



Vehicle Applied Solar Panels

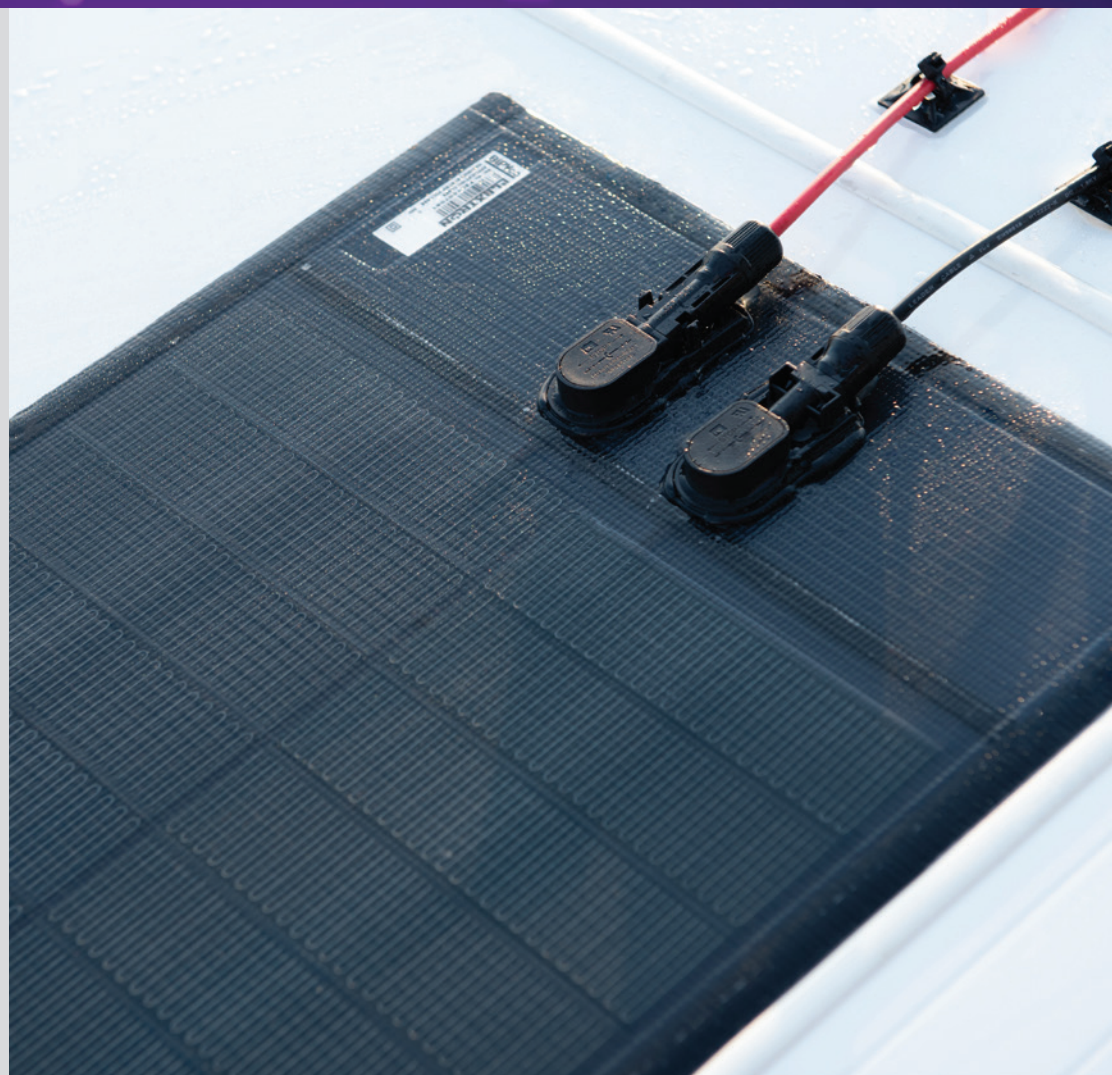
A Greener Fleet: Sustainable Power Management for Commercial Fleets

Modern commercial and passenger carrying vehicles are running more and more auxiliary services with light bars, telemetry, cameras, communications systems and tail lifts, but vehicle and auxiliary batteries are not matched to these power demands.

Vehicle engines are having to idle to provide supplementary power and many operators are experiencing problems with flat batteries and shortened battery lifespans.

Solar panels are a long-proven method of harnessing power from the sun. Genie Insights' solar products are constructed using CIGS (copper, indium, gallium and selenide) thin film solar PV cell technology, which is a lightweight, flexible and extremely powerful solution.

- ✓ **TRUCKS & TRAILERS**
- ✓ **BUSES & COACHES**
- ✓ **FLEET VANS & CARS**



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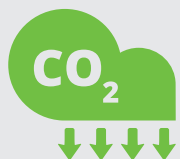
REDUCE TOTAL COST OF OWNERSHIP

As well as reductions in fuel and maintenance costs due to better battery management, having Genie Insights' solar panels is an attractive added value to the asset in the secondhand market.



IMPROVE BATTERY HEALTH

Redirecting power demand to solar energy means pressure is taken off batteries, which means prolonged battery life and better fleet reliability due to reduced jump-start related breakdowns.



REDUCE CARBON EMISSIONS

Adopting Genie Insights' solar panels allows vehicle engines to run less overall and eliminates or significantly reduces vehicle idling time, therefore reducing reliance on fossil fuels and consequently reduces fuel costs.



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- **INDUSTRY-LEADING EFFICIENCY**

As well as operating at a higher voltage than conventional solar solutions, our unique system works in low light, cloudy days and even in shading from buildings in town centres.

- **ROBUST & FLEXIBLE**

Because of the flexible nature of our solar panels, they are shatterproof, resistant to vibrations and cannot crack or fracture.

- **LIGHTWEIGHT SLEEK DESIGN**

Custom size modules bonded directly to the vehicles' roof are less than 3kg in weight per square metre and less than 3mm thick (bonded) so there's no drag or loss of payload.

- **UNIQUE CONSTRUCTION**

All Genie Insights' solar products are manufactured in the UK using a unique encapsulation process which has been developed through years of investment in research and development.

- **TAILORED SOLUTIONS**

We can offer custom solutions designed to provide the optimum power output specific to your fleet's individual needs.

- **SUITABLE FOR RETROFIT**



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Technical Specification

	Application		
	Fridge Trailer	Bus	
Module Name	GI 50 HE	GI 110	
Number of Cells	44	54	A solar cell, or photovoltaic cell, is an electrical device that converts the energy of light directly into electricity.
Number of Diodes	22	27	Most solar panels only contain 3 bypass diodes which significantly limits performance in shaded or cloudy conditions (if one cell is shaded, total power reduces by one-third). We incorporate bypass diodes into every other cell meaning if a pair of cells is shaded, the current is able to move to the next cell, so the only performance loss is from the shaded cells.
Module Length (mm)	1120	2600	
Module Width (mm)	355	358	
Module Height (mm)	3	3	Slim design means no drag or wind noise (no loss of MPG) and unlikely to get damaged by low hanging branches etc.
Weight	2.2kg with loom and controller	3.9kg with loom and controller	Extremely lightweight so no affect on payload.
Pmax - Power (W)	50	110	The Pmax is the maximum wattage ($V_{mp} \times I_{mp} = P_{max}$)
Voc - Open Circuit Voltage (V)	30.82	35	The Voc is the maximum voltage available from a solar cell. With an open-circuit voltage of >30 Voc, there is a highly efficient conversion of sunlight to energy. The advantage of having a higher voltage, compared to traditional solar solutions, means the panel will be able to start charging earlier in the day and remain charging for longer to keep the voltage above the battery state for longer. For comparison a conventional panel would be around 18-20 Voc on a 110W panel.
ISC - Short Circuit Current (A)	2.21	3.84	Short Circuit Current is how many amps (i.e. current) the solar panels are producing when not connected to a load. This is the highest current the solar panels will produce under standard test conditions.
Vmp - Maximum Power Voltage (V)	25	28.58	Voltage at maximum power is the voltage that occurs when the module is connected and operating at its peak performance output.
Imp - Maximum Current (A)	1.99	3.84	The Imp is the current (amps) when the power output is the greatest.
Efficiency	16%	16%	Solar panel efficiency is a measurement of how much of the sun's energy a panel can convert into usable electricity.
Performance Warranty	5 Years	5 Years	

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Find out more at www.genieinsights.com

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