



Looking to the sun to lower energy costs

Words: Chris Voet, Director of Key Accounts Commercial Europe, SolarEdge

Logistics hubs, the central facilities for distributing goods, are the core of logistics companies. Their vast, flat roofs are ideal for installing solar. As energy is one of the leading costs for operating a warehouse, solar can play a crucial role in lowering this outlay. Now, many logistics companies are planning for another huge challenge: transitioning company car fleets to fully electric vehicles.



emissions, due to more package deliveries. At the same time, logistics companies are being pressured by investors and regulators to achieve more aggressive ESG goals.

A study by Coyote Logistics, which included 250 global shippers across various industries, revealed that 81% of companies believe that to achieve success, their supply chains must play an integral role in owning sustainable initiatives across their networks.

A DHL survey of US consumers in May 2021 found that the majority, 60%, were willing to pay more for environmentally friendly products or services. Fifty-four percent stated they put more trust in a company based on public commitments to environmental sustainability. The survey results reflect the influential role that supply chain sustainability will play in the competitiveness of e-commerce businesses in the future.

But, as delivery truck fleets still depend on diesel fuel, the logistics sector is slow to transition completely to carbon neutrality. Still, many logistics companies are already moving to alternative energy sources to reduce their energy costs and dependence on the grid while ensuring uninterrupted operations. According to a new report by the UK Warehousing Association, the warehouse sector in the UK could generate around 13.8 TWh of renewable electricity per year, transforming the sector from net consumers to net producers.

In the US, developers lag behind their European counterparts in constructing sustainable warehouses and distribution centers. Nevertheless, American companies are taking steps to make their warehouses more energy efficient, by turning their rooftops into solar farms that can power the building's operations. These buildings, with typically large, open interiors devoted to storage and only small office areas, would appear to be easier to make green than other real estate. They usually require a moderate amount of energy, compared with more densely occupied structures such as office buildings or hotels.

Typically, non-refrigerated warehouses adopting conventional solar solutions consume no more than 10 to 20% of the energy they produce, for lighting and HVAC. This means that most of the produced energy is wasted, unless it is sold to the grid. However, it could otherwise be utilized for powering e-fleets, stored in batteries and transported to another warehouse. Or it could be sold to nearby businesses that cannot produce their own energy.

Logistics companies looking to reduce their operating costs are considering smarter cost-effective PV management systems that will optimize solar energy generated on the roof, while promoting a safe work environment below the roof.

For this next step, rooftop solar alone is not enough. A new smart energy model is needed to combine PV production with onsite e-fleet charging and full energy management. Logistics hubs, by adopting this new solution, could play a central role in advancing sustainable supply chains.

Distribution hubs go green for a better bottom line

Energy consumption in distribution warehouses, a complex and multilayered

challenge, has become an essential component in reducing the carbon footprint of supply chains. Surging energy prices, extreme weather, regional conflicts and other world events have raised uncertainties about future energy supply, which is significantly impacting logistics companies.

In addition, the rise of eCommerce retail sales, which nearly doubled between 2019 and 2020 and a trend that's not likely to go away, has increased transportation



PV installation safeguards furniture logistics hub

An interesting example is a leading Italian furniture manufacturer with a 36,000 square-meter logistics hub. A SolarEdge smart energy system was chosen for their rooftop installation covering an area of approximately 5,000 square meters.

Several factors played into the decision to select SolarEdge. The company wanted to address the sharp rise in Italy's electricity prices in 2021-2022 and reduce reliance on the grid. In addition, since the roof was shaded by electrical wires, maximizing energy production, and lowering energy losses due to solar panel shading were extremely important.

SolarEdge Power Optimizers connected to the PV modules ensured that each panel produced the maximum amount of power, and that underperforming panels did not affect strong ones as is true with conventional string inverter systems. And, with SolarEdge's Monitoring Platform, the system installers were able to accurately track energy production down to the panel level. Granular analytics and real time alerts enabled remote troubleshooting of underperforming panels, which reduced truck rolls and maintenance costs. This also provided the company with maximum system uptime, a high annual energy yield, and faster ROI.

Safe work practices over and under the roof

While maximizing profitability was a primary goal for the furniture manufacturer, it was critical for them to ensure the safety of their 100+ employees, as well as inflammable merchandise and expensive machinery. The SolarEdge system, with its built-in multilayer safety features, meets the most stringent safety standards and insurance requirements. The system's safety is proactively monitored in real-time to mitigate potential risks. The SafeDC™ feature automatically reduces the solar arrays to touch safe levels whenever the grid or inverter are shut down. This enables quick intervention by service crews or firefighters and protects the facility in an emergency event. This important feature,

together with embedded arc fault detection, gave the furniture manufacturer the peace of mind they needed.

Transitioning to e-fleets will drive carbon neutrality

Fleet vehicles are an essential element of daily life, transporting anything from food to clothing to just about every consumer item. Internal combustion engine (ICE) vehicles are responsible for nearly 25% of total GHG emissions.

Now, as logistics companies increasingly set ambitious decarbonization targets, they are starting to move towards electrifying their fleets. Replacing fossil fuel-powered fleet vehicles with zero-emission EVs will be a huge step towards carbon neutrality.

Interest in eTrucks across the logistics sector is growing. By 2040, 15 million EVs are expected to be part of corporate fleets in the US. According to McKinsey, in the EU more than 30 models of eTrucks will be available by 2040, and eTruck adoption will exceed 30 percent by 2030 across different classes.

Increased supply chain electrification demands PV-EV integration

To meet growing consumer demand and tighter turnaround expectations, many logistics companies are replacing their gasoline and diesel-powered forklifts with electric ones. Many are also adding energy-efficient warehouse robots to increase production and significantly reduce their energy bills. Another growing trend is warehouse drones that find and reach items on high racks or in narrow storage areas, and also transport the goods by air.

As part of the massive growth in the e-delivery truck market, e-fleet charging is expected to increase exponentially in the coming years. In fact, BP recently announced it is building Europe's first public corridor for ultra fast charging of e-trucks along a busy freight route stretching 600km across Germany.

All this electricity-powered equipment will need to be supported by more charging power. To avoid downtime, these devices will require effective, fast, reliable charging

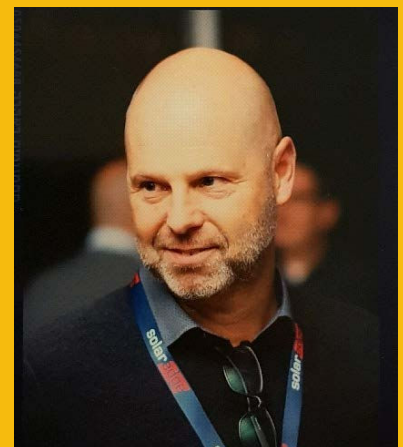
solutions. This increasing electrification will also hike up energy costs. To mitigate these added costs, logistics companies can use smart integrated PV-EV solutions.

SolarEdge's scalable PV solution design offers a future-ready investment in renewables, so logistics hubs can meet their evolving energy needs as their business grows. Through a smart energy ecosystem integrating PV with EV charging and other energy devices, enterprises will be able to utilize solar power produced on the roof for charging their future e-fleets.

Some companies might consider adding solar storage to charge e-trucks after sundown. Or, they may opt for 'bi-directional use', by discharging solar power stored in the truck's battery, to the building (V2B). Alternatively, this power could be injected and sold to the grid (V2G), or to neighboring businesses for additional revenue.

Later, to better utilize their parking structures, solar carports could be installed and connected to EV chargers, for use by employees and visitors. This could help promote more sustainable supply chains.

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Chris is a renewable energy expert who has worked for over 15 years in the solar and wind energy business.

Since 2019 he has led SolarEdge's pan-European C&I department, supporting global enterprises in reaching net-zero emissions targets, by developing optimized energy self-consumption solutions as well as onsite and virtual PPA scenarios.

His knowledge and expertise in a range of renewable energy solutions, combined with his financial background, enable Chris to work closely with multinationals and SMEs, turning their sustainable energy visions into a reality and delivering solid ROIs.