



SolarLite Road Studs™

How many lives saved today?

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.



Astucia offers a range of solar powered road studs to suit a wide variety of requirements, with both embedded and surface mounted

products.

Driving at night can be particularly hazardous, with over 8 fatalities every day in the UK alone and many more serious injuries, especially in areas where street lighting is either unavailable, not cost effective or environmentally not possible. Astucia 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) the projected light from each stud is ten times greater than the visibility given by traditional retro-reflective studs, and unlike conventional retro-reflecting road studs, SolarLite studs do not rely on headlight efficiency to perform effectively. At a speed of 100km/h

(62mph) this can increase driver reaction times from 3.25 seconds to over 30 seconds.

REDUCING ACCIDENTS AND SAVING LIVES

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

A fatality on UK roads is calculated by the Department for Transport (DfT) to cost over £1.87M, not to mention the dreadful personal consequences by such a tragic, and on occasions, preventable accident.

By installing Astucia SolarLite studs, many local and regional 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 and insufficient or non-existent street lighting.

KEY BENEFITS

- Proven reduction in night time accidents by over 70%
- Whole life cost lower than traditional road studs
- 10 times greater visibility for drivers than traditional reflective road studs
- Visible in adverse weather e.g. fog, rain or surface spray
- Highlights sharp bends, dips in the road and other hazards
- Effective additional driver safety when used in conjunction with street light reduction schemes

KEY FEATURES

- Up to 900 metres of visibility
- Reliable all night, all year round performance
- Totally sustainable harnessing free solar energy
- Use where street lighting is either unavailable, not cost effective or environmentally impossible
- Maintenance free – self contained
- Available in amber, red, white or green (uni or bi directional)
- Embedded and surface mounted options
- Motorcycle and bicycle friendly
- DfT approved



Astucia
Traffic Safety Systems

Astucia

Saving lives, Saving the environment and Saving you money.



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 Astucia 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 Astucia SolarLite studs on 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.

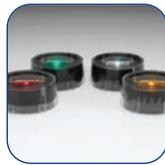


SAFER DRIVER BEHAVIOUR

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. Not only this but the studs reduce the use of headlight main beam and the risk of dazzling oncoming drivers.



ALL YEAR ROUND OPERATION

Astucia 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.



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.

Astucia products are extensively tested and are more robustly manufactured (ISO 9000) proven to be five 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

Astucia SolarLite road studs are installed in over 150 roads worldwide countries as

diverse as Ireland, Holland, South Africa, Australia and Venezuela, where they are significantly reducing the number of accidents.

Case study

The use of Astucia solar-powered road studs on a notorious stretch of highway in Kwazulu-Natal, South Africa demonstrated not only their success in road safety, but their cost-effectiveness too.

The major 2 year pilot project on the R66 north of Durban significantly reduced the number of serious accidents and road deaths on the busy highway. In previous years, 88 serious accidents had claimed 27 lives and 15 less serious accidents had occurred on a twisting 34km section of the road between Melmoth and Ulundi.

After the installation of 7,800 Astucia 'smart' road studs the accident rate fell to zero. The second stage of the installation has now extended the coverage to a total of 20,000 studs on 100 kilometres of the R66.



APPLICATIONS

Astucia'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 option.

SPECIFICATIONS

Embedded and surface mounted options

Technology	Active solar voltaic LED
Reflector colours available	Amber, Red, White, Green, Blue
Normal operating temperature range	-20°C (-4°F) to 60°C (140°F)
LED Configuration	Uni / Bi directional
LEDs per stud	1 per uni directional stud, 2 per bi directional stud
LED size	5mm
LED Colours available	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 frequency	>100Hz
Battery	Nickel metal hydride
Output on full charge	Up to 240 working hours with no solar input
Time to full charge	Time to full charge 3hrs @100 klux (sunny day)
Recommended fixative	Triflex R238 Resin

	Embedded	Surface mounted
Material	Polycarbonate & Polyester compound (GE Plastic "Xylex")	Acrylonitrile Butadiene Styrene (ABS)
Housing colour	–	White (Amber optional)
Dimensions	Ø108 x Ø112 x 52mm (Ø4.25" x Ø4.4" x 2.04")	Ø101 x Ø101 x 18.6mm (Ø4" x Ø4" x ¾")
Projection	4mm (0.15") above road surface	–
Weight	450g (16oz)	190g (6.7oz)
Reflector	Diamond grade	Prismatic corner cube

Winner of "Road Marking Project of the Year 2008" in the Highways Excellence Awards

Vale of Glamorgan

A4226 The Five Mile Lane

Application: Lane Delineation

Astucia product: F Series SolarLite

PROJECT BACKGROUND

The A4226, locally known as The Five Mile Lane is a busy rural narrow and bendy commuter route between Barry, Cardiff International Airport, the A48 and the M4 Motorway.

Against a background of an unacceptably high accident record the Vale of Glamorgan Council has undertaken a number of measures to improve road safety. These have included the introduction of a 40mph speed limit, deployment of a mobile speed camera and more recently a permanent speed camera, additional road markings, increased signage and resurfacing with high skid resistance material.

It was also clear from a complete analysis of all accidents occurring along the A4226 carried out by Vale of Glamorgan Council that an increasing number of the accidents were taking place at night time, suggesting that drivers were failing to take account of the limited view ahead provided by conventional vehicle headlight beams.

INSTALLATION

The installation initially carried out by Astucia in July 2002 comprised of almost 200 SolarLite D series road studs providing delineation for the centre line with white studs and on the most severe of bends the carriageway edges were also enhanced with red studs.

The positioning of the SolarLite studs was carefully designed to provide drivers with advanced indication of the nature of the road layout ahead. Following the success of the initial installation the location has been enhanced further by updating the installation with the Astucia SolarLite™ F Series embedded mounted type stud following approval of their use by the Welsh Assembly.

The SolarLite series road stud from Astucia, with its built in solar powered Light Emitting Diode (LED) automatically illuminates from dusk to dawn and is visible for up to ten times further than the traditional retro-reflective passive road stud where vehicle headlamps, even in best condition, will only provide up to 90 metres visibility.

By contrast, the Astucia SolarLite stud can be seen up to 1000 metres away regardless of the headlight beam.

At 100 km/h (62 mph) a visible distance of 90 m only represents a reaction time of 3.2 seconds, which is not enough time to properly judge certain road hazards such as the radius of a bend. With the increased visibility of the SolarLite road stud this reaction time is increased to over 30 seconds.

BENEFITS

Martin Rodgers, Marketing Director for Clearview Traffic Group Limited advised: "We are continually striving to reduce the number of accidents on roads world wide. We are therefore delighted that the installation of the Astucia SolarLite road studs along with the other safety measures that we have put in place have significantly reduced the number of accidents on this busy stretch of road."

In the three years since the initial installation of the Astucia SolarLite road studs and the other safety measures implemented there has been a 72% reduction in accidents on this stretch of road when compared with the prior three years.

Graham Muspratt, Astucia Product Manager, advises: "The SolarLite road studs from Astucia are proven to reduce accidents by providing information to drivers about the road ahead directly in their natural field of vision especially in areas where traditional street lighting is neither practical or cost effective. Astucia is committed to keeping traffic moving and saving lives."

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