

Current Event in Science

Directions: Read the following current event in science article and answer the reflective questions following the article in your notebook. Don't forget to include a title and date for your work in your notebook.

Solar Bike Paths Are All The Rage In The Netherlands

By June Liu on November 19, 2014

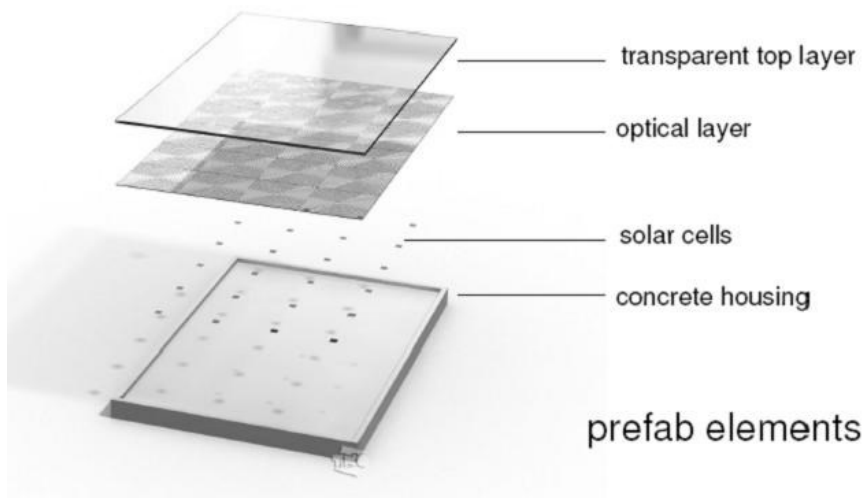
On November 12th, hundreds of biking enthusiasts in the Amsterdam suburbs of Krommenie and Wormerveer hopped onto their two-wheelers, to test out SolaRoad, the world's first solar bike path. The 100-meter test project is the result of a **collaboration** between the Netherlands Organization for Applied Scientific Research (TNO), local authorities and a **consortium** of Dutch companies.

Building a usable path that can absorb electricity was not an easy **endeavor**. That's because unlike solar panels that can be placed on rooftops and forgotten, bike paths are used daily. The engineers therefore had to devise a way to make it both **translucent** and **durable**, not to mention, skid-resistant.



While it took a few years, TNO was able to come up with a **feasible** solution. They built massive 2.5 by 3.5 meter (8 feet by 11.5 feet) concrete LEGO-like modules with an **integrated** layer of **crystalline** silicone solar cells. In order to ensure that the cells could catch the sun's rays, the tiles were covered with a layer of heavy-duty glass. An additional translucent plastic layer ensured that the path was skid-resistant.

Technical specification



According to the engineers, this small stretch of the bike path only one side of which has the solar panels, will be able to **harness** enough energy to fulfill the annual electricity demands of at least two homes. Though that is 30% less than what could be generated by similar number of solar panels that are **affixed** at an angle on rooftops, TNO's Sten de Wit says that solar roadways make perfect sense for the Netherlands.

That's because while the country does not have room to build additional power

Class Copy – Do Not Remove

plants to fulfill its growing energy needs, it does have 87,000 miles of roadways that can be used to harness the sun's energy! The one hurdle to widespread **deployment** is the expense - just this tiny stretch of solar bike path cost an **astounding** \$3.7 mm USD (United States Dollars) to build!

However, Sten believes that as solar cells get increasingly cheaper and more efficient, future projects will not cost as much. The government officials certainly seem to agree and are planning to install the technology beneath 20% of the country's roadways, if SolaRoad withstands the extensive three-year testing period.

Oddly enough, this was not the only 'solar' road opened in Netherlands that week. On November 13th, to mark the beginning of the Vincent Van Gogh 2015 International theme year, Dutch **innovator** Daan Roosegaarde unveiled the Van Gogh-Roosegaarde cycle path. Inspired by the post impressionist artist's 'Starry Night' painting, the 600-meter **asphalt** path that runs along Van Gogh heritage locations in the **Dutch** Province of Brabant, is embedded with colored pebbles, that absorb and store solar energy during the day and release it at night. The result is a pathway that is as beautiful as Van Gogh's famous painting!



This magical road is the artist's second collaboration with Heijman's **infrastructure**. In 2013, the two unveiled the world's first 'smart highway' - a dark stretch of road that is **infused** with solar energy absorbing photo-**luminescent** powder that lights up at night, making it easier for drivers to see, especially in winter when the roads are often icy.

Outside of the Netherlands, the enthusiasm for energy-generating and energy-saving pathways is just as strong. UK-based Pro-Teq recently released a product that allows public pathways to illuminate with a star-like glow at night. In the U.S., a project called Solar Roadways raised \$2.2 million this past summer, to **implement** LED lights and heating elements into road panels. With these various projects underway, the future of our roadways certainly appears to be bright!

COMPLETE THE FOLLOWING IN YOUR SCIENCE NOTEBOOK!

Directions: Answer the following questions in your notebook in complete sentences.

1. What is the title, author and date of the article?
2. Choose two words bolded in the article that are new, unfamiliar, or interesting to you. Define these two words using a dictionary and context clues.
3. What is SolaRoad? How did TNO construct it? How much energy can it harness? How much did it cost?
4. What was the other solar road unveiled in the Netherlands the same week? How does it illuminate at night?
5. What is the 'smart highway'? Where else are similar projects being undertaken? What are they?
6. How are the two bike paths similar? How are they different?