

Current Affairs search results for tag: science-and-technology

1. Central Railway Installs First Floating Solar Plant (July 2, 2024)

Central Railway installed a 10 MWp floating solar plant in Igatpuri lake, Western Ghats.

An Overview of the News

- This is the first floating solar plant initiative by Indian Railways.
- The plant is part of efforts to leverage renewable energy sources, including solar and wind energy.
- Goal: Zero carbon emission by 2030.

Additional Solar Plants:

- Commissioned 12.05-MWp solar plants on station rooftops and buildings.
- 4-MWp solar plants installed last year.
- Saved Rs 4.62 crore in 2023-24 and reduced carbon footprint by 6,594.81 MT.
- Plans to install an additional 7-MWp solar plant in the current year.

Current Renewable Energy Usage:

- Utilising 56.4 MW of wind energy and 61 MW of solar energy.
- Agreements for 325 MW of solar and wind energy on a "round-the-clock" basis.
- Expecting an additional 180 MW of solar and 50 MW of wind power this financial year.

Environmental Impact:

- Equivalent to saving 2.5 lakh trees.
- 70% of traction energy expected to be green after full commissioning of renewable sources.

Power Consumption:

- Present monthly power consumption: 236.92 million units for traction and 9.7 million units for non-traction work.

Energy Efficiency Awards:

- Bureau of Energy Efficiency awarded "Shunya-Plus" label to five buildings and "Shunya" label to two buildings of Central Railway.
- Labels indicate efforts towards creating Net Zero Energy Buildings (NZEBS) and Net Positive Energy Buildings (NPEBS).

- Reflects commitment to environmental conservation.

2. MoD Contracts SpacePixxel for Advanced Miniaturised Satellite under iDEX Initiative (June 28, 2024)

The Ministry of Defence (MoD) signed a contract on June 25, 2024, with Bengaluru-based SpacePixxel Technologies Pvt. Ltd.

An Overview of the News

- The contract is for designing and developing a Miniaturised Satellite capable of carrying multiple advanced payloads up to 150 kgs for the Indian Air Force (IAF).

iDEX Initiative Significance:

- This marks the 350th contract under the Innovations for Defence Excellence (iDEX) initiative, part of MoD's flagship program.
- It is the first-ever iDEX Prime (Space) Satellite Grant under the Mission DefSpace: Open Challenge.

Signing and Key Personnel:

- Signatories included Awais Ahmed Nadeem Alduri, CEO of SpacePixxel, and Anurag Bajpai, Additional Secretary (Defence Production) & CEO of iDEX-DIO.
- The signing took place in New Delhi, Delhi, in the presence of Defence Secretary Giridhar Aramane and other MoD officials.

Technological Advancements:

- The contract aims to foster innovation in space electronics, facilitating faster deployment, economical manufacturing, scalability, adaptability, and reduced environmental impact.
- Integration of Electro-Optical, Infrared, Synthetic Aperture Radar (SAR), and Hyperspectral payloads into a single, compact satellite is expected to enhance earth observation and defence capabilities significantly.

Impact of iDEX Initiative:

- The iDEX initiative continues to play a crucial role in transforming India's defence sector by nurturing startups and Micro, Small & Medium Enterprises (MSMEs) to develop cutting-edge technologies.

About iDEX:

- Launched by Prime Minister Narendra Modi in April 2018, iDEX operates under the Department of Defence Production (DDP), Ministry of Defence (MoD).

- It has organized 11 editions of the Defence India Start-up Challenge (DISC) and
- introduced the Acing Development of Innovative Technologies with iDEX(ADITI) scheme to foster innovations in critical and strategic defence technologies.
- Currently collaborating with over 400 start-ups and MSMEs, iDEX has facilitated the procurement of 35 items valued at over Rs 2,000 crore.

3. New Plant Species '*Petrocosmea arunachalense*' Discovered in Arunachal Pradesh (June 24, 2024)

Researchers from the Arunachal Pradesh Regional Centre (APRC) of the Botanical Survey of India (BSI) have identified a new plant species named '*Petrocosmea arunachalense*'.

An Overview of the News

- The species was discovered in the Mandala region of West Kameng district, Arunachal Pradesh.
- '*Petrocosmea arunachalense*' is an herbaceous plant belonging to the Gesneriaceae family.
- This find marks only the second known species of the *Petrocosmea* genus in India.
- The discovery has been documented in the Nordic Journal of Botany.
- The research underscores Arunachal Pradesh's rich biodiversity and emphasizes the importance of conservation efforts.
- Dr. Krishna Chowlu, along with researchers Akshath Shenoy and Ajit Ray from APRC, Itanagar, led the discovery.

About Arunachal Pradesh

- It is a state located in the northeastern region of India. It shares its borders with the countries of Bhutan, China and Myanmar.
- Establishment:- 20 February 1987
- Capital:- Itanagar (Executive Branch)
- Chief Minister:- Pema Khandu
- Official flower:- *Rhynchostylis retusa*
- Official Animal:- Gayal

4. ISRO Achieves Third Consecutive Success in Pushpak Reusable Launch Vehicle Landing Experiment (June 23, 2024)

The Indian Space Research Organisation (ISRO) has achieved a third consecutive success in the Reusable Launch Vehicle (RLV) Landing EXperiment (LEX) with the Pushpak vehicle.

An Overview of the News

- The third and final test in the series, RLV LEX-03, was conducted at 07:10 IST on June 23, 2024 at the Aeronautical Test Range in Chitradurga, Karnataka.

Pushpak's Autonomous Landing

- The winged vehicle 'Pushpak' was released from an Indian Air Force Chinook helicopter at an altitude of 4.5 km.
- Pushpak then autonomously executed cross-range correction maneuvers, approached the runway, and performed a precise horizontal landing at the runway centerline.
- Due to Pushpak's low lift-to-drag ratio aerodynamic configuration, the landing velocity exceeded 320 km/h, compared to 260 km/h for a commercial aircraft and 280 km/h for a typical fighter aircraft.
- After touchdown, Pushpak's velocity was reduced to nearly 100 km/h using a brake parachute, followed by landing gear brakes for further deceleration. Pushpak autonomously maintained a stable and precise ground roll along the runway.

Significance of the Mission

- This mission simulated the approach, landing interface, and high-speed landing conditions for a vehicle returning from space, reaffirming ISRO's expertise in acquiring critical technologies for developing a Reusable Launch Vehicle.
- The successful completion of the RLV-LEX-03 mission, building on the previous LEX-01 and LEX-02 successes, boosts ISRO's confidence in the critical technologies essential for future orbital re-entry missions.

About ISRO

- Established on August 15, 1969
- National space agency of India
- Launches space rockets from Satish Dhawan Space Center in Sriharikota, Andhra Pradesh.
- Headquarters located in Bengaluru.
- Current Chairman: S Somnath

5. Discovery of New Snake Eel Species: Ophichthus Suryai Off Odisha Coast (June 22, 2024)

Researchers from the Zoological Survey of India's (ZSI) regional center in Gopalpur, Odisha, have identified a new species of snake eel, *Ophichthus suryai*, along the Odisha coast.

An Overview of the News

- This discovery **honors Surya Kumar Mohanty, former joint director of Fisheries & Animal Resources Development Department of the Odisha government.**

Specimen Collection

- Locations: **Specimens collected from:**
 - Subarnarekha estuary
 - Bahuda estuary
- Additional Collection Site: Coastal fishers at Paradip Fish Landing Centre
- Publication: Findings published in the Bulletin of Marine Science by Rosenstiel School of Marine, Atmospheric and Earth Science, University of Miami

Distinct Features of Ophichthus Suryai

- Dorsal Fin Origin (DFO)
 - Located just above or slightly anterior to the gill opening
- Unique Vertebral Count and Teeth Patterns
 - Differentiates it from other species within the Ophichthus genus
- Pectoral Fin Characteristics
 - Small, rounded, and white in color
 - No dark blotch on the anterior lobe of the dorsal fin

About Odisha

- Formation - **1 April 1936**
- Capital - **Bhubaneswar**
- Governor - **Raghubar Das**
- Chief Minister - **Mohan Charan Majhi**
- Rajya Sabha - **10 seats**
- Lok Sabha - **21 seats**
- There are a total of **147 seats in Odisha Assembly.**

6. Wärtsilä Unveils World's First Large-Scale 100% Hydrogen-Ready Engine Power Plant (June 21, 2024)

Wärtsilä Oyj Abp, a Finland-based company, has launched the world's first large-scale 100% hydrogen-ready engine power plant to support net-zero power systems.

An Overview of the News

- The Wärtsilä 31 is a highly efficient medium-speed 4-stroke marine engine that:
 - Synchronises with the grid within 30 seconds from the start command.
 - Ensures energy security through fuel flexibility.
 - Offers unparalleled load-following capabilities and high part-load efficiency.
- The engine can run on natural gas and 25% hydrogen (H₂) by volume blends.
- It has completed over 1 million running hours with more than 1,000 MegaWatt (MW) installed capacity globally.
- The hydrogen-ready engine power plant concept is certified by TÜV SÜD (Technischer Überwachungsverein - Technical Inspection Association).
- The H₂-Readiness certification includes three stages with three corresponding certificates.
- Wärtsilä has achieved the first stage with a Concept Certificate for the engine power plant's conceptual design.
- The 100% hydrogen-ready engine is expected to be available for orders in 2025 and for delivery from 2026.

About Finland

- It is a northern European nation.
- It shares borders with Sweden, Norway and Russia.
- Finland's arctic Lapland province is famous for the Northern Lights, a spectacular natural phenomenon.
- Lapland is a vast wilderness area with national parks and ski resorts, making it a popular destination.
 - Capital - **Helsinki**
 - Helsinki is situated on a peninsula and is surrounded by islands in the Baltic Sea.
 - President - **Alexander Stubb**
 - Prime Minister - **Petteri Orpo**
 - Currency- **Euro**
 - **Nokia company is from Finland.**

7. AIIMS Publishes Case Study on India's First Successful Delivery of An Anemic Child with One of the World's Rarest Blood Groups (June 18, 2024)

All India Institute of Medical Sciences (AIIMS) New Delhi published a case study on India's first successful delivery of a child suffering from anemia with one of the world's rarest blood groups, Rh 17 antigen.

An overview of the news

- Dr. Neena Malhotra, Head of the Obstetrics and Gynaecology Department at AIIMS Delhi, briefed the media on the complications that arose during pregnancy due to alloimmunisation, which is the incompatibility between the red blood cells of the mother and the baby.
- The fetus underwent 6 intrauterine blood transfusions to reduce the chances of hydrops or heart failure.
- Dr. Aparna Sharma, an Obstetrics and Gynaecology professor, highlighted that the biggest challenge was obtaining the rare Rh 17 antigen, which had to be sourced from Japan.

About AIIMS

- It is a public medical research university and hospital located in New Delhi, India.
- The institute is governed by the AIIMS Act, 1956.
- AIIMS Delhi operates autonomously under the Ministry of Health and Family Welfare.
 - Established: **1956**
 - Current President: **Mansukh Mandaviya**
 - Dean: **Neena Khanna**
 - Director: **M Srinivas**
 - Motto: "**Sharīramādyam khalu dharmasāadhanam**" ("**The body is indeed the primary instrument of dharma**")

Anemia Overview

- Anemia is characterized by a deficiency of healthy red blood cells or hemoglobin, impairing oxygen transport to the body's tissues.
- Hemoglobin is a protein in red blood cells responsible for carrying oxygen from the lungs to the rest of the body.
- Symptoms include tiredness, weakness, and shortness of breath.

Types of Anemia

- Aplastic Anemia

- Iron Deficiency Anemia
- Sickle Cell Anemia
- Thalassemia
- Vitamin Deficiency Anemia

Symptoms of Anemia

- General Symptoms:
 - Symptoms depend on the cause and severity of anemia.
 - Initially, anemia can be mild and symptomless, but symptoms worsen as anemia progresses.
 - An underlying disease can mask anemia symptoms, with anemia sometimes discovered through tests for other conditions.
- Possible Symptoms:
 - Tiredness
 - Weakness
 - Shortness of breath
 - Pale or yellowish skin (more noticeable on lighter skin tones)
 - Irregular heartbeat
 - Dizziness or lightheadedness
 - Chest pain
 - Cold hands and feet
 - Headaches

8. India Receives Indigenous Man Portable Counter Drone System (June 13, 2024)

On 10th June 2024, the Indian Army acquired the first-of-its-kind Man Portable Counter Drone System (MPCDS).

An Overview of the News

- Developed by AXISCADES Technologies Limited, Bengaluru, under a Rs 100 crore agreement with the Indian Army.

Key Features of MPCDS:

- Portability: Operates on both battery and mains power, enhancing its deployment flexibility.

- Frequency Coverage: Covers a wide range of frequency spectrums including Command & Control and Navigation.
- Detection and Jamming Capability: Capable of detecting and jamming various types of drones within a range of up to 5 kilometers (Kms).

Significance:

- Strategic Investment: The Ministry of Defence (MoD) and Defence Forces plan to enhance their Counter-Unmanned Aerial Vehicle (C-UAV) capabilities with an estimated investment of Rs 3000 crore over the next 5 years.
- Role of AXISCADES Technologies Limited: The company will be instrumental in this initiative due to its expertise in C-UAV systems, offering integrated sensors and neutralization options.

9. CCRAS Launches PRAGATI-2024 to Revolutionize Ayurveda Research and Innovation (June 2, 2024)

The Central Council for Research in Ayurvedic Sciences (CCRAS) has introduced the Pharma Research in AyurGyan And Techno Innovation (PRAGATI-2024) initiative to advance the future of Ayurveda.

An Overview of the News

- The launch event occurred on May 28, 2024, at the India Habitat Centre in New Delhi and was inaugurated by Dr. Vaidya Rajesh Kotecha, Secretary of the Ministry of Ayush.
- This initiative seeks to enhance research and innovation in Ayurveda by promoting collaboration between CCRAS and the Ayurveda drug industry.
- CCRAS aims to engage every stakeholder by offering scholarships, thereby helping students appreciate the importance of research.

About CCRAS

- Parent Body: Ministry of AYUSH, Government of India
- Location: New Delhi, Delhi
- Autonomy: CCRAS operates as an autonomous body under the Ministry of AYUSH.

10. Agnikul Cosmos launches Agnibaan SORTeD with world's first 3D printed engine (May 31, 2024)

On May 30th, 2024, Agnikul Cosmos Private Limited successfully launched **Agnibaan SORTeD (SubOrbital Technological Demonstrator)** from **Agnikul Launch Pad 1 (ALP-1)**, located within the **Satish Dhawan Space Centre (SDSC)-SHAR in Sriharikota, Andhra Pradesh, India.**

An Overview of the News

- This marked the maiden flight of **Agnibaan SOrTeD, propelled by the world's first single-piece 3D printed semi-cryogenic engine.**
- Agnibaan SOrTeD stands as **India's second privately developed rocket, equipped with the world's pioneering 3D printed engine technology.**
- The rocket signifies a significant leap in India's private space exploration endeavors, showcasing indigenous design and engineering capabilities.

Technical Specifications of Agnibaan SOrTeD:

- Agnibaan SOrTeD operates as a single-stage launch vehicle, featuring Agnikul's innovative Agnilet engine, which powers its ascent.
- This achievement underscores Agnikul Cosmos Private Limited's commitment to advancing space propulsion technology.

About Agnikul Cosmos Pvt Ltd:

- Its manufacturer is Indian Aerospace.
- It is located within the **National Centre for Research and Development (NCRD)** at the **Indian Institute of Technology (IIT) Madras.**
 - Founded:- **2017**
 - Headquarters:- **Chennai, Tamil Nadu**
 - Chief Executive Officer (CEO) and Co-Founder:- **Srinath Ravichandran**