Conserve™ The Energy

It's Tomorrow™

October - 2018 **Issue : 24**

INSIDE...

Why ???

We the people on the earth are gifted with wonderful energy sources by the nature, which has made our routine much more smother & easier… However, this gift of the nature is ' limited '. What we have done is, with the growth of science & technology, we have started using it extremely, because of which the energy resources are going to finish in near future. Hence, let us take the pledge to conserve the energy - save the energy!!!

Tips of the Month

Article - 1 : Cars run on thorium for 100 years, without refueling

A very imaginative digital designer Loren Kulesus has come up with a very strange concept called the Cadillac World Thorium Fuel Concept. While its exterior dimensions were certainly notable, it's the stuff that powered it that really made waves – or lasers, rather.

Thorium is a mildly radioactive material and one of the densest materials known in nature. It can be used to power laser, which would then heat water, creating steam that tuned a small turbine that propelled a car. While some laughed at the concept, a few others took Kulesus' idea quite seriously, specifically Laser Power Systems (LPS) from Connecticut.

Laser Power Systems has created its own thorium engine, which weighs around 500 pounds which could easily power a car for 100 years on only eight grams of thorium, thereby supplanting more than 7,396 gallons of gasoline over a century and that's just in one vehicle.

Source: https://www.digitaltrends.com/cars/cadillac-concept-powered-thorium-lasers-can-last-100-years/

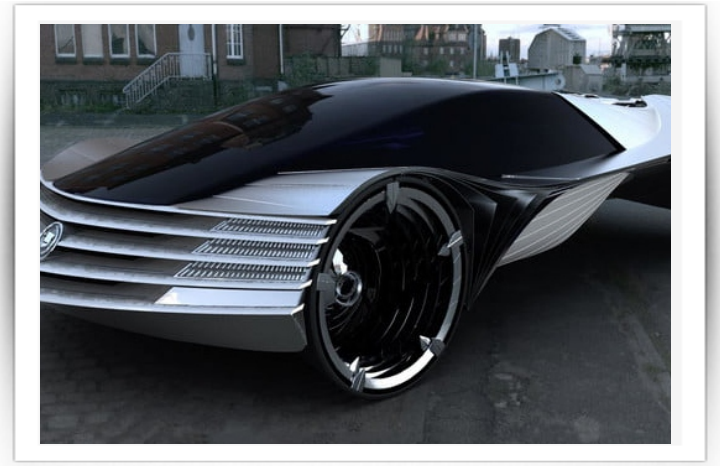


Image Source: https://www.digitaltrends.com/cars/cadillac-concept-powered-thorium-lasers-can-last-100-years/

Article - 2 : Cleaning the air with roof tiles

Students from University from California, Riverside's Bourns College of Engineering has invented a roof tile coating, which when applied to an average sized residential roof breaks down the same amount of smog causing nitrogen oxides per year as a car driven 11,000 miles. They have calculated that 21 tons of nitrogen oxides would be eliminated daily if tiles on one million roofs were coated with their titanium dioxide mixture. It was also calculated that it would cost only around $5 for enough titanium dioxide to coat an average sized residential roof.

It would have a significant impact in Southern California, where 500 tons of nitrogen oxides are emitted daily in the South Coast Air Quality Management District average area. Nitrogen oxides are formed when certain fuels are burned at high temperatures. Nitrogen oxides then react with volatile organic compounds in the presence of sunlight to create smog.

The students set out to change that. They coated two identical off-the-shelf clay tiles with different amounts of titanium dioxide, a common compound found in everything from paint to food to cosmetics. The tiles were then placed inside a miniature atmospheric chamber that the students built out of wood, Teflon and PVC piping. The chamber was connected to a source of nitrogen oxides and a device that reads concentrations of nitrogen oxides. They used ultraviolet light to simulate sunlight, which activates the titanium dioxide and allows it to break down the nitrogen oxides. They found the titanium dioxide coated tiles removed between 88 percent and 97 percent of the nitrogen oxides.

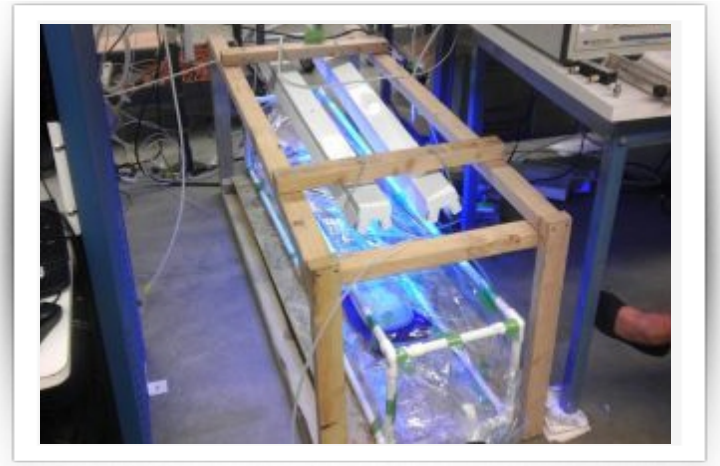


Image Source: https://ucrtoday.ucr.edu/22621

They also found there wasn't much of a difference in nitrogen oxide removal when different amounts of the coating were applied, despite one having about 12 times as much titanium dioxide coating. There wasn't much of a difference because surface area, not the amount of coating, is the important factor.

Source: https://ucrtoday.ucr.edu/22621

Article - 3 : Cool Pavements

Cool pavements refer to a range of established and emerging materials. These pavement technologies tend to store less heat and may have lower surface temperatures compared with conventional products. They can help address the problem of urban heat islands, which result in part from the increased temperatures of paved surfaces in a city or suburb. Communities are exploring these pavements as part of their heat island reduction efforts. The conventional pavement surface temperature is generally 20-30ºC [68-86°F] higher than the air/surrounding temperature due to pavement solar energy absorption during daytime, especially in the summer. Also, the absorbed heat energy from pavement surface, which stored in the pavement subsurface, will be re-released into the atmosphere after sunset, keeping heating the atmosphere at nighttime. Due to the large area covered by pavements in urban areas, they are an important element to consider in heat island mitigation. Cool pavements can help to address heat islands effect through reducing pavement and air temperature, if used in a large scale. Also the cool pavements with lower surface temperature could reduce the chance of heating storm water as it runs off the pavement into the local waterways. Besides these effects contributing to address the problem of urban heat islands and improve water quality, the lower temperature in the pavements also would reduce pavement damage/deterioration and improve pavement service life/durability. Cool pavements can be made from traditional paving materials, such as cement concrete. New cement concrete has a solar reflectance (SR) of 30–50%. There are also novel cool-colored coatings for asphalt concrete pavements that reflect about 50% of sunlight. Another approach is to use a clear binder that reveals highly reflective (light-colored) aggregate.

Benefits:

a) Energy savings and emission reductions.
b) Improved comfort and health
c) Increased driver safety

Image Source: https://heatisland.lbl.gov/coolscience/cool-pavements

d) Improved air quality
e) Reduced street lighting cost
f) Reduced power plant emissions
g) Improved water quality

Source: https://heatisland.lbl.gov/coolscience/cool-pavements

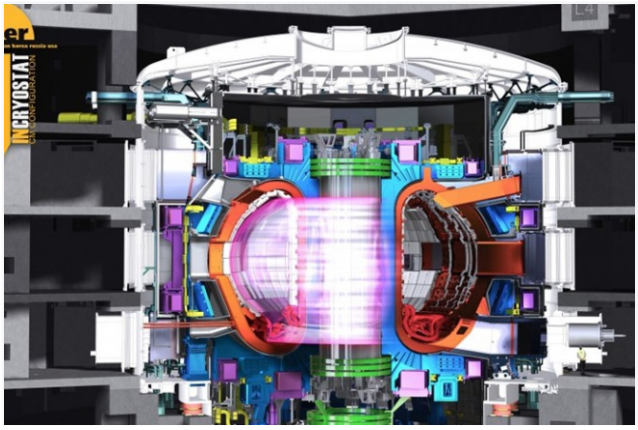
Article - 4 : International Thermonuclear Experimental Reactor

ITER is one of the most ambitious energy projects in the world today. 35 nations are collaborating in southern France to make a Tokamak, which is a magnetic fusion device that can be designed to prove the feasibility of fusion as a large scale and carbon free source of energy based on the same principle that powers our sun and stars.

It is a crucial experimental campaign that will be carried out at ITER with science of fusion and preparing the way for the fusion power plants of tomorrow. ITER will be the first fusion device to produce net energy. It will also be the first fusion device to maintain fusion for long periods of time. It is the first device to the test the integrated technologies, materials and physics regimes necessary for the commercial production of fusion based electricity.

The idea of joint experiment in fusion was first stated in 1985, where thousands of engineers and scientists have contributed to the design of ITER. The ITER members include China, the European Union, India, Japan, Korea, Russia and the United States. These members are now engaged in a 35 year collaboration to build and operate the ITER experimental device and together bring fusion to the point where a demonstration fusion reactor can be designed.

Source: https://www.iter.org/proj/inafewlines



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Conserve the Energy,

Save our Climate!

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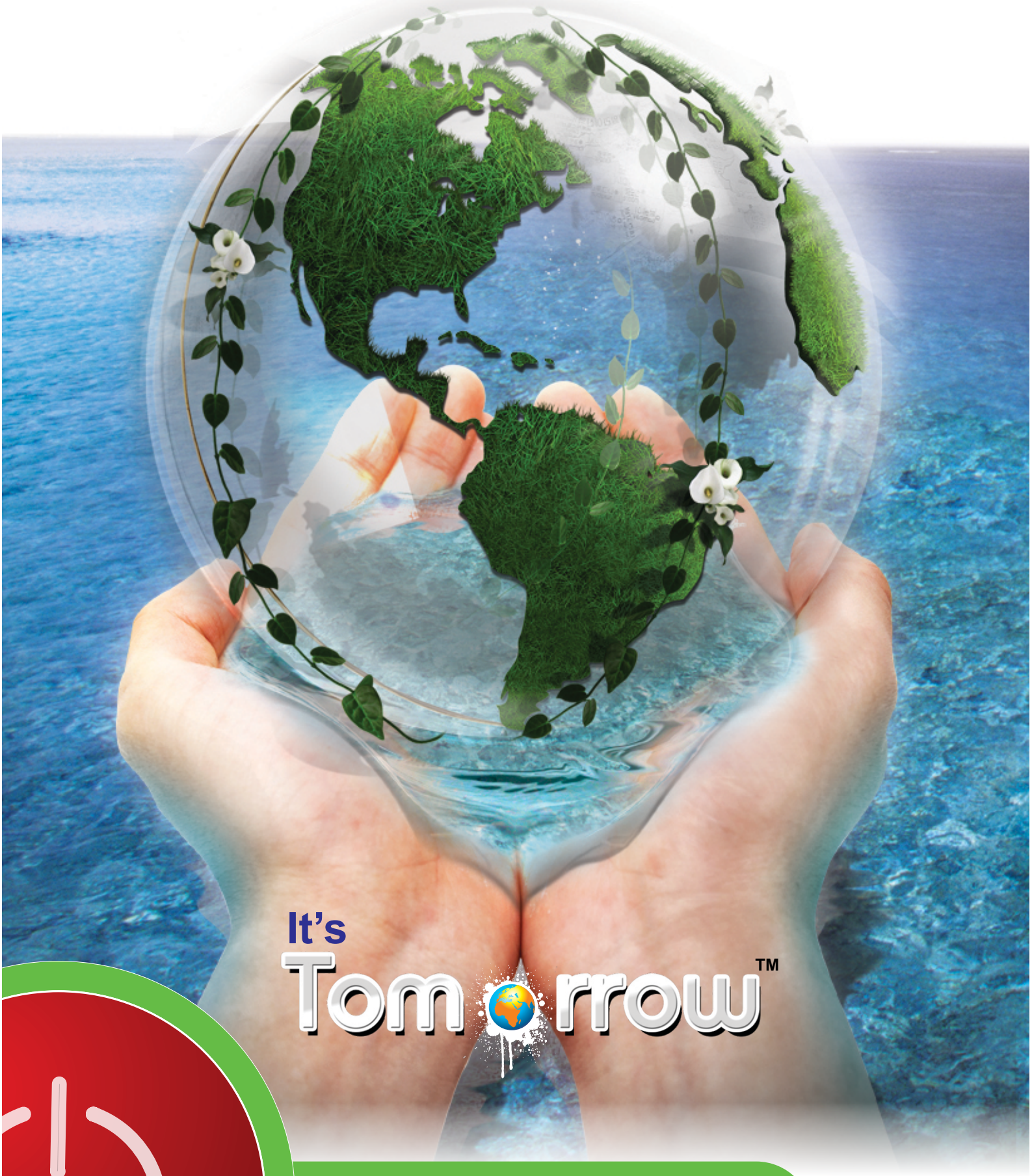

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Nanoland Ltd.
Mezzanine Floor, N. R. House, Nr. Popular House, Ashram Road, Ahmedabad - 380 009. INDIA
Tel : +91 79 27545254/5255/5256 Fax : +91 79 27545257/4167
Email : info@conservetheenergy.com
Web : www.conservetheenergy.com

/cnsrv_enrgy

/energyconserve