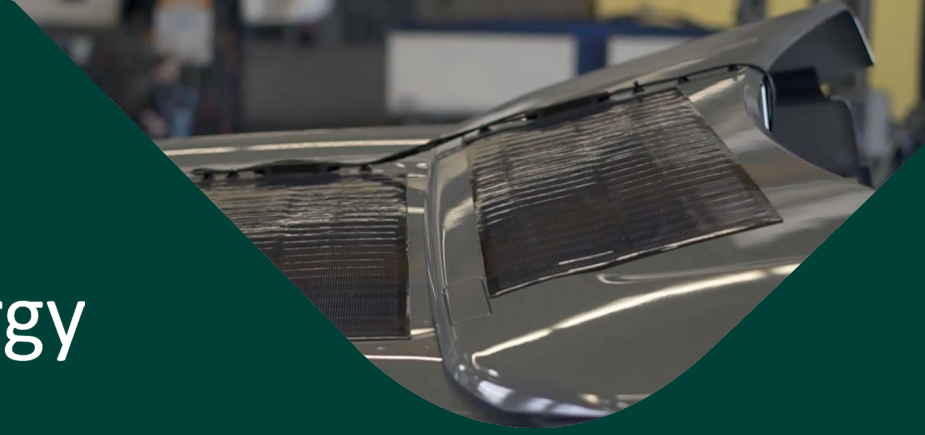
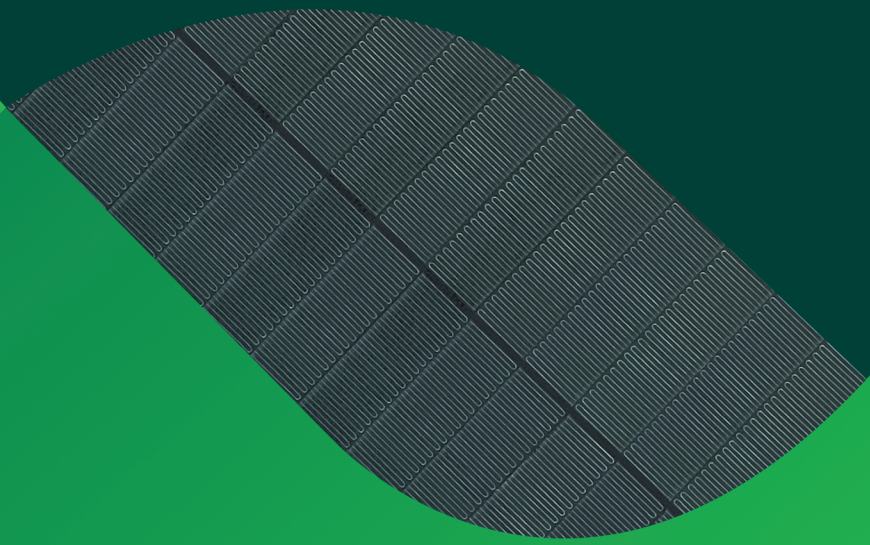


Green Energy

Innovative solar solutions for transport



Powering fleets
Reducing costs
Driving sustainability

Leader in CIGS solar solutions for transport

greenenergy.pro

Practical and sustainable innovation

Why solar for transport?

Challenges

- Growing demand for sustainable fleet solution
- EU regulations and CO_2 reduction incentives
- Competitive advantage

Solutions with CIGS solar

- Fuel savings
- Emissions reduction
- Operational efficiency

A scalable solution for every fleet

With rising fuel prices, ambitious sustainability targets and tighter regulatory requirements, fleet operators face increasing pressure to cut costs and emissions without disrupting operations.

Green Energy's solar solution offers a low-cost, high-impact transition technology that's simple and scalable: seamlessly integrating with your existing fleets – no infrastructure changes required.

Our solar kits range from 110 Wp to 960 Wp, and are designed for trucks, buses, vans and trailers. They are durable, easy and quick to mount on most vehicles, taking as little as 4 hours per vehicle.

Suitable for:

- All trucks and rigid trucks
- City buses, long-distance buses and coaches (see p. 15)
- Trailers and semi-trailers
- Refrigerated trailers
- Minibuses, vans and LCVs
- Vehicles with forklifts, lift trucks and lifting platforms

Benefits of Green Energy's solar solution

Cut emissions

- Reduce reliance on fossil fuels with clean solar power
- Lower CO2 emissions and minimise environmental impact
- Support sustainability targets and regulatory requirements
- Enhance emissions tracking and reporting for Scopes 1 and 3

Fuel savings

- **Save 4-7% on fuel** annually for trucks
- **Save 6-12% on fuel** annually for buses
- **Payback period of 10-18 months** for trucks
- **Payback period of ~24 months** for buses

Better battery health

- **Longer battery life:** Solar charging reduces strain and prevents deep discharge
- **Efficient charging:** Solar power continuously tops up the battery, reducing load on the alternator and ensuring a more consistent charge.
- **Less maintenance:** Less wear on batteries and alternators means better reliability and fewer repairs and replacements
- **Fewer breakdowns:** Prevents dead starter batteries and excessive battery drain

Idle reduction

Energy from our solar panels going direct to the battery drastically reduces idling time leading to substantial fuel savings, lower maintenance costs, decreased emissions, less noise pollution and improved operational efficiency.

See how Samat got 6,9% savings with an 11-month payback on p.10

Green Energy

Green Energy

- Lightweight
- Durable
- Flexible
- Glass-free
- Weather-resistant

CE RoHS COMPLIANT

Superior CIGS solar tech

Glass-free and durable

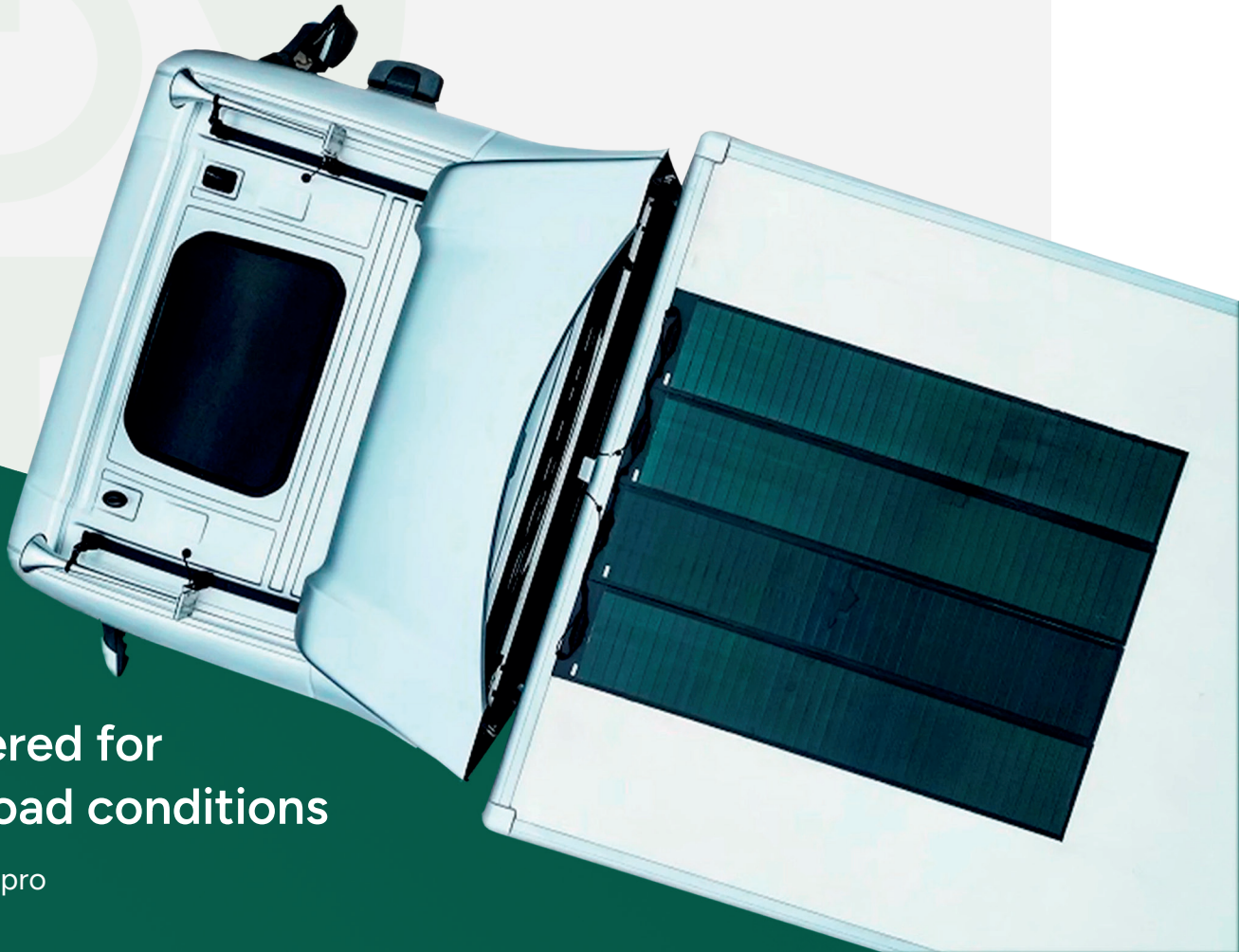
CIGS solar panels are ideally suited for heavy transport. Based on thin-film technology, they contain no silicon or glass, making them flexible, durable and highly resistant to microcracks and fire hazards.

Lightweight and flexible

Their lightweight and flexible design means they fit on most vehicles without compromising on performance. The solar panels are installed directly to the vehicle roof using specially developed mounting tape.

Efficient and reliable power

The panels generate clean power directly to the battery, easing the load on the engine and alternator. This flexible solution not only ensures efficient and reliable power production but also provides significant fuel and CO2 savings.



Engineered for tough road conditions

greenenergy.pro

Advantages of CIGS solar

Key features

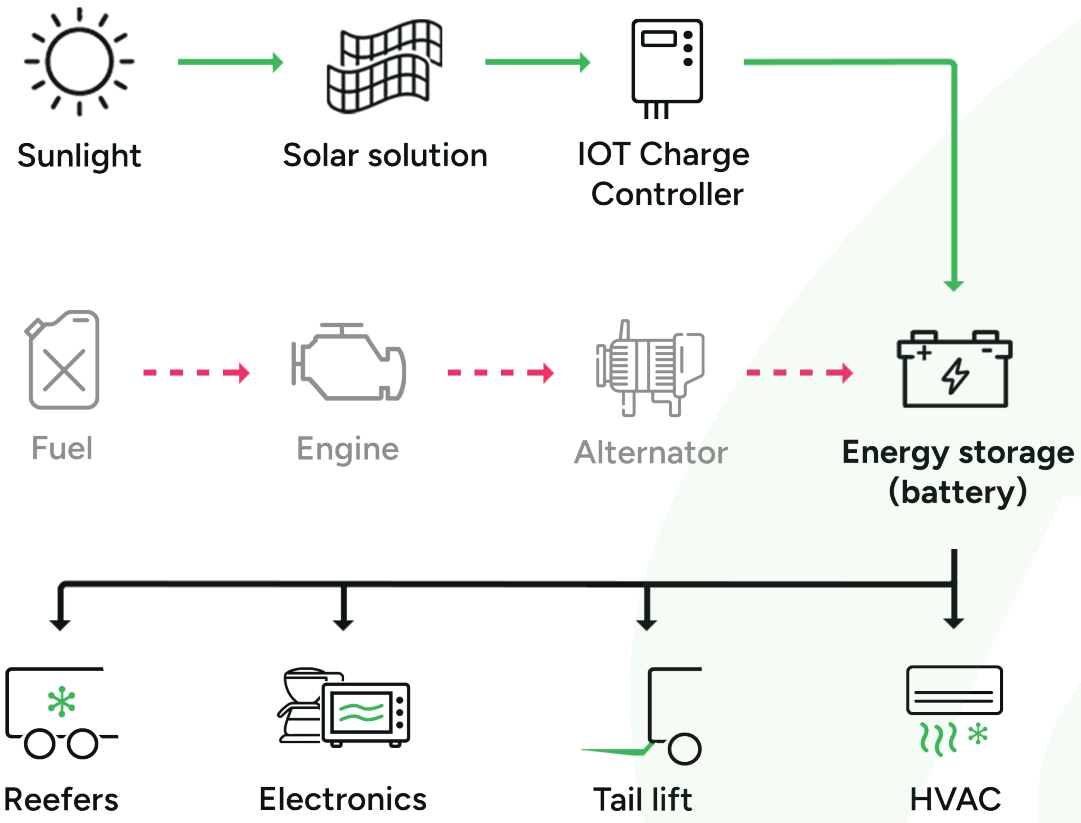
- Flexible and durable
- Low carbon footprint
- Lightweight
- Only 3mm in thickness
- All-weather resistant
- Taped directly to the roof
- 25+ years of efficiency
- Double battery life

Learn more:
greenenergy.pro/cigs-solarpanel/

Our solar panels outperform crystalline solar panels

Solar panels comparison	CIGS solar panels	Traditional solar panels
Behaviour in direct sunlight	👍	👍
Behaviour in indirect sunlight	👍	👎
Behaviour in cloudy weather	👍	👎
Weight below 3kg / m^2	👍	👎
Resistant to shocks and vibrations	👍	👎
Works without ventilation	👍	👎
Low manufacturing carbon footprint	👍	👎

How our solution works



1 Green Energy solar panels are mounted to the roof

They convert sunlight into direct current (DC), whether you're driving or parked, and lessen the load on the engine and alternator to charge the battery.

2 Green Energy advanced IOT charge controller

With the help of our advanced IoT charge controller, the solar energy gently charges the batteries and regulates the voltage and current.

3 The storage of energy produced by the solar panels

Any power generated by the solar panels which is not used upon production will instead be stored in the vehicles battery until the vehicle needs it.

4 Reliable power supply for the vehicle's electrical systems

Your vehicle will now have a reliable source of power that is able to deliver power for various electrical systems and keep the battery charged.

The result is better energy efficiency, extended battery life and reliable power, while reducing environmental impact.

IOT Charge Controller

For intelligent charge management

Access data on solar panel efficiency, environmental impact, battery voltage, operational efficiency and fuel savings across your fleet with our intelligent charge management and IoT system. Register your charge controller and link it to the Green Energy app to access data on solar system performance on your vehicle.

Green Energy

About our charge controller

- E-mark, RoHs, CE
- IP65
- IoT connection
- Compatible with all battery types
- Automatic software updates
- App for data collection and remote diagnostics

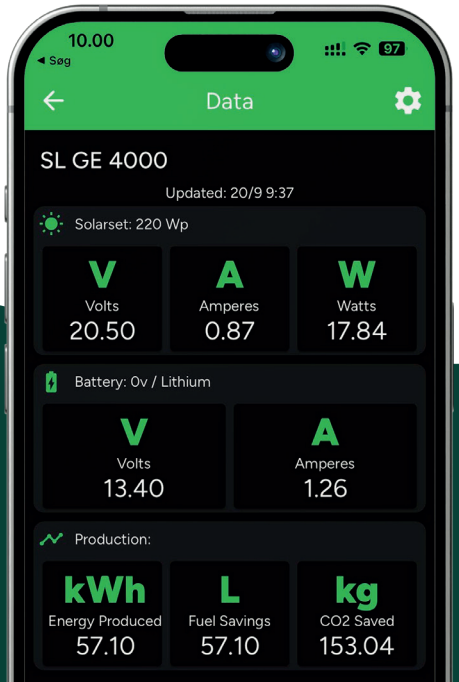
Download the Green Energy app

GET IT ON Google Play

Download on the App Store

You can find the Green Energy app in the Google Play Store (Android)

and the App Store (iOS) It is listed under the name MIPV.pro System.



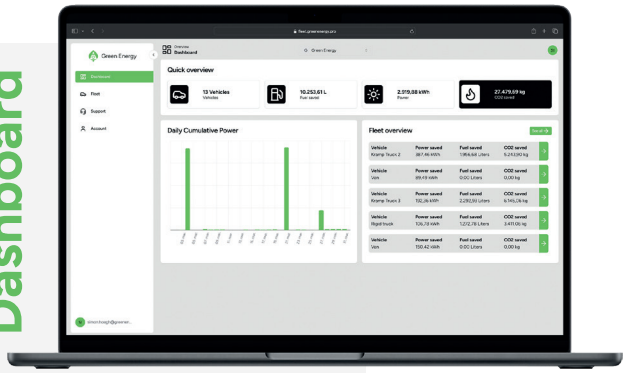
Green Energy Fleet Tracker

See savings in real time

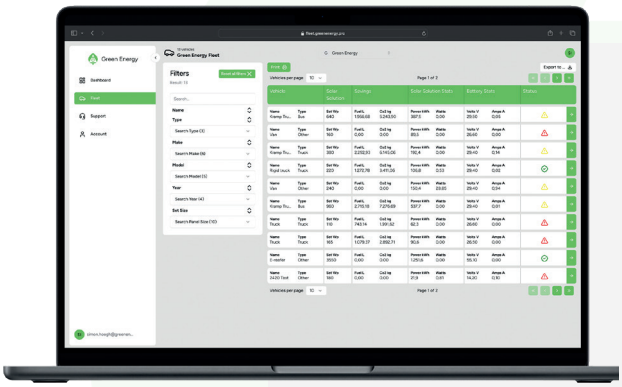
Add Fleet Tracker software to enable real-time data, analytics and reporting for every vehicle in your fleet. Improve fleet management and use data for ESG reporting and Scope 1 and 3 calculations. With user-friendly dashboard.

Fleet Tracker helps you monitor the operational efficiency of your fleet, no matter the size. It gives you remote diagnostics of battery performance, power production, and savings calculations for each of the vehicles in your fleet.

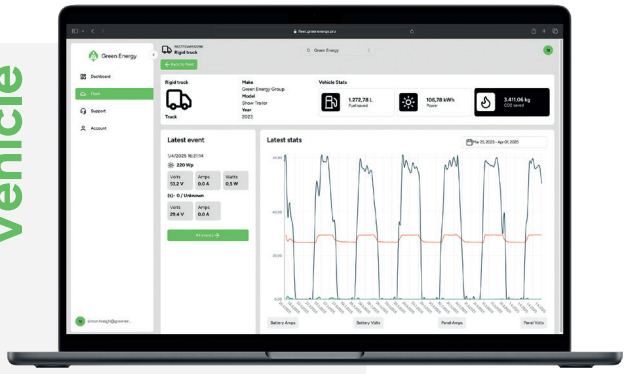
Dashboard



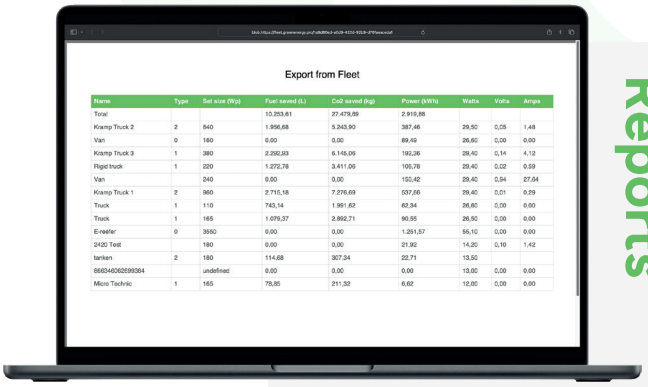
Fleet



Vehicle



Reports



Learn more:

greenenergy.pro/ge-fleet-tracker/

Samat International AB see 6,9% fuel and CO_2 savings

12-month field test shows impressive results

Samat International AB, a leader in the transportation of sensitive products in Europe, is committed to sustainability through its ACT CSR plan and QHSSE initiatives.

In 2023, they launched a pilot programme with Green Energy's solar solution on two trucks. Less than two years later, over 40 of their trucks are equipped with our lightweight CIGS solar panels—delivering both financial and environmental benefits.

Tank to wheel results: Trucks in 2025

This 12-month study (Jan 1 - Dec 31, 2024) was conducted with together our customer Samat International AB. It compared 21 solar-equipped trucks installed with identical 165 Wp solar sets to 23 non-solar trucks. The 44 trucks were a mix of Scania and Volvo trucks with similar load profiles. The analysis is based on an average annual mileage of 89.957 km pervehicle.

Annual average fuel saving percentage:	**6,9 %**
Energy production per vehicle per year:	**92,3 kWh**
Fuel savings per vehicle per year:	**1.478 Litres**
Reduction in CO2 emissions per vehicle per year:	**3,96 Tonnes**

Data

Timeframe:	**12 months**
Annual mileage per vehicle:	**89.957 km**
Diesel price per litre:	**1,30 €**
Solar set list price (2024):	**1.811 €**
Payback period:	**11 months**

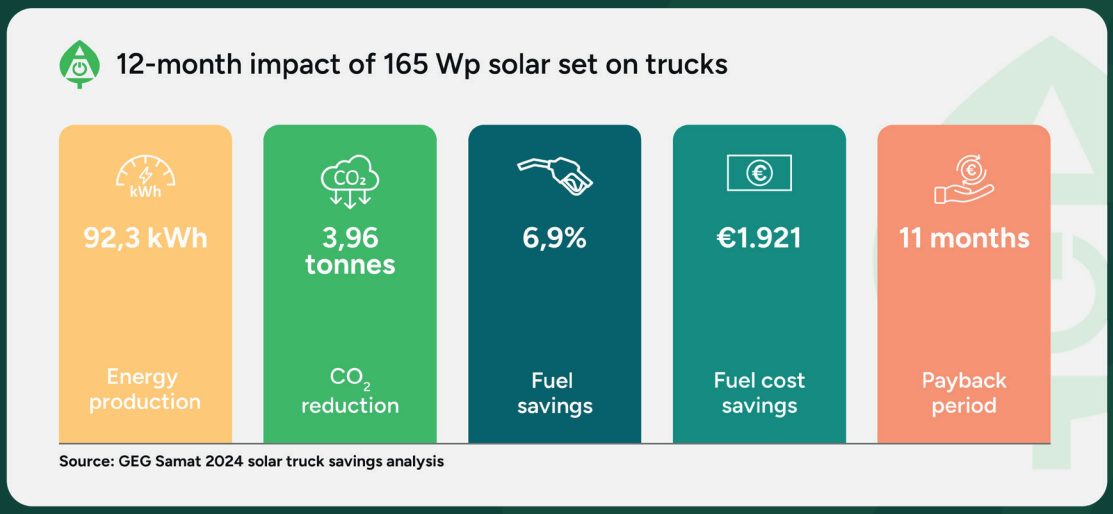
Samat®

Green Energy

From pilot to proof – and payback

Following a successful pilot in 2023, Samat and Green Energy conducted a year-long data study in 2024 to examine the performance of solar-installed trucks vs. trucks without solar.

We fitted 21 diesel trucks with Green Energy 165 Wp solar kits and compared them with 23 diesel trucks without solar panels as a control group. The 44 trucks, consisting of Scania and Volvo trucks, carried similar loads, covered an average annual mileage of 89.957 km per truck, and operated under comparable conditions and routes throughout 2024. Here's what we found. The solar-powered trucks achieved:



With a **payback period of just 11 months**, Samat quickly saw the value in scaling the solution across their fleet. They have since installed all brand-new trucks in their fleet with our solar systems from day one.

More than just fuel savings

But that's not all. Our solar solution also has a positive effect on operational efficiency. Samat and other customers report:

Significant reductions in idling time > **reducing unnecessary fuel consumption**

Extending battery and alternator life > **reducing maintenance costs**

Fewer battery-related breakdowns > **reducing downtime and emergency callouts.**

Sustainability

Green Energy

Solutions that drive impact today

Achieving meaningful CO_2 reductions before 2030 and 2040 isn't just a goal it's a necessity. The science is clear: emissions need to go down every single year. Reaching Net Zero in 2050 won't be enough if we don't reduce emissions significantly along the way. Every year we delay action, the path gets steeper - and the climate risks increase.

The heavy-duty reality

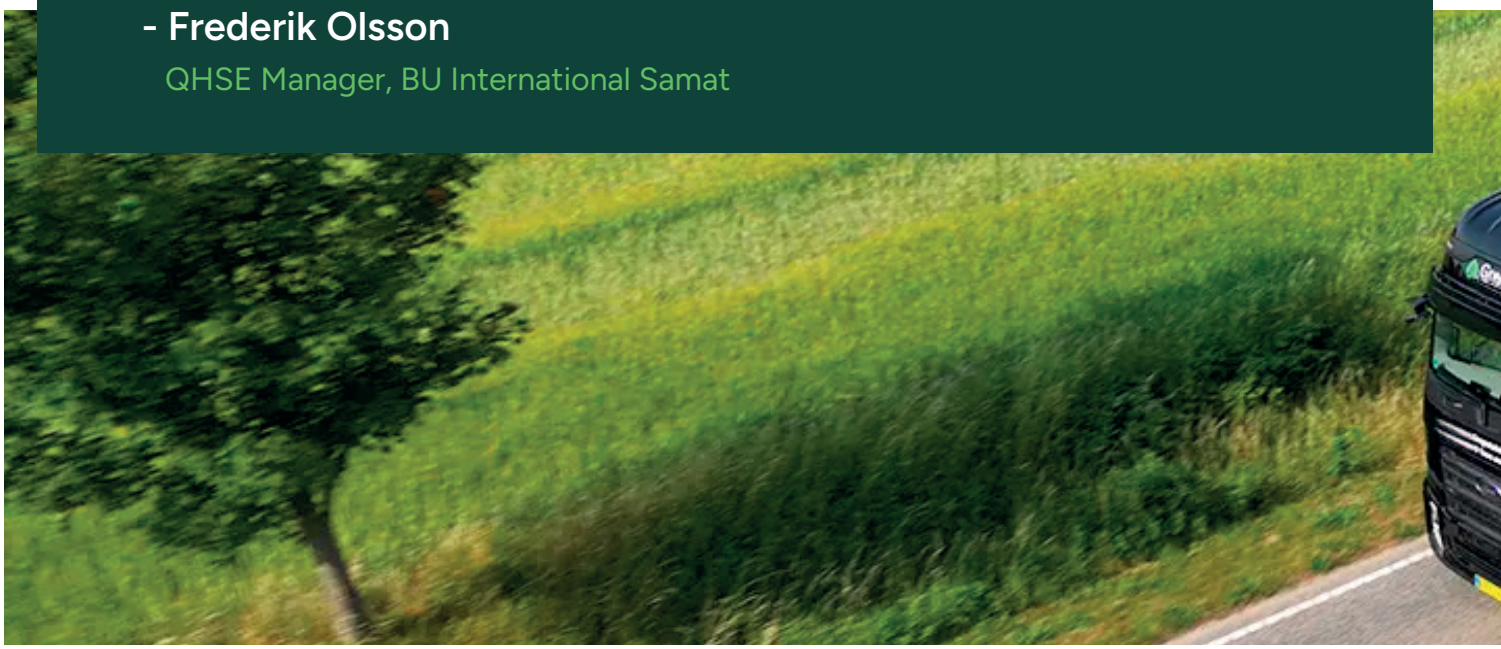
For heavy-duty transport, full electrification is a long-term goal - but it won't scale fast enough. Even in the most optimistic scenarios, only around 50% of Europe's heavy-duty fleet will be electric by 2040-2050. That leaves millions of vehicles still running on fossil fuels for decades to come.

We can't afford to wait. We need transitional technologies that reduce emissions today while we build toward Net Zero.

Thanks to having Green Energy's solar panels on our trucks, we have been able to reduce 92.9 MT CO2 emissions in 2024. The reduction for 2025 will be even greater as we have just installed their solar panels on another 10 new trucks. It's practical and innovation solutions like this that help us move towards our sustainability goals.

- Frederik Olsson

QHSE Manager, BU International Samat



Scalable with strong ROI

Many sustainability projects are costly, slow to implement, and dependent on external factors like subsidies, energy prices, or infrastructure rollout.

Green Energy Group's solar solution is different.

- **Scalable:** Start with 5, 50 or 500 vehicles impact scales with your fleet.
- **Fast ROI:** Typical payback in 10-18 months for trucks and 18-24 months for buses.
- **Low-risk:** No dependency on fuel price volatility, interest rates or future infrastructure.
- **Quick to deploy:** Installation time from 4 hours per vehicle (see p. 18)
- **Immediate impact:** Emissions savings begin the moment the vehicle hits the road.

And with a low-carbon manufacturing footprint, the panels start making a positive climate contribution from day one.

A smarter way to hit your targets

For sustainability leaders looking to drive real impact - and do so responsibly - our solar solution offers a proven, pragmatic path to measurable CO_2 reduction, fleet resilience, and cost savings.

A small investment for a greener future

Solar solutions for buses and coaches

Addressing industry challenges

- **Reducing Fuel Costs**: Cut fuel consumption by powering auxiliary systems like air conditioning and onboard electronics, lowering overall fuel expenses.
- **Lowering Emissions:** Reduces reliance on fossil fuels, helping meet EU emissions regulations like the EU Green Deal and Clean Vehicle Directive, promoting cleaner transport.
- **Enhancing Efficiency:** Extends battery life and improves fuel efficiency, reducing downtime and improving fleet performance on long routes.
- **Supporting Compliance:** Cost-effective way to meet Euro 6 and other regulations for CO_2 reduction without the need for full electrification.
- **Boosting Sustainability:** Helps bus and coach travel companies promote cleaner transport and offer passengers more sustainable travel options

Benefits for buses and coaches

- 6-12% annual fuel savings
- 6-12% reduction in CO_2 emissions
- Doubles battery life
- Reduces idling
- Extra power for electrical appliances
- Extends generator lifetime
- Increases driver and passenger comfort
- Easy and quick installation

What our customers say

Our vehicles are full and busy every single day, and there's not much I can do to generate extra revenue. Therefore, we are very much focused on cost savings at the moment, and we really believe, with the presentation that Green Energy have done, that we are in a position now to make significant savings.

- Mark Anderson

Director, Anderson Travel

We've been consistently pushing the boundaries of intercity transportation with innovative solutions that can help us reduce our impact. Building on the success we've seen with our European fleet, we're thrilled to expand our partnership with Green Energy and bring this technology to the US in yet another key step toward achieving our sustainability goals.

- Jay Miller

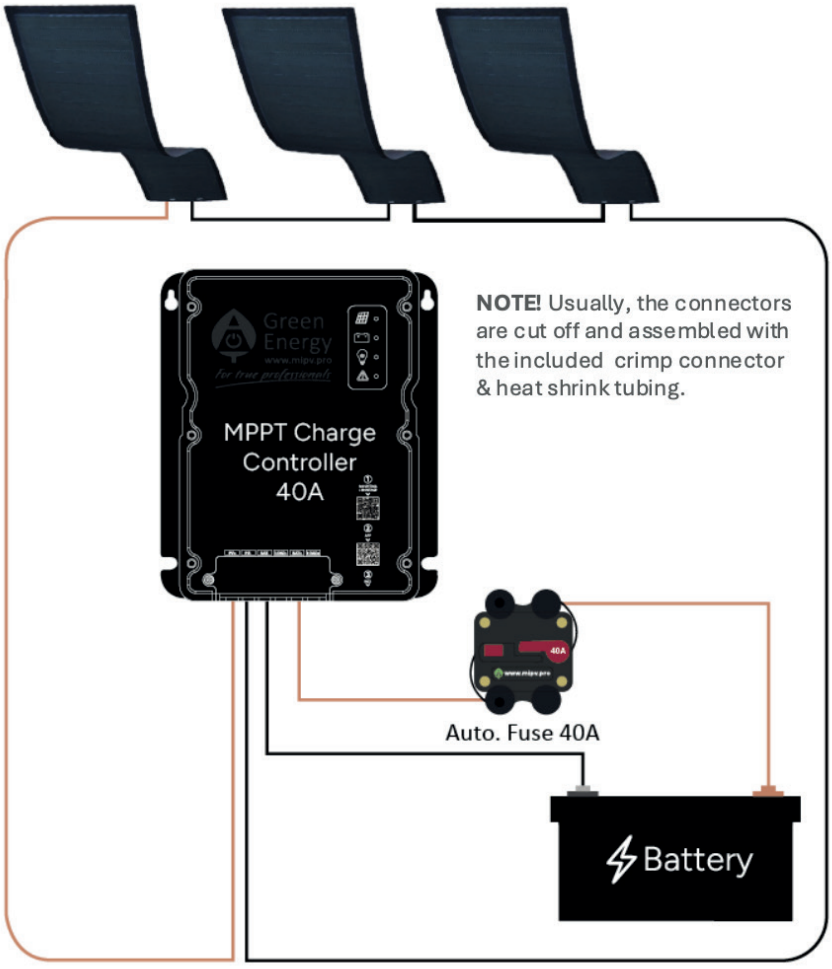
Head of Business Development, West Region, Flix North America

Ideal for trucks

Green Energy

165 Wp solar set (12V / 24V)

- **3 pcs.** 55W HV CIGS solar panels, 35x115 cm, with adhesive
- **1 pc.** Charge controller, 40A MPPT
- **1 pc.** Cable entry box supplied with adhesive
- **2 pcs**. 20 m. PV Cable
  (incl. cable tie and mounts, butt crimp connector and heat shrink tubing.)
- **3 pcs.** Battery cable
- **1 pc.** circuit breaker 40A (IP67)

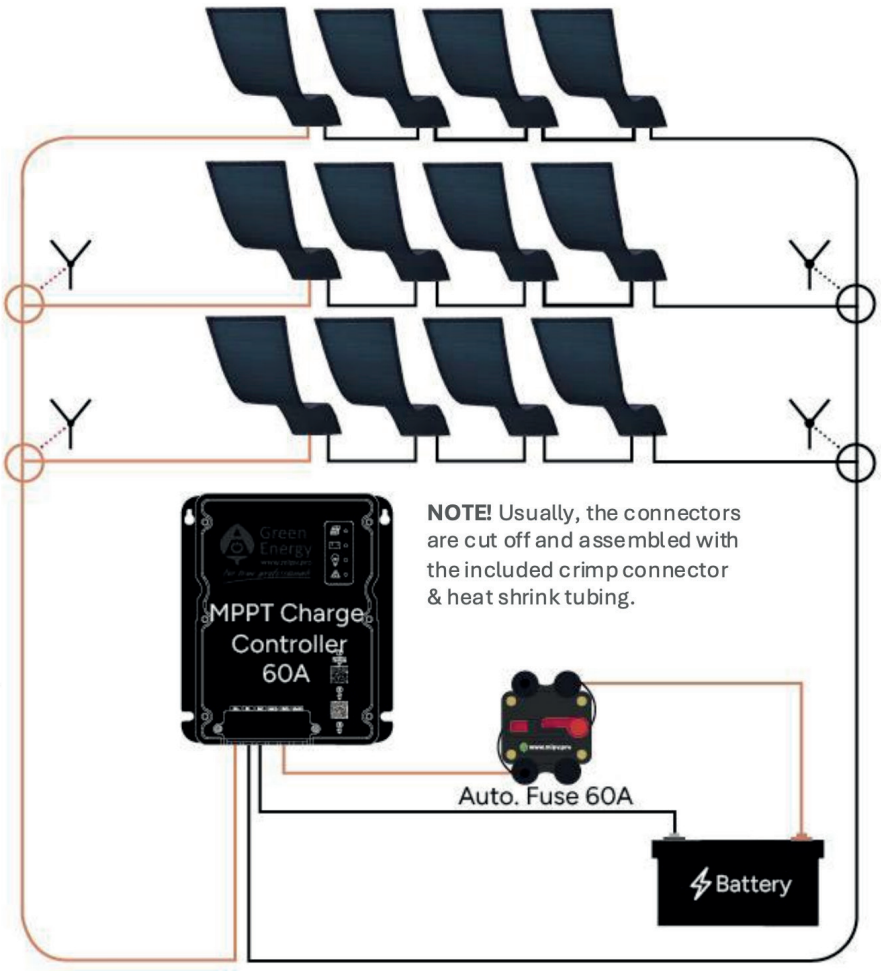


Ideal for buses

Green Energy

960 Wp solar set (24V)

- **12 pcs**. 80W CIGS solar panels with adhesive, 35x185 cm
- **1 pc.** MPPT Charge Controller, 60A
- **1 pc.** Cable entry box supplied with adhesive
- **2 pcs**. 20 m. PV Cable
  (incl. Cable tie and mounts, butt crimp connector and heat shrink tubing.)
- **3 pcs.** Battery cables
- **1 pc**. Circuit breaker 60A (IP67)
- **4 pcs.** Y-Connectors
- **14 pcs.** 0,5 m. Alu. cable tray with adhesive



Solar panel installation

Fast and easy installation

Our solar sets come with everything you need to mount the solution. Our solar panels come with pre-applied, specially designed mounting tape for a quick and secure fit. We provide step-by-step guides and videos to walk you through the installation process. Need extra support? You can book installation training with us, or for larger-scale projects, our technicians can handle the installation for you.

How long does it take to install?

Installation times vary depending on the vehicle's make, model and any existing roof equipment. To help you plan, here's a general guide to what you can expect for different vehicle types.

Vehicle type	110Wp	160Wp	165Wp	190Wp	220Wp	240Wp	380Wp	640Wp	960Wp
Van	3-4	4-5				5-6		7-8	8-10
Trailer	2-3			3-4				4-5	
Truck	4-6	-	4-6	-					
City Bus	-							8-10	9-11
Coaches									

See installation examples

https://greenenergy.pro/examples/

Solar panel sets

Our solutions

Green Energy

Solar set		Dimensions
110 Wp	2 x 55 Wp CIGS-Solarpanels	350 mm x 1150 mm
160 Wp	2 x 80 Wp CIGS-Solarpanels	350 mm x 1850mm
165 Wp	3 x 55 Wp CIGS-Solarpanels	350 mm x 1150 mm
190 Wp	2 x 95 Wp CIGS-Solarpanels	350 mm x 2150 mm
220 Wp	4 x 55 Wp CIGS-Solarpanels	350 mm x 1150 mm
240 Wp	3 x 80 Wp CIGS-Solarpanels	350 mm x 1850 mm
380 Wp	4 x 95 Wp CIGS-Solarpanels	350 mm x 2150 mm
640 Wp	8 x 80 Wp CIGS-Solarpanels	350 mm x 1850 mm
960 Wp	12 x 80 Wp CIGS-Solarpanels	350 mm x 1850 mm

Recommended vehicle solutions

Recommended solution*	110 Wp	160 Wp	165 Wp	190 Wp	220 Wp	240 Wp	380 Wp	640 Wp	960 Wp
LCVs and vans		✓		✓	✓	✓			
All trucks	✓		✓						
Vehicles with forklift or lifting platform						✓	✓	✓	
Buses and coaches							✓	✓	✓
Trailer - for reefer starter battery	Reefer battery only					Lift, forklift and other electronics			

*Depending on specific vehicle and extra equipment

Green Energy

Turning sustainability into profitability

Green Energy is the leading provider of CIGS solar solutions for transport. We believe that solar energy can be simple, impactful and cost-effective without sacrificing performance, efficiency or design. By harnessing the power of CIGS, we are helping fleets drive cleaner, smarter operations – and turning sustainability into profitability.

Our solar panels are powered by CIGS technology – a lightweight, flexible and ultra durable alternative to traditional photovoltaic systems. Unlike glass panels, our CIGS panels adapt seamlessly to curved surfaces, are easy to install, weather-resistant, and perform well even in low-light conditions, making them ideal for heavy transportation.

With more than 2,000 installations, fleet operators, freight and logistics companies, OEMs, and truck and bus companies across Europe and beyond are using our solar solutions with proven success.

Save fuel, lower emissions and cut costs.
Contact our team today.

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