



अनुनाद

A DEPARTMENTAL NEWSLETTER

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सामयिकी

current affairs

TESLA'S ENTRY TO INDIA

Tesla is set to start its operations in the country in 2021

COVID-19 VACCINE

Covishield and Covaxin — available in India, vaccination programme under way

SIGNAL V/S WHATSAPP

A 2-word endorsement by Elon Musk boosted the Signal Messaging application



VISION OF THE DEPARTMENT

Strive to be a Centre of Excellence in Electrical engineering and producing graduate engineers instilled with human values and professional ethics, who will serve as a valuable resource to the nation.

MISSION OF THE DEPARTMENT

- i. To impart strong technical foundation through high-quality teaching and practical skills.
- ii. To groom the graduating engineers for Industry, Research and Higher Education.
- iii. To inculcate ethical and moral values by providing a congenial environment.

PROGRAM EDUCATIONAL OBJECTIVE

- | | |
|------|--|
| PEO1 | To develop professionals in core and allied engineering sectors. |
| PEO2 | To promote innovation in design and research. |
| PEO3 | To develop self-employed professionals with strong communication, team work and leadership skills. |
| PEO4 | To inculcate human and ethical values for the betterment of the profession and the society. |

PROGRAM SPECIFIC OUTCOME

PSO1

Apply the concept of basic and electrical engineering fundamentals in solving Electrical & Electronics Engineering Problems.

PSO2

Develop and enhance innovative skills to provide engineering solutions in the areas pertaining to Electrical & Electronics Engineering.

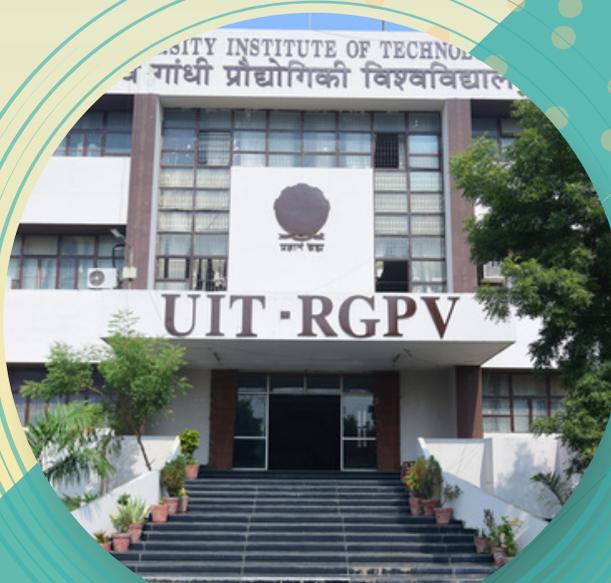
PSO3

Analyze and design Electrical & Electronics Engineering systems.

Any suggestions for modifying above statements are solicited.



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TECHNOLOGY>

TESLA'S ENTRY TO INDIA

India's electric vehicle drive: Union Minister Nitin Gadkari said Tesla is set to start its operations in the country in 2021 and would also look at setting up of a manufacturing unit based on demand.

5G's Important Role: In Autonomous Car The increased network speed would mean less delay in information transmissions and faster vehicle response times, and could eventually make autonomous vehicles safer on the road than human-driven vehicles.

Models and initial price: Its first offering for India is expected to be the Model 3 sedan. It is currently the best-selling Tesla and also its most affordable offering around the globe. Tesla is also expected to introduce its other models like its current entry-level SUV, the Model Y, later.

The features made for India: Electric cars are environmental friendly and lack of exhaust gases High efficiency of the electric motor in comparison with the petrol engine. Low noise due to a small number of moving parts of the car and mechanical transmission

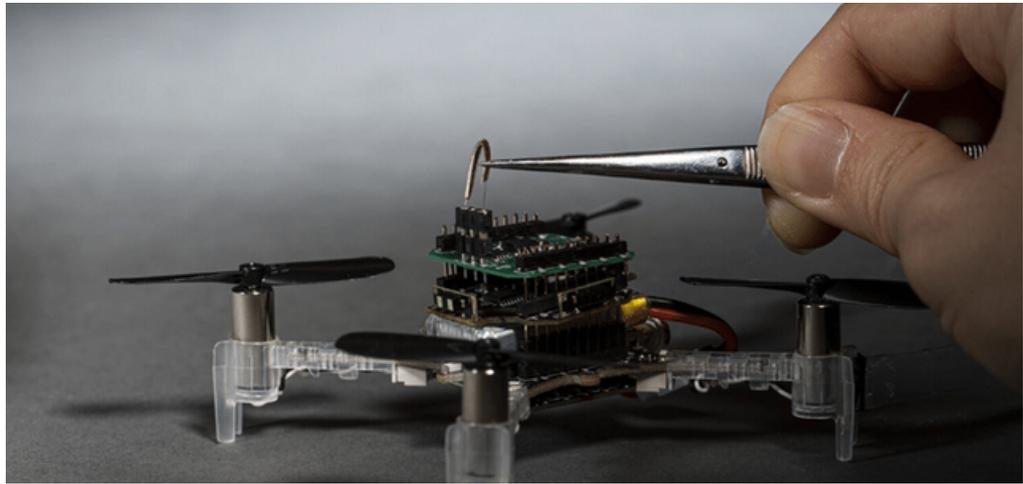
Companies behind the scene: According to Registrar of Companies filings, EV maker Tesla has registered a new entity titled, Tesla India Motors and Energy Private Limited, in Bengaluru as its subsidiary on January 8.

WORK CITED: THE HINDU

HEALTHCARE>

VACCINE BREAKTHROUGHS

The vaccination drive, where the beneficiaries currently will not have a choice between the two vaccines – Covishield and Covaxin – available in India, has been planned in a phased manner, identifying priority groups, the Health Ministry said. Healthcare workers, both in the government and private sectors including Integrated Child Development Services (ICDS) workers, will receive the vaccine during this first phase.



DETAIL >

HERE COMES THE 'SMELLICOPTER'

Researchers at the University of Washington and the University of Maryland have developed an autonomous drone that uses live antennae from a moth to smell and avoid obstacles as it travels in the air.

- Smellicopter is a biohybrid odor-guided autonomous palm-sized air vehicle.
- Smellicopter is a combination of the sensitivity of a biological organism on a robotic platform where its motion can be controlled.
- The smellicopter uses antennae from the Manduca sexta hawkmoth.
- Moths can use their antennae to sense chemicals in the environment.

- Incorporating a live antenna from a moth as a sensor makes this drone tune and search in rescue operations. It also helps navigate an area with unexploded devices.
- It was developed in association with the Air Force Center of Excellence on Nature-Inspired Flight Technologies and Ideas (NIFTI).
- One huge advantage of drones is that these little robots can go places where people can't, including areas that might be too dangerous, such as unstable structures after a natural disaster or a region with unexploded devices.

WORK CITED: THE HINDU

IN OTHER NEWS

→ कैबिनेट ने चेनाब नदी पर 850 MW की रतले परियोजना के लिए 5,282 करोड़ रुपये के निवेश को दी मंजूरी



केंद्रीय मंत्रिमंडल ने जम्मू-कश्मीर के किश्तवाड़ जिले में चेनाब नदी पर स्तिथ 850 MW की रतले पनबिजली (hydropower) परियोजना के लिए 5281.94 करोड़ रुपये के निवेश को अपनी मंजूरी दे दी है।

इस परियोजना का विकास राष्ट्रीय जल विद्युत निगम (National Hydroelectric Power Corporation) और जम्मू-कश्मीर राज्य विद्युत विकास निगम लिमिटेड (Jammu & Kashmir State Power Development Corporation Ltd) की क्रमशः 51% और 49% हिस्सेदारी वाली एक नयी संयुक्त उद्यम कंपनी (जेवीसी) द्वारा किया जाएगा।

WORK CITED: LIVE MINT

→ MIT develops concept for Airplanes to combat Air Pollution



To combat the rising threat of noxious chemical-borne air, a team of researchers at MIT have developed a concept hybrid-electric aeroplane propulsion system.

The team published the details of the design, in the hybrid electric system, the gas turbine drives a generator, producing electricity to power aircraft's wing-mounted, electrically-driven propellers. they moved the power-generating gas turbine from the wings and integrated it with the plane's cargo hold - where the generator is located.

WORK CITED: THE HINDU

→ भोपाल में जल्द ही 100 ई-वाहनों के चार्जिंग स्टेशन बनेंगे



भोपाल स्मार्ट सिटी डेवलपमेंट कॉर्पोरेशन लिमिटेड (BSCDCL) शहर में लगभग 100 स्थानों पर इलेक्ट्रिक वाहन चार्जिंग स्टेशन स्थापित करेगा। BSCDCL ने एनर्जी एफिशिएंसी सर्विसेज लिमिटेड (EESL) के साथ अनुबंध किया है।

पहल प्रकृति के संरक्षण के लिए इलेक्ट्रिक वाहनों के उपयोग को बढ़ावा देंगी। इसके अतिरिक्त, बड़े तालाब पे BSCDCL द्वारा एक सोलर प्लांट, 2 करोड़ 50 लाख की लागत से बनाया गया है। यह सोलर प्लांट 500 किलोवाट क्षमता का है। लगभग 1500 पैनल लगाए गए हैं। सोलर प्लांट से हर साल 9 लाख यूनिट बिजली का उत्पादन होने की उम्मीद है।

WORK CITED: FREE PRESS



TECHNOLOGY>

GOOGLE GOES DOWN

Why did Google go down? It ran out of storage!

Google had said that it ran out of storage on Monday evening and that caused all its services to go offline. Google services such as Gmail, YouTube went down for about 45 minutes. It caused inconvenience to people who use services such as Gmail, YouTube, Drive among others.

- The sudden disruption baffled most people, including Google that took some time to figure out what went wrong with its several services.
- Finally, Google has an answer. Google says the outage was caused by an "Internal Storage Quota Issue", which is not as simple as it sounds.
- In a statement, a Google spokesperson told India Today Tech that its services experience what is an "Authentication System Outage" for about 45 minutes due to the said internal storage quota issue.
- To simplify this, the Google spokesperson explained, the internal tools that the company uses to allocate sufficient storage to each service that handles authentication did not work as expected. After the storage limit was exhausted, the system failed to automatically make more storage available, causing the system to crash.

WORK CITED: INDIA TODAY

HISTORY >

REMEMBERING NARINDER KAPANY, THE "FATHER OF FIBER OPTICS"

Coining the term "fiber optics" in 1955, physicist Narinder S. Kapany conducted research that had resounding effects across multiple disciplines, including electrical engineering.



Kapany was a polymath in the proper sense of the word with achievements in academia, cultural philanthropy, entrepreneurship, and physics.

Early in his college career, one of Kapany's professors claimed that light only traveled in a straight line—an assertion that Kapany questioned for years. In an article published in Nature, Hopkins and Kapany outlined how they used a 75-centimeter bundle of several thousand optical fibers to achieve low-loss light transmission.

Dr. Kapany was a consummate entrepreneur, founding no less than three companies focused on optical technology and solar technology over the course of nearly forty years.

WORK CITED: ALL ABOUT CIRCUITS

TECHNOLOGY >

HYDROGEN FUEL CELLS TAKE TO THE SKY



In September, hydrogen-electric engine manufacturer ZeroAvia achieved the world's first commercial flight powered by hydrogen fuel cells. While the operation of a hydrogen fuel cell is similar to most batteries, the important distinction is that this alternative is entirely carbon-free. Instead, the reactions of a hydrogen fuel cell produce H₂O. In addition, the efficiencies of hydrogen fuel cells can reach up to 60% compared to 25% in a standard combustion engine.

WORK CITED: ALL ABOUT CIRCUITS



DETAIL >

AS DATA CENTERS EXPAND, HOW ARE ENGINEERS UPPING AC/DC CONVERSION EFFICIENCY?

The demand for data center efficiency is only expanding in 2021. Here are some methods that EEs use to increase AC/DC power conversion efficiency—including a new option of GaN-powered AC/DC power supplies.

POWER FACTOR CORRECTION:

One of the main sources of inefficiency in traditional AC/DC conversion comes down to the power factor. This is normally a result of a significant phase difference between the voltage and current at the load terminals of a circuit. The solution to this problem is called power factor correction (PFC) and can take on many forms.

- In a conventional bridge rectifier, to counteract this, engineers will insert an

inductor, which has the opposite phase effect of a capacitor in the circuit, working to restore the power factor to 1.

- To further improve power efficiency in AC/DC conversion, engineers often turn to a "totem-pole bridgeless" circuit architecture, that replaces the bridge with a series of high-frequency MOSFET switches, controlled in such a way that they behave as a rectifier.
- This week, Bel Power Solutions announced that it was able to solve this problem by using GaN FETs from Transphorm. Combining the bridgeless totem-pole rectifier PFC circuit with GaN FETs proved to be an effective solution.

WORK CITED: ALL ABOUT CIRCUITS

IN OTHER NEWS

→ New Qualcomm Chip Opens Door to \$125 5G Phones

A new mobile processor announced by Qualcomm Technologies is expected to spawn a wave of economically priced 5G smartphones. Kedar Kondap, vice president for product management at Qualcomm maintained in a statement that the Snapdragon 480 5G Mobile Platform will exceed OEM and consumer expectations in delivering high- and mid-tier features at an affordable price.

→ "Use Signal", Elon Musk.



A 2-word endorsement by Elon Musk has boosted the Signal Messaging's application downloads, as well as the stock of a tiny medical devices company that goes by a similar name.

All happens after Whatsapp's privacy policy dispute. "Use Signal," the Tesla Inc. CEO wrote on Twitter on 7 January 2021, apparently referring to the encrypted messaging service. Signal saw 2.200 installs on India's app stores last Wednesday.

→ Co-WIN



Co-WIN, based on five modules, is effectively an upgraded version of the government's Electronic Vaccine Intelligence Network (eVIN) launched in 2015 and used for India's Universal Immunisation Programme.

- eVIN was originally designed to closely monitor vaccine inventories at inoculation centres, reduce spoilage of vaccines as a result of poor cold storage, and maximise availability to children and pregnant women.
- The app is set to serve as an end-to-end solution for vaccine management and distribution and includes tracking features that allow officials to closely monitor how vaccines are transported from the manufacturer to the recipient.

DETAIL >

पेट्रोलियम मंत्रालय ने किया 'सक्षम' अभियान का शुभारंभ



पेट्रोलियम और प्राकृतिक गैस मंत्रालय ने हरित और स्वच्छ ऊर्जा के बारे में जागरूकता फैलाने के लिए एक महीने तक चलने वाले 'सक्षम' नामक जन जागरूकता अभियान की शुरुआत की है। 'सक्षम' का अर्थ संरक्षण क्षमता महोत्सव है।

पुरे देश में चलाए जाने वाले अभियान में स्वच्छ ईंधन का उपयोग करने के फायदों के बारे में लोगो में जागरूकता फैलाने के लिए विभिन्न गतिविधियों जैसे साइक्लोट्रॉन, किसान कार्यशालाएं, सेमिनार, सीएनजी वाहन ड्राइविंग प्रतियोगिता आदि शामिल होंगे।

इनमें गैस आधारित अर्थव्यवस्था की ओर बढ़ना, जीवाश्म ईंधन का स्वच्छ उपयोग, जैव स्रोतों को चलाने के लिए घरेलू स्रोतों पर अधिक निर्भरता और इलेक्ट्रिक वाहनों का बढ़ता उपयोग शामिल हैं।

WORK CITED: JAGRAN JOSH



SCI BUZZ >

RIP: MARS DIGGER

RIP: Mars digger bites the dust after 2 years on red planet

NASA has declared the Mars digger dead after failing to burrow deep into the red planet to take its temperature.

Scientists in Germany spent two years trying to get their heat probe, dubbed the mole, to drill into the Martian crust. But the 16-inch-long (40-centimetre) device that is part of NASA's InSight lander couldn't gain enough friction in the red dirt. It was supposed to bury 16 feet (5 metres) into Mars, but only drilled down a couple of feet (about a half metre).

Following one last unsuccessful attempt to hammer itself down over the weekend with 500 strokes, the team called it quits on January 14.

TEAM



THE CREATIVE MINDS BEHIND अनुनाद!

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