Geveko ITS
-intelligence for the Road

LED-Mark

Typically used for:

- Cycle paths visualization
- Road & curve marking
- Marking of crossings
- Line delineation
- Roundabouts
- Railway crossings
- Harbour fronts
- Warning in black spots

Geveko ITS
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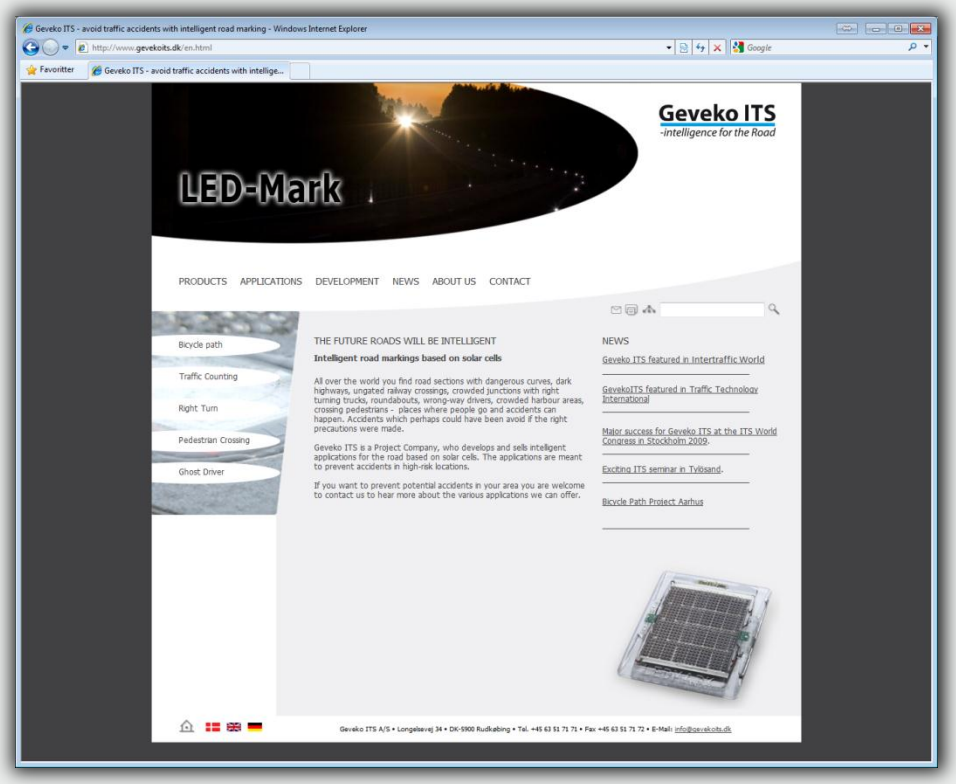
Source of information: www.gevekoits.com

- Products
- Data sheets
- Applications
- Videos
- News



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Marketing materials

- Product sheet
- Ordering form
- Advertising
- Power Point

PR / Editorials

Wise words from an expert in solar roadstuds

Seemingly hardly a day goes by without the next latest and greatest technology being unveiled to the market, yet every now and then one will stand out from the pack to offer something new. One that Denmark's Geveko ITS believes falls into this category is currently being introduced worldwide with a set of recommendations to road owners on the most pertinent selection criteria.

Although solar roadstuds have existed in the market for several years, until recently they were all much of a muchness. Geveko ITS, however, believes its latest innovation sets a new standard in the field. "Since we didn't have sufficient internal resources for bringing the solar roadstud to a new stage of development, we entered into a cooperation with Sweden's Luleå Technical University," reveals Bruno Hansen, managing director of Geveko ITS. "They have handled much of the R&D, while we have contributed crucial know-how surrounding aspects such as solar cells, charging technology, and conditions on the road.

"The fact that Luleå University has been part of the project from the beginning means that they have conducted a great deal of analysis into how the solar roadstuds should function, be installed, and what features are in line for the future," Hansen continues.

Geveko ITS has drawn up a number of parameters to be assessed when selecting the right solar product.

Run-time evaluation

The first is operational time. When road owners decide to use solar roadstuds, they're not just looking for a simple light device. Crucial product features to their performance on roads and cycle paths are evaluated against the user experience of motorists and cyclists. A key performance parameter is the time it can remain lit up without sourcing new energy (sunlight) – what's known as operational time. In most areas of the world, sunlight is in short supply in the darker periods of the year, so there's always the risk of the stud not lighting when it is supposed to. Other products in the sector only include a luminescent material, although it's important to note that with such products, the operational time can be very limited.

Sub-zero temperatures also affect operational time, leading to many batteries not being able to charge at all. Partial sun can also be a problem for some studs, as the solar cells will only charge if they are covered fully by sunlight. All in all, these conditions can lead to operational times of anything between 24-800 hours – and even at 800 hours you can't guarantee that they'll emit light when they are supposed to.

(Above) Life-saving visibility enhancements at dangerous rural bends (Left) Geveko ITS has developed a system that makes it safer for the pedestrian as well as for the driver

Need to know?

When choosing a solar roadstud, it is wise to seek advice from an established expert

- Why not all solar roadstuds are the same
- Four key parameters should be assessed when choosing a product: operational time; physical characteristics and installation; built-in intelligence; and performance and warranty
- How cooperation with a university in Sweden is bearing important fruits for one commercial player
- Why experience – in both research and manufacturing – counts for a great deal

Importance of installation

The second parameter relates to physical characteristics and installation. Of course, solar roadstuds don't require any cabling and are therefore considerably cheaper than hardwired roadstuds, which involve extensive installation and maintenance. Solar roadstuds cost around one-tenth of the installation and one-third of the running costs when compared to threaded technologies. On top of this, they are CO_2-neutral in operation and are a 'green' way to enhance traffic safety without having to increase budgets.

But what other physical parameters are important? Many roadstuds have been known to be quite large, making mounting time consuming and costly, while increasing the risk of the studs being damaged – for example, by snow plows. The reason for this is they typically use very large power sources (batteries), although today it is possible to use the same-sized batteries as a regular cell phone. Road owners should consider size carefully before choosing a solar roadstud as a large roadstud – or one that is poorly designed – is susceptible to damage or being dislodged by a snow plow. A thin solar roadstud manufactured from a flexible material is easy to mount, so consequently reduces application time and the need for securing the workzone. Furthermore, thin roadstuds can be mounted onto bridges and similar infrastructure. Additionally, some roadstuds are mounted simply using a hammer, so road owners must consider them as equally easy to remove – and prone to theft.

Intelligent approach

A third parameter to consider is built-in intelligence. Solar roadstuds do not typically include any intelligence at all, although it should be a consideration for road owners if they want to improve traffic safety by being able to detect traffic, guide motorists and cyclists and communicate with traffic information systems.

"We have built an application at the Luleå University where we have installed dynamic traffic guidance that detects when a car is approaching the roundabout and starts a running light to make sure the motorists pass the roundabout in the right way. We are also able to control the way the solar roadstuds light and in doing so also improve the interaction with motorists in the future," Hansen continues.

The final parameter is performance and warranty. A nickel's worth of free advice in this regard is to ask any supplier details of its track record in the field, but be careful not just to evaluate the performance based on generic parameters or size of the company itself. Not many suppliers have the necessary years of successful experience with solar roadstuds, while very few actually manufacture the solar roadstuds themselves. Be sure to liaise with a supplier that develops and manufactures, as this will be the optimum partner for developing new features – and ask for the specific warranties of the products. Do not forget to include performance parameters such as operational time, size, mounting, security against theft, etc.

"It is essential to familiarize yourself with the technical parameters of a solar roadstud if you want to be sure to make the right choice," Hansen concludes. ○

(Above) The LED-Mark (Above Left) installation and maintenance is much quicker than hardwired solutions (Left) Solar roadstuds are ideal for rural locations where power provision can be problematic

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CO2 neutral cycle path lighting in Aarhus

by Per Schøring

We meet him at the Skoedstrup exit outside of Aarhus in Denmark, just before twilight on a November day in 2010. Considering the high speed and the 9 km he has just cycled, he arrives in rather a relaxed mode, but this is quite characteristic for a fireball thrilled about his mission. We are talking about lighting of cycle paths with Pablo Celis, project manager for Aarhus Cycle City.

The city of Aarhus has decided to make an effort for the cyclists in the city, and have created the Aarhus Cycle City, headline and name of a project headed up by Pablo Celis, project manager and M.Sc. Engineering.

A better solution at lower costs

The project, which is due to run over a 5 year period, has a budget of more than 10 million Euros and aims at transferring some of the transport need from cars to bicycles.

- It has both an environmental and a health effect if we are able to make the citizens of Aarhus choose the cycle over the car, says Pablo Celis.
- The project is not based on religious views about making everybody in Aarhus cycle to work every day. We know this is not possible. But if we improve the conditions for cyclists, it will become easier to choose the bike. On top of this, we hear from cyclists that dark cycle paths is an obstacle to cycling to work, and this is how we found out that we had to do something about it. Within the city limits, it is possible for the city council to establish lighting of cycle paths and this will typically be done with threaded technologies. Outside city limits, on the other hand, this is not possible, primarily because the financial implications are extensive. Normally, lighting with traditional technologies costs more than 40 Euro per meter, so we were really happy to learn that it is possible to solve our problem with LED-Mark at 1/10 of the cost of threaded technologies.

- I first heard about the solar-cell-based technology 3 years ago, but at that time the concept was not ripe for our purpose. My colleague, Michael Bloksgaard, met Geveko ITS on Vejforum 2009 (a major Danish conference on road safety), and he brought with him a sample of the technology that was very convincing. The dialogue with Geveko ITS that followed lead to further development of the product, and now the life-time of the LED-Mark is minimum 5 years, which makes us believe in the technology, and this is why we have placed the LEDs as light on two cycle paths outside of Aarhus, says Pablo Celis.

Each LED-Mark consists of an LED (light emitting diode), solar cells, and rechargeable batteries. Over the day, the batteries are recharged, and after dark the unit turns itself on via simple built-in controls. It may also be used for pointing out particular risks, e.g. sub-zero temperatures. LED-Mark was developed by the Danish company Geveko ITS, which is part of Geveko, who has developed road marking over the past 50 years.

- The technologies, which we have developed over the past 9 years, are now in serial production and the application areas are infinite, says Bruno Hansen, General Manager for Geveko ITS, and continues:
- They may be used for stretches of road with dangerous curves, along dark highways, unlighted cycle paths and unlighted roundabouts – in other words, wherever there is a risk of accidents.

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Videos and presentation

YouTube channel

Ghost Driver

LED-Mark presentation

Cycle path

Luleaa roundabout

Short presentation

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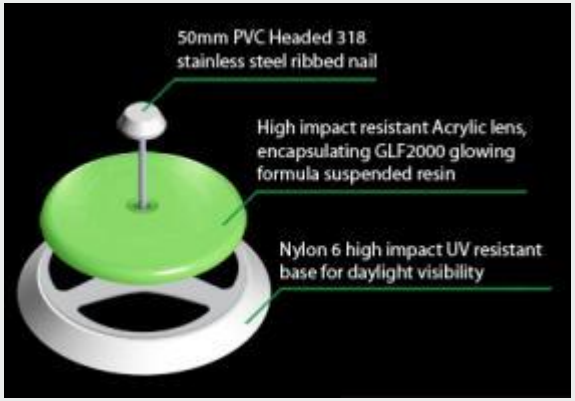
Competition

A wide variety available!

38 mm!

Expensive cabling!

Varying quality!



Prone to theft!

400 hours operation!

Geveko ITS
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LED-Mark has superior performance!
LED-Mark is competitive!

- Budget price is around 4,600 EUR incl. mounting per km.
- LED-Mark budget price is around 4,600 EUR incl. mounting per km. and installation takes a very short time.
- Please, pay attention to market opportunities

Astucia SolarLite

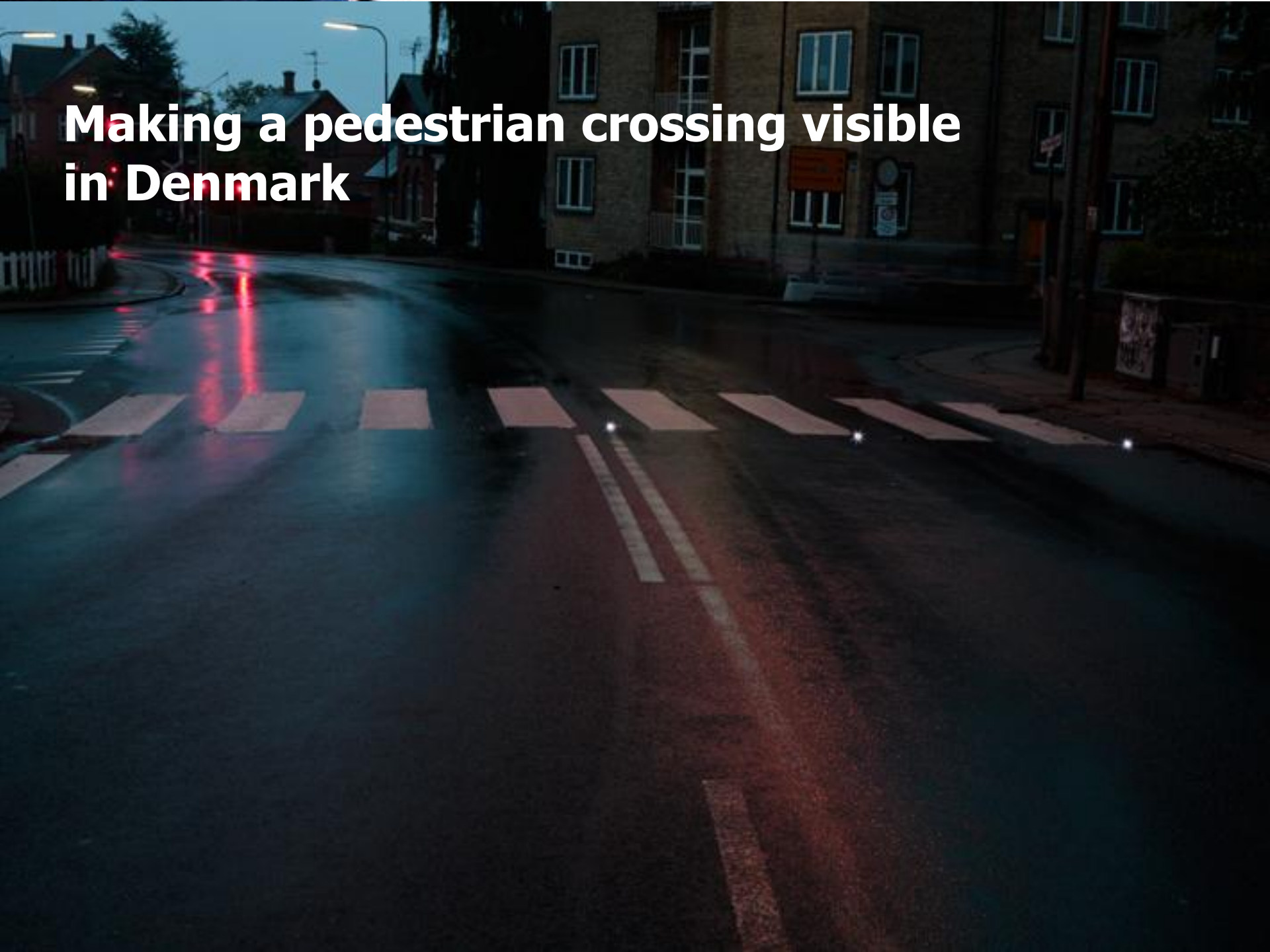
- Market leader (volume)
- Expensive installation
- Short operation time
- We have heard of many failing studs
- See video of installation

Enhancing line marking in road curve in Jutland, Denmark

Making a 2+1 road visible in Sweden

Making a cycle path visible in Aarhus, Denmark

Leading lights on cycle path in Kerteminde, Denmark


Making a pedestrian crossing visible
in Denmark

LED-Mark installed in road curve in Rendsburg, Germany

Installing LED-Mark on special cycle path crossing in Freiburg, Germany

Holes drilled and cleaned


Glue

Levelling


Finishing


Ready