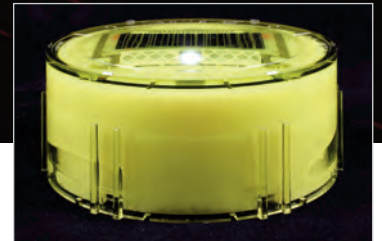


Product Specification

SolarLite

Road Studs™



The smart, safe and sustainable option for providing guidance and hazard warning to drivers during the hours of darkness, reducing accident rates by over 70%, reducing environmental impact and saving costs.

Clearview Intelligence offers a range of solar powered road studs to suit a wide variety of applications with both embedded and surface mounted products.

There are in the UK alone an average of 5 fatalities every day and many more serious injuries. Driving at night can be particularly hazardous; although only a third of journeys are made during the hours of darkness almost half the serious accidents occurs at this time.

Clearview provides a sustainable solution with innovative solar powered SolarLite Intelligent Road Studs helping to reduce accident rates by over 70% on current UK installations.

Increased visibility

Using ultra bright LEDs (Light Emitting Diodes) to provide up to ten times greater visibility than traditional retro-reflective studs, and unlike conventional retro-reflective road studs, SolarLite studs do not rely on vehicle headlight efficiency to perform effectively.

At a speed of 100km/h (62mph) this can increase the time a driver has to react from 3.2 seconds to over 30 seconds.

Reducing accidents and saving lives

The innovative design of Clearview's SolarLite road studs makes them a vital component in cutting the number of road traffic accidents during the hours of darkness and thus saving countless lives each year.

A fatality on UK roads is calculated by the Department for Transport (DfT) to cost over £1.9M, not to mention the dreadful personal consequences of such a tragic, and on occasions, preventable accident.

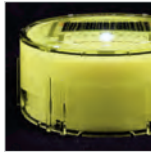
By installing SolarLite studs, road authorities can help reduce accident rates and as a consequence significantly cut the amount of road closures and congestion. The studs are particularly effective at sites where there is a high accident risk, often on sharp corners, winding roads with poor delineation; or where street lighting is either unavailable, not cost effective or environmentally not possible.

Key Benefits

- Superior distance visibility of road layout ahead compared to retro-reflective studs
- Reliable all night, all year round performance
- Lower lifetime costs than traditional road studs
- Long lasting, carefree operation
- Maintains superior visibility even in poor weather conditions and on wet roads
- Decreases night time accidents by over 70%
- Allows additional reaction time to respond to changing road layouts
- Reduces erratic driving behaviour and smoothes braking along winding roads
- Enhances driving experience, making drivers feel safer and more able to travel at night
- Highly impactful and politically visible contribution towards reducing road safety fears

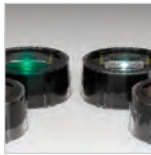
Safer driving behaviour

The Transport Research Laboratory has carried out research showing that when SolarLite road studs are used, drivers are significantly less likely to cross the central white line, or to move out of lane on a dual carriageway and braking is more consistent and less erratic. Not only this, but the studs reduce the use of headlight main beam and the risk of dazzling oncoming drivers.



All year round operation

Clearview use patented power management technology to confidently assure reliable, robust and maintenance free all year round operation. Just a few hours bright daylight will provide 10 nights operation. SolarLite F Series embedded road studs have a profile of less than 4mm above the road surface making them unobtrusive to motorists, motorcyclists and cyclists. They are also robust enough to withstand traffic passing over them with no adverse effects. The studs are also available in a surface mounted option.



Snowplough housing

Outside of the United Kingdom many road authorities use metal tipped snowploughs set with little or no clearance above the road surface. The Clearview snowplough housing is designed specifically to protect the SolarLite road stud and ensure its safety benefits are realised all year round regardless of the weather conditions.



Traditionally road studs of any type are not often installed in areas where winter conditions require regular snowplough activity due to the damage to the studs that the ploughs can cause.

The Clearview snowplough housing overcomes these issues by deflecting the snowplough blade over the road stud ensuring the stud's longevity and enabling drivers to benefit from the additional safety that the studs provide.

The housing is manufactured in durable cast iron to protect the Clearview F Series embedded road stud, that is supplied pre-assembled within the housing, from all types of snowplough blade. Even when installed within the snowplough housing the complete assembly has a profile of less than 4.5mm above the road surface.

Saving the environment

In our current economic environment councils are looking for ways to reduce costs and lower their environmental audit score.

Using free solar energy ensures that the SolarLite road stud is a sustainable solution enabling councils to reduce energy costs in some suitable locations (mainly rural) where street lighting is a costly exercise.

A number of local authorities also use SolarLite studs on footpaths and cycle ways as the embedded studs are both unobtrusive and bicycle friendly. Not only is the SolarLite stud an innovative product in saving lives, it enables you to increase focus on reducing emissions and providing efficient solutions. This provides a highly visible and newsworthy contribution to road safety.



Lower costs

The operating life of the SolarLite road studs is greater than the road surface and the whole life costs are substantially lower than that of traditional road studs, with a significant reduction in maintenance costs.



Clearview Intelligence products are extensively tested and are more robustly manufactured (ISO 9001:2008) proven to be at least four times more durable and reliable than conventional retro-reflective road studs. The Highways Agency has a requirement under TD26/04 for all studs to be checked at least twice a year and replaced if more than 10% are not working, or 10 consecutive studs are missing / not working or if any single stud has a loose casing, or a single stud is missing in legal requirement areas such as double white lines.

All SolarLite road studs, both surface mounted and embedded types have UK type approval from the Department for Transport and comply with BS EN 1463.

International success

Clearview's SolarLite road studs have been installed at over 400 locations worldwide including countries as diverse as: Ireland, Holland, Poland, Sweden, South Africa, Australia, Venezuela and the United States of America. In each of these locations they are significantly reducing the number and severity of accidents.



Key Features

- Flush mounted active road stud providing up to 900m of visibility from high intensity LEDs
- Totally sustainable harnessing free solar energy from built-in solar panel
- Superior solar energy harvesting & storage electronics designed to maintain light outputs throughout a full annual cycle
- Use where street lighting is either unavailable, not cost effective or environmentally not possible
- Ideally suited to centre line and slip road use
- Low profile of less than 4mm above the road surface
- Full range of colour options for all delineation use including amber, red, white or green

Case Study A4128 - Winner of "Road Marking Project of the Year 2011"



Buckinghamshire County Council was looking to improve the safety on the A4128 in High Wycombe, Buckinghamshire.

This particular section of the A4128 was subject to a local safety scheme in 2006 to improve both night time and wet weather visibility, being situated on an A road in a rural environment, tree lined, and in a natural hollow in the carriageway, drivers were failing to cope with the road conditions, especially in the dark and wet. Part of the scheme was the three year streetlight reduction trial where the lighting along the stretch of road had been switched off.

To increase the safety on the A4128, High Wycombe it was decided to install Clearview solar powered road studs, and replace all of the road markings with improved wet weather performance lining.

The positioning of the SolarLite studs was carefully designed to provide drivers with advanced indication of the road layout ahead. White studs provide delineation for the centre line, while on the most severe bends the carriageway edges are enhanced with red edge studs. A small number of green studs have also been installed at lay-bys and farm entrances.

The use of the latest Clearview SolarLite flush mounted solar-powered studs is providing a cost-effective, environmentally-friendly and long-lived solution to night-time road safety. Use of the SolarLite studs was also highlighted as a key component in improving road safety on the A4128, now seen as the most improved road in the UK, as confirmed by the 2011 EuroRAP report.



Case Study M40 - Guiding the way on the M40 London to Birmingham corridor



The stretches of road between junctions 3 - 4 and 5 - 6 on the M40 Motorway had been identified as high risk accident locations due to the topography, road layout and lack of street lighting.

This highlighted the need for clearer road markings to enable a clearer vision and more defined view of the road ahead for drivers.

Improvements to the M40 Motorway at these locations required a bespoke solution and careful consideration due to the environmentally sensitive nature of the motorway especially between Junctions 5 and 6. The motorway passes through the Chiltern Hills escarpment, which since 1965, has been classified as an Area Of Natural Beauty (AONB).

The deployment of 7,000 SolarLite Road Studs between the above mentioned junctions was the ideal solution, providing enhanced delineation to improve night time road safety whilst maintaining an area of natural beauty and so preserving it for future generations. With the aid of eco-friendly SolarLite Road Studs, the Chiltern Hills are also protected from the effects of light pollution.

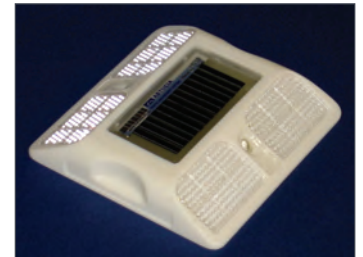
Clearview Intelligence's emphasis is on road safety and enhanced delineation whether on a rural road, urban road or major motorway as in this case on the M40. The use of SolarLite Road Studs has provided a significant contribution to road safety in the UK and abroad. For this installation on the M40 motorway Clearview worked alongside Atkins and The Highways Agency.



Applications

Clearview Intelligence's expertise and flexibility allow for near limitless solutions and functionality but here are some specific examples of where our range of SolarLite road studs may be used effectively, particularly in poor weather conditions and the following areas:

- Road Delineation
- Lane Marking and Guidance - especially for: complicated intersections / interchanges / lane merging and on / off ramps
- Accident black-spots / cluster sites
- Hazardous road layouts - including: bends / curves, junctions and dips (including 'blind summits')
- Advanced warning of fixed roadside / in-road objects - including: signage, bridge ends, traffic islands
- Areas adversely affected by poor visibility
- When street lighting is either unavailable, not cost effective or environmentally not possible
- Airports - taxiways, pushbacks, fire routes and periphery areas (including by-pass and aprons)
- Cycle path delineation and route guidance
- Others include: car parks and architectural designs



The SolarLite studs also come in a surface mounted 'S' Series version

Specifications

EMBEDDED AND SURFACE MOUNTED OPTIONS

TECHNOLOGY	Active solar voltaic LED
REFLECTOR COLOURS	Amber, Red, White, Green, Blue
NORMAL OPERATING TEMPERATURE RANGE	20°C (-4°F) to 60°C (140°F)
TEMPERATURE RANGE	20°C (-4°F) to 85°C (185°F) High Ambient F Series Version
LED CONFIGURATION	Uni / Bi directional
LEDS PER STUD	1 per uni directional stud 2 per bi directional stud
LED SIZE	5mm
LED COLOURS	Amber to EN1463, Red to EN1463, White to EN1376 C, Green to EN1463, Blue to EN1376 A
APPROXIMATE MAX DISTANCE OF VIEW	Up to 900m dependent on road layout
LED OUTPUT	>100Hz
BATTERY	Nickel metal hydride
OUTPUT - FULL CHARGE	Up to 240 working hours with no solar input

TIME TO FULL CHARGE	Time to full charge 3hrs @100 klux (sunny day)
FIXATIVE	Triflex R238 Resin (UK) or Robnor Resin EL628SS (Non-UK)

	F Series	S Series
MATERIAL	Polycarbonate & Polyester compound (GE Plastic "Xylex")	Acrylonitrile Butadiene Styrene (ABS)
HOUSING COLOUR	- White	
DIMENSIONS	108 x 112 x 52mm (4.25" x 4.4" x 2.04")	101 x 101 x 18.6mm (4" x 4" x 0.73")
PROJECTION	4mm (0.15") above road surface	19mm (0.75") above road surface
WEIGHT	450g (16oz)	190g (6.7oz)
REFLECTOR	Diamond grade	Prismatic corner cube

SNOWPLOUGH HOUSING

MATERIAL	Ductile Iron (EN-GJS-400-18-LT20)
DIMENSIONS	153 x 153 x 62.5mm (6" x 6" x 2.46")
PROJECTION	4.5mm (0.18") above the road surface
WEIGHT	2.35kg (82oz)