



# Energy Headlines

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## ELECTRIFIED ROADS COULD POWER CARS

The cars of the future could be powered by electrified roadways. Such technology would allow electric cars to forgo their heavy batteries, which not only add to a vehicle's weight, increasing the energy needed to move it, but also force it to sit idle while recharging.

The idea has been around for decades. Previous attempts used an electrified coil in the road to create an electromagnetic field that interacts with a coil attached to the car. "Since the coils must be exactly aligned face-to-face to achieve a high energy efficiency, such schemes may be useful for [charging] vehicles in a parking lot, but never very effective for cars while running," says Masahiro Hanazawa at Toyota Central R&D Labs in Nagakute, Aichi, Japan. Hanazawa and Takashi Ohira at Toyohashi University of Technology, also in

Aichi, are developing a system that transmits electric power through steel belts placed inside two tyres and a metal plate in the road. "Our approach exploits a pair of tyres, which are always touching a road surface," says Hanazawa.



To test how much energy would be lost as electricity travelled through the tyres' rubber, Hanazawa and Ohira set

up a lab experiment in which they put metal plates on the floor and inside a tyre.

"Less than 20 per cent of the transmitted power is dissipated in the circuit," says Ohira. With enough power the system could run typical passenger cars, says Ohira, and the team are now developing a small-scale prototype to prove it. He admits, however, that the system's energy loss is "much higher than regular batteries".

John Boys, an electrical engineer at the University of Auckland, New Zealand, notes that with this system, the metal pads on the road would need as much as 50,000 volts to power the car, the same voltage used to operate tasers. "You wouldn't want to step on that," he says.

Source: [www.newscientist.com](http://www.newscientist.com)

## CLOUD COMPUTING 'CAN SAVE MILLIONS OF TONS OF CO2

New research from the Carbon Disclosure Project (CDP) has revealed the extent to which cloud computing can



slash CO<sub>2</sub> emissions. Cloud Computing: The IT Solution for the 21st Century suggested US companies could save 85.7 million metric tons of CO<sub>2</sub> annually by moving to the cloud. This

is the equivalent of 200 million barrels of oil. According to the research, cloud computing can help organisations last both their energy consumption and CO<sub>2</sub> emissions, while saving money and increasing operational efficiency. However, many of the companies which participated in the research said boosting

their environmental performance was not their primary motivation for moving to the

cloud Paul Stemmler from Citigroup said: "Carbon reduction is one driver, but not the primary driver. The primary driver is time to market." By 2020 cloud computing is expected to account for 69 percent of IT spend, up from around ten percent today. The CDP currently acts on behalf of 551 institutional investors and over 3,000 organisations disclose their greenhouse gas emissions, water management and climate change initiatives through the project.

Source: [www.lowcarboneyconomy.com](http://www.lowcarboneyconomy.com)



*If you use Web mail services like your e-mail is considered "in the cloud" because you can access it from any device with Internet access*



## JAPANESE WIND TURBINE TRIPLES POWER OUTPUT



"The capacity for hope is the most significant fact of life. It provides human beings with a sense of destination and the energy to get started."

-Norman Cousins

Necessity, as we've all been told can sometimes be the mother of invention. In Japan, there is a necessity for a power source that does not require fossil fuels, since they don't have any. So the Japanese invested heavily in nuclear power, which, at the moment, is looking like a tenuous investment given the recent Fukushima meltdown. Fortunately, they did not put all their eggs in one basket, either. That's when they came up with the wind lens.

*Beppu in Japan has got nine geothermal hot spots, four out of which have ponds showing unusual colours*

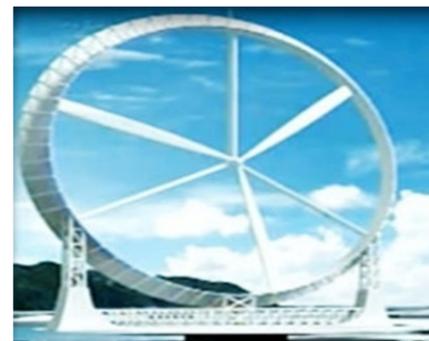


Except instead of focusing light, a wind lens, which is an inward curving ring around the perimeter of the circle inscribed by the turbine's blades as they rotate, focuses airflow, directing and ac-

celerating the air as it enters the blade zone.

According to team leader Professor Prof. Yuji Ohya, it consists of an inlet shroud, a diffuser and a brim. This results in a low pressure area behind the turbine which draws in more air creating even more power. Researchers claim that this approach can triple the turbine's output while reducing noise at the same time.

Last year in the US, wind turbines provided 40,180 MW of power, or 3.2% of total demand. Tripling that would bring it quickly up to 10%. Extrapolating that out a bit: at this rate, the entire US energy demand could be met with about 20% of its wind energy potential. This would require an area of 170,000 square miles, about the size of California. Now, that's still a pretty big area, but it's getting smaller all the time. This technology puts



wind cost below coal and nuclear without subsidies.

Given the fact that Japan is an island nation, it has the advantage of being surrounded by water. The Kyushu researchers anticipate that the best use of these turbines will be offshore. They have designed hexagonal-shaped floating platforms to support them. The platform can be combined into a beehive-like formation.

Source: [www.innovationtoronto.com](http://www.innovationtoronto.com)

## HARISH HANDE-THE MAN WHO SHINES



Harish Hande was born in Handattu Kundapura Taluk Udipi District, Karnataka and raised in Rourkela, Orissa, India. After completing his basic schooling in Orissa, he went to IIT Kharagpur for his undergraduate studies in Energy Engineering. He then went to the U.S. to do his Master's and later PhD. in Energy Engineering at the University of Massachusetts Lowell. Harish Hande co-founded SELCO INDIA (in 1995), a social venture, to eradicate poverty by promoting sustainable technologies in rural India.

With its headquarters in Bangalore, SELCO has 25 branches in Karnataka

and Gujarat. Today SELCO INDIA has installed solar lighting systems in over 120,000 households in the rural areas of these states.

Harish Hande has won the Ashden Award for Sustainable Energy 2005 and Tech Museum Award 2005. Harish has also received the world's leading green energy award from Prince Charles in 2005. In 2007 SELCO INDIA won the Outstanding Achievement Award from Ashden Awards. The award was presented by Al Gore, former Vice President of the United States of America.

Harish Hande was named the Social Entrepreneur of the Year 2007 by the Schwab Foundation

for Social Entrepreneurship and the Nand & Jeet Khemka Foundation. He was also the featured attendee and speaker at the Clinton Global Initiative 2007.

In 2008, Harish Hande was chosen by Business Today as one of the 21 young leaders for India's 21st century. In mid 2008, India Today named him one of the 50 pioneers of change in India.

He was awarded with Asia's prestigious Ramon Magsaysay Award for 2011, also sometimes referred to as Asia's Nobel Prize.

Source: [www.wikipedia.com](http://www.wikipedia.com)





*Tianjin Eco city, in China is the duplicate of Stockholm's sustainable city concept.*

## SUSTAINABLE CITY IN THE DESERT?

Oil money has conjured up a pricey experiment in sustainability in a patch of desert between downtown Abu Dhabi and its airport. There, the city of Masdar ("the source") is rising. It is meant to signal a shift away from fossil fuels by hosting a variety of ecofriendly approaches, such as a system of subterranean electric cars—Personalized Rapid Transit—that whisk visitors and residents from point to point. Yet despite its ambitious goals, innovative planning and best intentions, Masdar may likely be only a mirage for other cities hoping to mimic its approaches to sustainability. The brainchild of ruling Sheikh Khalifa bin Zayed Al Nahyan as funded by Mubadala Development Co. and envisioned by architect Norman Foster, nascent Masdar is certainly a city to behold. The sun's power is harvested via concentrating mirrors or the photovoltaic panels in a 10-megawatt array just outside the city walls. Wells may be drilled

to tap Earth's heat, and the entire city will be built in a perfect square raised some seven meters into the air to help capture desert breezes. A 43-meter-tall wind tower that looks like a grated oil-rig funnels these breezes to street level, and those avenues are shaded by their orientation to the sun. The buildings range from undulating red sandstone curves with an Arabic flair that are student apartments to a squat armadillo shell that shelters Masdar's anchor tenant—the Masdar Institute of Science and Technology (M.I.S.T.), a joint venture of higher learning between M.I.T. and the Abu Dhabi government.

But is Masdar truly sustainable? That word has economic, social and environmental implications: the city must help its inhabitants generate wealth; it must make them, at least in their view, healthier and happier; and it must be able to continue to secure the resources—natural and otherwise—to

continue. Cities can and do collapse—the decline and fall of Rome is one such historic example. But United Nations Brundtland Commission in 1987 de-



defined sustainable as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." That is further elaborated for cities by a set of 10 guidelines—known as the Melbourne Principles adopted in 2002 and ranging from long-term vision to enabling good governance—to determine a city's relative sustainability.

Source: [www.scientificamerican.com](http://www.scientificamerican.com)

## FROM READER'S PEN-MICRONUTRIENTS AND PLANT GROWTH



Micronutrients are essential for the normal growth of plants. Boron, Chlorine, Copper, Iron, Manganese, Molybdenum and Zinc comes in the category of micronutrients. These are required less than 100 mg/kg in dietary food but shortage of any of these drastically affect the growth, metabolism and reproductive phase in plants, animal and human beings. Increased deficiencies of micronutrient in soils and crops affect a large part of the global population. About 3 billion people in the world are affected with micronutrient malnutrition. The World Health Organization estimates that globally some two billion people are affected by iron deficiency and that some 750 million people suffer from iodine deficiency. Also zinc defi-

ciency is increasingly recognized as an important public health problem. The restoration of soil health and thus the micro nutrient profile seems to be most cost effective way of overcoming health disorders caused by deficiency of nutrients. It is well known that change in the food habits and nutrient uptake has made some of the diseases almost of epidemic order. The widespread incidence of arthritic pain possibly influenced by the boron deficiency may be a case in point.



By comparing the prevailing and frequency of diseases in nutrient deficient and excess areas, the correlation between nutrient deficiency in soil and that in humans can be verified. It is then required to explore to what extent there are possibilities for simultaneously increasing crop yield and crop micronutrient contents through application of micronutrients to crops. Where this is possible, there would be a simultaneous benefit both for farmers in the form of higher incomes and for consumers in the form of better health.

Submitted by:  
Anjali Garg  
Chemical Engineering

## 100 WAYS TO SAVE THE ENVIRONMENT

### In Your Home – Reduce Toxicity

... In continuation with the last issue

29. Eliminate mercury from your home by purchasing items without mercury, and dispose of items containing mercury at an appropriate drop-off facility when necessary (e.g. old thermometers).
30. Learn about alternatives to household cleaning items that do not use hazardous chemicals.
31. Buy the right amount of paint for the job.
32. Review labels of household cleaners you use. Consider alternatives like baking soda, scouring pads, water or a little more elbow grease.
33. When no good alternatives exist to a toxic item, find the least amount required for an effective, sanitary result.
34. If you have an older home, have paint in your home tested for lead. If you have lead-based paint, cover it with wall paper or other material instead of sanding it or burning it off.
35. Use traps instead of rat and mouse



poisons and insect killers.

36. Have your home tested for radon.  
37. Use cedar chips or aromatic herbs instead of mothballs.

### In Your Yard



38. Avoid using leaf blowers and other dust-producing equipment.  
39. Use an electric lawn-mower instead of a gas-powered one.  
40. Leave grass clippings on the yard—they decompose and return nutrients to the soil.  
41. Use recycled wood chips as mulch to keep weeds down, retain moisture and prevent erosion.  
42. Use only the required amount of fertilizer.  
43. Minimize pesticide use.  
44. Create a wildlife habitat in your yard.  
45. Water grass early in the morning.  
46. Rent or borrow items like ladders, chain saws, party decorations and others that are seldom used.  
47. Take actions that use non hazardous



components (e.g., to ward off pests, plant marigolds in a garden instead of using pesticide).

48. Put leaves in a compost heap instead of burning them or throwing them away. Yard debris too large for your compost bin should be taken to a yard-debris recycler.

To be continued in the next issue.....

### COMIC SENSE



## CONFERENCES ALERT

### Conferences Abroad

The Power Turbine Congress 2011

website: [www.turbinecongresseurope.com](http://www.turbinecongresseurope.com)

Date: October 25-27, 2011

Location: Vienna, Austria

### Renewable Energy & the Environment

website: [www.osa.org/renewable\\_energy](http://www.osa.org/renewable_energy)

Date: November 2-3, 2011

Location: Austin, Texas, USA

### Conferences within India

#### Green Building Congress

website: [www.igbc.in/](http://www.igbc.in/)

Date: October 20-22, 2011

Location: New Delhi

#### Fuel Economy and Sustainable Road Transport

website: [www.imeche.org/events/c1321](http://www.imeche.org/events/c1321)

Date: November 8-9, 2011

Location: Pune, Maharashtra

## QUIZ

1. Which is the largest automobile company in Europe?
2. Which is the world's longest highway?
3. Where is the world's largest monopole magnet installed?
4. Where is the first eco-friendly stadium of India?

Send your entries to [mnit.energyheadlines@gmail.com](mailto:mnit.energyheadlines@gmail.com)

## credits

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