

SOLNET



Safety and security in C&I Rooftop PV

Next era of solar PV rollout

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I. Executive Summary

In the rapidly transforming landscape of the Commercial & Industrial (C&I) rooftop solar sector, the importance of safety cannot be understated. With every installation, there is an intricate web of economic, operational, and safety considerations that stakeholders must address.

This white paper seeks to shed light on the crucial link between rigorous safety measures in rooftop solar installations and the securing of investments bottom line. It outlines a number of key risk factors for owners and installers to watch out for, while offering a look into the strategies employed to impart more confidence and deliver better performance to both current and future rooftop PV installations in Europe.

II. The Importance of Safety in C&I Rooftop Solar Installations

Safety and Its Economic Imperative

At the heart of C&I rooftop solar market is a foundational truth: safety isn't just about preventing accidents; it's about protecting investments. With a more clear line drawn between safety and economic performance, the importance of safety can be understood from an economic lens. This shift in thinking will hopefully help organizations to better integrate the value of safety into its economic models, allowing them to make the shift to C&I solar with more confidence.



CASE STUDY

Employing real-time monitoring to increase safety as well as returns

KPO's Prisma Liisanlehto in Finland is a good example of a customer under Solnet's maintenance, who has opted for safe intelligent solar power. S-Group's goal is to be carbon-negative by 2025 and they are transitioning to 100% renewable solar and wind power by 2030. Continuous consumption monitoring is an absolute requirement for achieving these goals, and Solnet's remote monitoring of solar energy helps in that regard.

The growing value of real-time monitoring can be clearly seen in this project, as an added touch, the building shares these monitoring and production statistics on digital signage, conveniently breaking the figures down into easy-to-understand metrics such as EV mileage, household energy consumption, etc.

Addressing Specific Risks

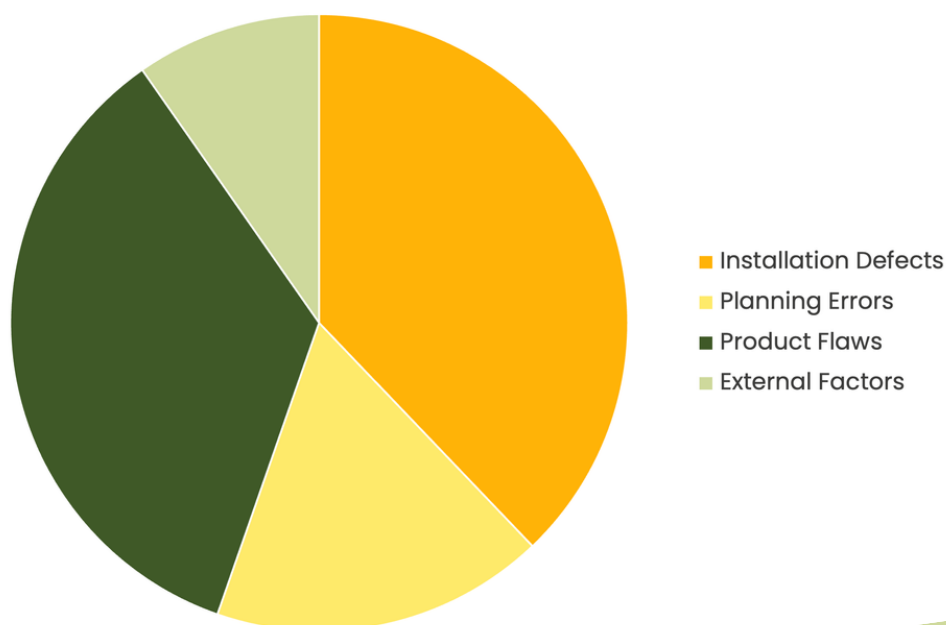
1. Electrical hazards

The dangers of electrical shocks, especially during installation, maintenance, or in the face of system faults, are genuine. One of the most serious electrical hazards is the result of a delayed shutdown in the event of a fault or emergency. This can lead to electrocution, or further damage to the system if the system cannot be attended to in short order. [A Fraunhofer and TÜV Rheinland supported guideline on fire risks in PV](#) revealed that electrical arcs represent the single largest potential danger within a PV system, with heats measuring several thousand degrees putting surrounding materials at risk of fire. International insurers such as Zurich have started recommending power optimizers or microinverters to increase fire safety.

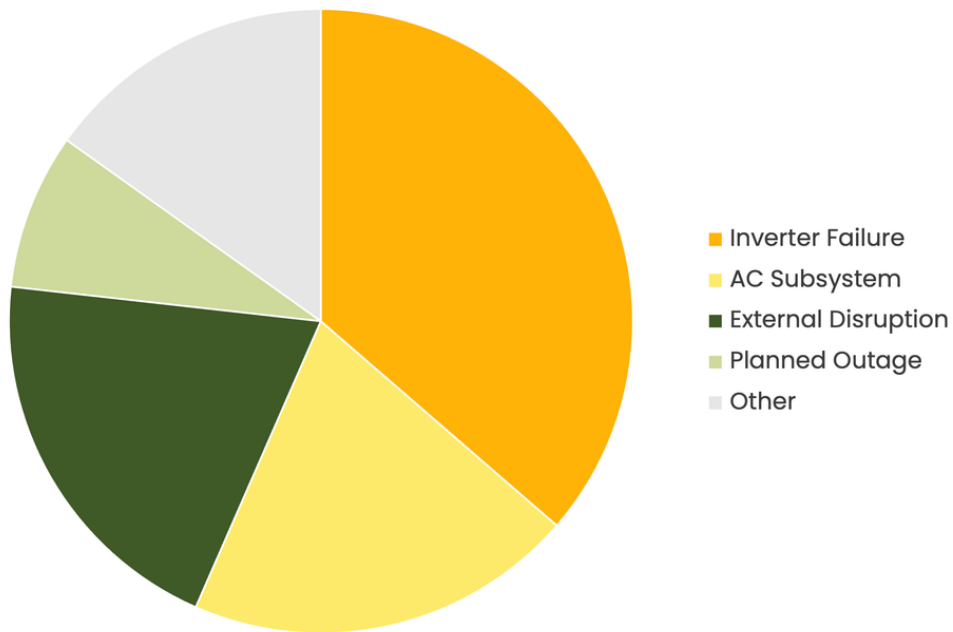
2. Fire Risk

Unfortunately, fires are not uncommon in rooftop PV arrays. [In an analysis of 210 solar PV fires in Germany](#), 39% were attributed to installation defects and 18% to planning errors, meaning the value of expertise cannot be overlooked. The risk of fire can be greatly exacerbated by installer error, as well as damage to modules, inverters or other components. Fire hazards are mitigated easily by using qualified installer and power optimizers, which are also recommended to be used by major insurers.

Causes of Fire Damage to PV Systems



Causes of Energy Loss in PV Systems



3. Roof damage & leaks

Rooftops aren't just platforms for solar installations; they're integral to the structural integrity of a building. [A report from JS Held](#) states that risk associated with roof damage is far higher on commercial buildings than homes. This is due to business operation disruption not falling under standard insurance policies. This is an often overlooked risk factor associated with a rooftop PV installation, and one which can lead to considerable costs beyond just the loss of energy output. The condition and suitability of roof should always be inspected before planning PV installation. Using qualified installers mitigates risk of roof damage during installation.

4. Inverter malfunctions

Inverters are critical, and their malfunctioning can manifest multiple risks. [According to the NREL](#), 36% of all energy losses originate from inverter related issues. For a component that represents a relatively small percentage of the overall system cost, its outages can have a massive negative effect on system performance. It is vital to pay attention to both the quality of inverter selected, as well as the expertise of those installing and maintaining these key components. Risk of inverter malfunction is easily mitigated by choosing high quality inverters from leading manufacturers.

Insurance Benefits of Safer Solar Installations

Incorporating advanced safety measures doesn't just prevent potential hazards; it also translates to substantial financial benefits in the form of reduced insurance premiums. It's important to take a proactive approach to safeguard the financial health of any plant – understanding the long-term insurance implications of safety decisions is a key step to doing so. The insurer Zurich has adapted their new guidelines to recommend use of power optimizers or micro-inverters on all new installations for added safety measures.

1

Risk Mitigation

Insurance companies assess risk based on the likelihood of incidents such as fires, electrocution, or system failure. Advanced safety systems substantially lower these risks, making the installation more insurable at a lower rate.

2

Asset Longevity

Components of smart solar solutions typically have longer guarantee periods. This positively impacts the depreciation schedule, a factor considered by insurance companies for premium calculation.

3

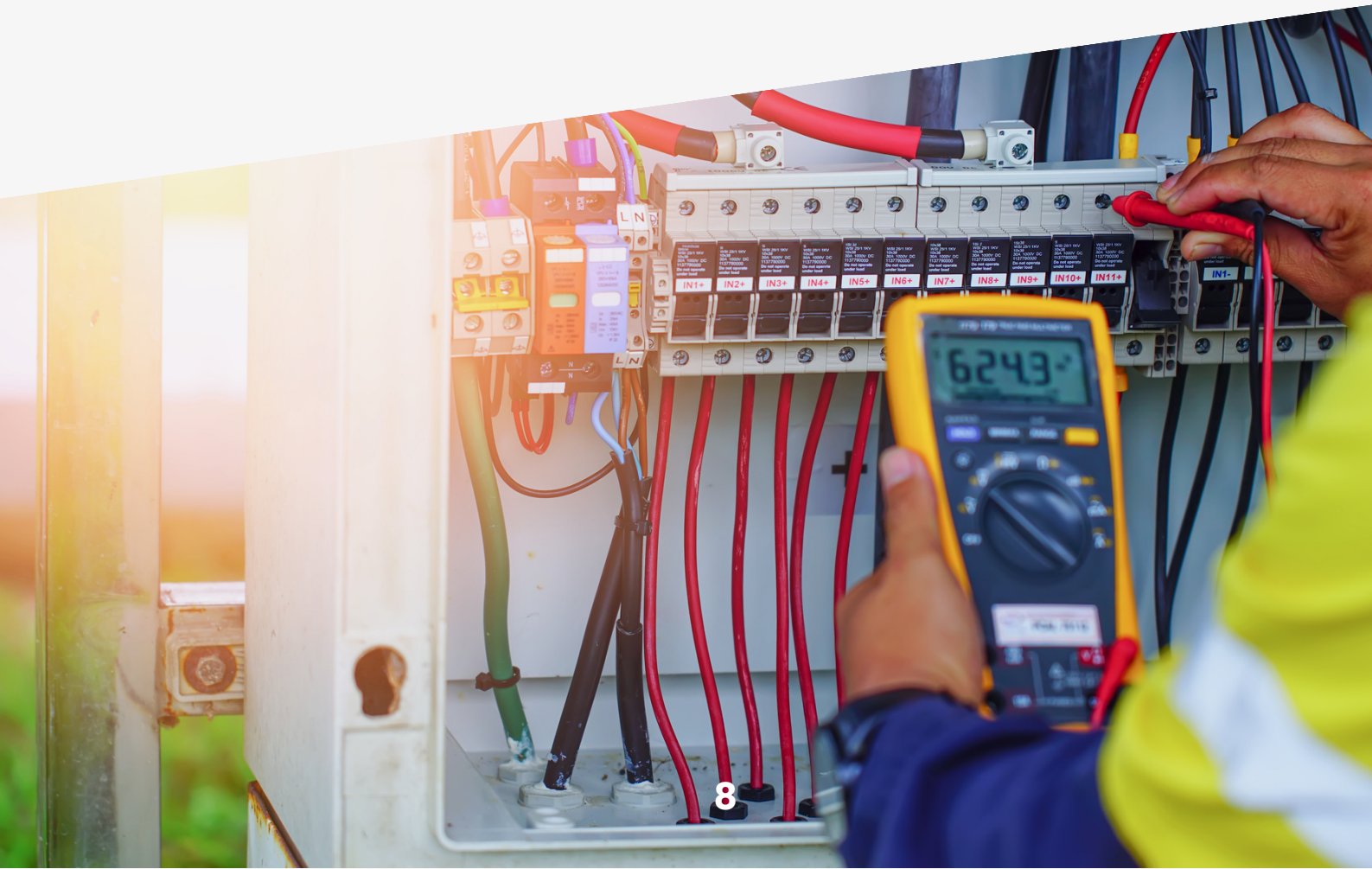
Investor Attraction

Lower insurance premiums make solar projects more attractive to investors, as they directly correlate with reduced operational costs and higher net profits.

III. Overview of Enhanced Safety Measures Offered by Solnet Group

Innovation Beyond Compliance

Solnet Group's proactive approach to safety transcends standard regulations. Recognizing the gaps in current safety measures, Solnet Group presents advanced safety solutions that promise not just adherence but operational excellence.



CASE STUDY

“Roof of the Year” looking to challenge the status quo

A big part of setting better industry standards comes down to establishing best practices. This was part of the thinking behind an innovative new rooftop installation in the Netherlands. The roof at Apartment complex Mannoury in Amsterdam takes a look at the effects a green roof would have on the energy output of a PV installation and what effect the PV system has on the green roof providing partial shading.

The innovative rooftop installation was awarded the rooftop of the year in the Netherlands and brings with it a number of potential safety boosts.



1. Continuous Monitoring Systems

By integrating real-time monitoring tools, Solnet Group ensures immediate alerts and responses to potential system threats. This gives system owners a much more holistic understanding of the daily operation, as well as expected outputs of their PV system. When applied to an entire fleet of PV systems, this can greatly decrease downtime as well as the number of required onsite visits.

2. Adaptive Safety Protocols

Solnet Group’s protocols evolve with emerging risks and technological advancements, ensuring up-to-date protection. This is important as it addresses two emerging issues: the increase in extreme weather events spurred on by climate change, and the rapid advance of technology, both hardware related, as well as AI-driven operational advancements.

3. Rapid Shut Down

Rapid shut down in rooftop C&I refers to systems having the ability to disconnect PV modules from the string and quickly decrease the DC voltage of a system in the event of a fault. This is particularly valuable, as it not only reduces the likelihood of further damage occurring, but it also allows installers, maintenance workers and firefighters to work safely around the utility.

5. Shift to Automation

In order to optimize operations at Solnet Group, we aim to be a leader in automation, delivering our customers digital first systems built to perform over the long term.

4. Advanced Data Management

As the availability of real-time data continues to increase, the importance of properly managing, securing, and ultimately leveraging that data will increase as well. Solnet Group is focused on delivering more value from the continually growing data sets that can be pulled from the day-to-day operation of solar installations.

IV. Conclusion: Safety as a Prerequisite for Secure Investment

Prioritizing Safety in C&I Rooftop Solar Installations

The European solar sector stands at the cusp of a massive transition. As businesses increasingly recognize the value of green energy solutions, it's paramount to ensure that the rush to solar doesn't compromise on safety. Doing so not only protects the assets and personnel of businesses but also ensures the longevity and efficiency of solar installations.

Solnet Group has focused on safety and Smart Solar utilities since 2014 as this was identified as one of the future megatrends due to lack of safety automation in traditional systems.



Solnet Group's Contribution to Secure Investment

1

Mitigating Downtime

Through use of power optimizers, real-time monitoring and immediate alerts, Solnet Group's solutions drastically reduce the effect of faults and potential downtime of solar installations, ensuring consistent energy generation and optimal ROI. This will drive considerable value over the lifetime of systems and allow for more confidence when creating long term financial models to drive investment decisions.

2

Boosting Investor Confidence

By demonstrating a proactive approach to safety and adhering to best-in-class standards, Solnet Group's safety solutions give investors the assurance they need to commit to long-term projects. Improving the overall perception of solar on the C&I rooftop space in Europe is the ultimate goal.

3

Future-proofing Installations

The adaptive nature of Solnet Group's safety protocols ensures that as the solar industry evolves, the safety standards protecting installations will evolve in tandem. Staying at the leading edge of technological advancements in the solar PV space will allow for agile operation that benefits customers and protects the value of their asset. At the same time, closely monitoring and actively contributing to the development of regulations in Europe will be a key focus of Solnet Group.

Final Thoughts

As the European C&I rooftop solar sector continues its upward trajectory, it's essential for stakeholders to understand that the real value of an investment isn't just in its immediate returns, but in its longevity and sustainability. Prioritizing safety, as Solnet Group does, ensures that installations remain productive and profitable for years to come. In this sense, safety doesn't just protect; it propels the future of solar in Europe.

For businesses contemplating the move to solar or investors eyeing the lucrative market, the message is clear: The era of rooftop solar is here, and its success hinges on robust safety solutions like those offered by Solnet Group. Embrace safety, and the sky's the limit.

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Solnet Group

Verrijn Stuartweg 1J
1112 AW Diemen
The Netherlands

info@solnet.group

Tel. +31 20 210 1251

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