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The Energy Headlines

THE ENERGY NEWSLETTER OF MNIT JAIPUR

"When we heal the Earth,

*We heal ourselves" - **David Orr***

GREEN HEROES

Meet this seven year old environmental activist from Manipur, India Licypriya Kangujam. She is planning steps to prevent damage from natural disasters. She also attended sixth session of Global Platform for Disaster Risk Reduction in 2019.

Mind Blown!

According to the latest government report released by Railway Ministry, Jaipur Junction Railway Station is the cleanest railway station of India. Top 10 of this list also includes other two stations of Jaipur, i.e. Durgapura and Gandhinagar Jaipur at 3rd and 5th rank respectively. 6 out of top 10 cleanest railway stations are in Rajasthan.

PLASTIC ROADS

Consumer Plastic waste represents a serious problem that is damaging the environment and many species on the planet. In 2015, the amount of plastic waste generated was more than **381 million tonnes** which is roughly equal to the mass of two-third of the world's total population. **Packaging alone generates 141 million tonnes** annually of single-use plastic waste, being responsible for almost half of global plastic waste.

Zwolle is a city west from Amsterdam in Netherland where the world's first plastic road prototype was built using **recycled single-use plastic**. The road includes sensors which collect data proving information for further development, space for services to run underneath, and its own **storm water management system**. Building the plastic road presented many advantages including cheaper materials than traditional road-building materials and less time required for complexion before the road was fully installed. The hollow space in the design of this plastic roads can be used to store water or as space for cables and pipes.

The innovation is considerably more sustainable. The goal is to make the Plastic Road out of 100 percent recycled plastic and to make it fully reusable. It is perfectly in line with the Cradle to Cradle philosophy and the principles of the circular economy.

SOURCE: Innvcorner/global.org

ELECTRIC VEHICLE & ITS FUTURE IN INDIA

Amidst the increase in hazardous pollution by the emissions of various harmful gases which include the emissions of sulfur and nitrogen compounds by the vehicle, it becomes very essential so that India and its people forthwith adjudicating to resolve this issue by prompting with the EV charging stations. Till presently, India has installed 85 EV charging stations spread in 15 cities across 9 states including Mumbai, Delhi, Bengaluru, Hyderabad, Indore, Vijayawada, and Hosur.

However, growing EVs means India needs a proper charging infrastructure, which is currently at its nascent stage. Tata Power, part of the Tata Group has now jumped the wagon to install electric vehicle charging stations across India and is the first big name to do so.

The average time required by the currently launched Indian EV cars to be charged from zero to full charge with a normal charger is around 7 hours and around 90 minutes with a fast charger.

Each charging station will consist of Direct Current (DC) and Alternating Current (AC) charging points. The DC charging points will have a capacity of 15 to 50 kilowatts (kW). The AC charging points will have a capacity of 3.3-22kW.

since the cars, battery technologies, charging standards are still under various stages of evolution we are looking at an infrastructure which would be future ready.

Last financial year (FY18) of the 25 million new vehicles that hit the Indian roads, less than 0.3 percent were EVs (around 56,000). In the National Electric Mobility Mission Plan (NEMMP) 2020 announced in 2013, the expectation was to achieve sales of 6-7 million EVs (including hybrids) year on year starting from 2020.

As per the recent tariff orders by Maharashtra Electricity Regulatory Commission (MERC), the electricity tariff for EV charging will be priced at ₹6 per unit for the next 2 years.

By 2030, a city like Delhi alone could require around 300,000 fast chargers, presuming 30 percent EV penetration into an estimated car park of 10 million. Meeting this infrastructure need could call for an investment of around $1 -1.5 billion. So, the total investment will depend on how deeply EVs penetrate the automotive market in India and how.Soon, Tata Power will be introducing a mobile app which can be used by EV users to locate chargers, book a charging slot, manage the charging process and finally make payments. This mobile app will accept payments through all the standard modes like debit/credit cards, digital wallets and cash.

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RECYCLING PLASTIC USEFUL OR WORTHLESS?

MIT researcher **Andrew McAfee** has a very contrasting view of recycling of plastic. He believes that **burying plastic wastes in landfills** is a far better method to deal with it as recycling plastic waste is a very complex and strenuous process. Recycling of metal is very beneficial but not in case of plastic as it is very tedious work to do. **Plastic Pollution Coalition CEO Dianna Cohen** says that small plastic objects like straws etc are one of the major sources of plastic pollution .

POWER OF ARTIFICIAL

The best part of the **microgrids** is that they are the local energy grids which can operate both ways - freely or even by staying connected to a bigger conventional grid. These grids are not only **energy savers**, but also offer **energy independence, efficiency**, and protection during the **time of contingencies.**

How can AI in MICROGRID assist in the energy system as a whole?

AI i.e. artificial intelligence - one of the popular technological innovations of the present time. Using the machine learning potentialities of AI with microgrid controllers, you can promote operation improvements while experiencing continuous adaptation.

This technique is spreading far and wide. Along with **Worley Parsons Group**, a San Diego's tech company called **XENDEE** has come up with an **advanced toolkit** for microgrid design. This toolkit aims to cater turnkey solutions in up to a **90% less time** and expense as compared to other methods.

BUILD YOUR OWN POLLUTION TESTING KIT

You're in a parking lot and you look down at a puddle with some rainbow-looking residue in it. What could it be? .The experiment can determine exactly what kind of oil is polluting an area, whether it is **crude oil, motor oil, heating oil, or another petroleum-based contaminant**.

The experiment uses a **spectrometer** to determine which contaminants compose the pollutant. Each molecule of **oil fluoresces** (glows) at a different wavelength, giving them each a specific colour and allowing you to determine the composition with a spectrometer. The experiment is a fun and informative way you can learn about the environment and its compositions around you.

The following three steps are used: Collect, Scan, & Compare.

STEP 1: Collect the samples of suspected oil or tar from the ground, and dissolve small amounts of mineral oil so they are transparent. You will need a spectrometer that is used to differentiate the different colours specific chemicals to determine what kind of substance you have. The spectrometer is connected to the computer so when you shine the laser through it, it will be able to analyse and determine exactly what you are dealing with- some truly fascinating technology!

STEP 2: Illuminate the solutions with **ultraviolet light** -- presently using a **405-nanometer blue laser** -- and record the light spectrum with a DIY spectrometer.

STEP 3:Now comes the fun where you get to put your new equipment to the test. The spectrometer and oil analysis kit can now be used to scan and use your computer to analyse the composition of chemicals that you discover. The instructions on how to analyse your contaminants can once again be found at Public Lab Oil Testing Kit webpage which includes all the instructions. Have fun examining pollutants and seeing what you can come up with!

SOURCE : PUBLIC LAB

Bio-plastic from Mango Peels

A 23-year-old graduate of the University of San Carlos in Philippines 'Denxybel Montinola' has developed a new bioplastic that's both eco-friendly and water soluble.He used a mango peel-seaweed blend to make his bioplastic, and it in fact turned out "more robust and flexible". Apparently, it's also about as strong as conventional plastic. But the best part, is that this bio-plastic doesn't break up into harmful micro particles like the conventional one which disintegrates into microscopic particles and pollutes our water bodies, fish, and our digestive systems, the bioplastic is water soluble. And when it dissolves, there are no toxic chemicals involved that could harm anyone.

So, this could mean a drastic reduction of at least some form of plastic use in India.

INNOVATION CORNER

Oxygen Bar in Delhi

With increasing level of pollution in Delhi NCR, people throng an "Oxygen Bar" just to breathe pure oxygen. As pollution soars in our country , this may become our near future !!

Smog Vaccum Cleaner

Daan Roosegaarde made world's first smog vacuum cleaner which makes jewellery from air pollution.

It works on the principle of ionization and are 7 meters high.

Robotic Bees

B-Droid is a company which creates robotic bees for artificial pollination of flowers.

It was created by researchers at University of Warsaw to pollinate crops effectively.

The Seabin

Invented by Andrew Turton and Pete Ceglinski, its main aim is to clean sea with wastes such as plastic , oil , detergents etc.

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