturing and delivery process. The results for Industry 4.0 model could be increased profit, market revenue, and market share.

Image courtesy: <http://www.verosim-solutions.com> || <http://advancedmanufacturing.org> || <http://www.vvgazette.com> || <https://i.yimg.com> || <https://www.sparklinglogic.com> || <http://ept-int.com> || <https://salk.biz> || <https://cdn0.vox-cdn.com> || <https://voiceofpeopletoday.com> || <https://image.redbull.com> || <https://www.phikappa.org> || <http://iatswails.com>

Meet the Indian Teen and his Invention, Kalamsat - Smallest Satellite for NASA



India again broke a global space record by launching world's lightest satellite weighing 64 grams, called Kalamsat, developed by 18-year-old Tamil Nadu student Rifath Sharook and his team.

Named after former Indian President, Dr. APJ Abdul Kalam Azad, Kalamsat was the only Indian payload in the mission. A NASA sounding rocket flew the tiny satellite, and the lift-off was from the space agency's Wallops Island around 3 PM (IST).

In conversation with Mission Director, Srimathy Kesan, she said that the total flight time of Rocket was 240 minutes and Kalamsat got separated from the rocket in 125 minutes after lift-off. While learning about the satellite's post-launch, we also came to know that it fell into the sea. After recovering, NASA will send it back to the team for decoding the data.

Specification of the "Tiny Satellite"

- It can be held in one's palm as it is 3.8cm cube.
- The structure is 3D printed with reinforced carbon fiber polymer.
- It is equipped with a nano Geiger-Muller for measuring radiations in the space.

The incredible achievement makes us believe that Space is not unreachable and has no boundaries, therefore, let us all do research and conquer the Mars soon.

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3D Printing on Human Skin to Become Reality



The Engineering researchers at the University of Minnesota have developed a revolutionary process for 3D printing electronic sensory devices that gives robots the ability to feel the environment. The innovation will act as a significant step for printing electronics on human skin.

Uses of 3D printed Sensors

The lead researcher on the study, Michael McAlpine revealed about the uses of super sensors.

- Introducing bionic skin on surgical robots gives them the ability to make the surgery easier and precise.
- These sensors will make it easier for robots to walk and interact with the environment.
- The innovation will lead to the future sensors that will be printed directly onto the human skin for monitoring their health and protecting soldiers in the field from dangerous chemicals.

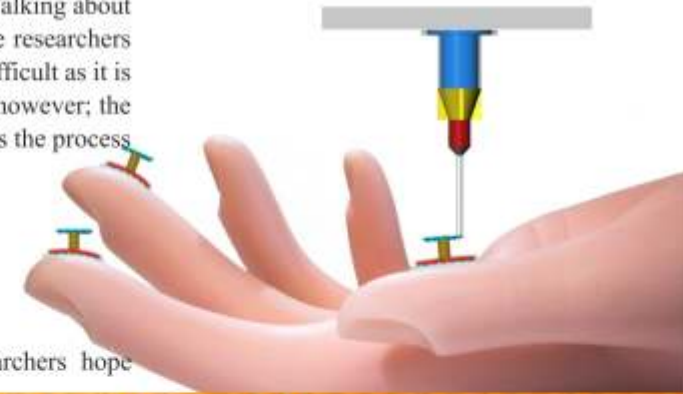
- The sensor devices are so sensitive that it can even detect the pulse of an individual.

Designing and Development of Sensors

McAlpine and his team created a unique sensing fabric with the help of a 3D printer that they built in the lab. The printer is inscribed with four nozzles, which can print with specialized "inks" that forms as layers of the device. All the layers used in flexible sensors can be set at room temperature. Talking about the conventional 3D printing, the researchers said that using liquid plastic is difficult as it is hot and rigid to use on the skin, however, the flexible 3D printed sensors makes the process easy by expanding up to three times the original size.

Going Beyond the Limitations of Biology

In their next experiment, researchers hope



to print such "skin" on the human body. Other advancements will include improvement in laparoscopic surgery and provision of touch sensation for the victims. The people who are suffering from prosthetic limbs can gain the touch sense through the artificial skin. Surprisingly, this breakthrough can completely revolutionize mass production.

According to the lead researcher on the study, there can be the arrival of undiscovered applications because the possibilities of future are endless.

Impact of GST in Education and Training Sector!

Prescribed courses by IIM have been exempted under GST. In addition, the specific services such as transportation of students, catering, and security in pre-school education and higher secondary education have been exempted under GST. Though, the courses and educational services would encourage the GST exemption, education institutions still have to bear GST burden for the following procurement:

- 1 Services such as renting, telecommunication, and purchase of goods will continue to remain as an input

tax cost for educational institutions.

- 2 Training Services by commercial coaching institute will have to bear GST the rate of 18%.
- 3 Foreign entities organizing educational training events in India that is attended by local or overseas participants will become liable to bear GST.

Now, it calls for education and training sector to keep a close watch on GST along with the subsequent exemptions and their related clarifications.



Education and Training Sector in India is among the key priority areas of government. Government's focus towards education sector is well reflected through various exemptions in Service Tax and Value Added Tax.

However, it's hard to accommodate every concern of an educational and training sector. In contrast to certain exemptions, the education, and training sector has borne the burden of indirect taxes in certain situations.