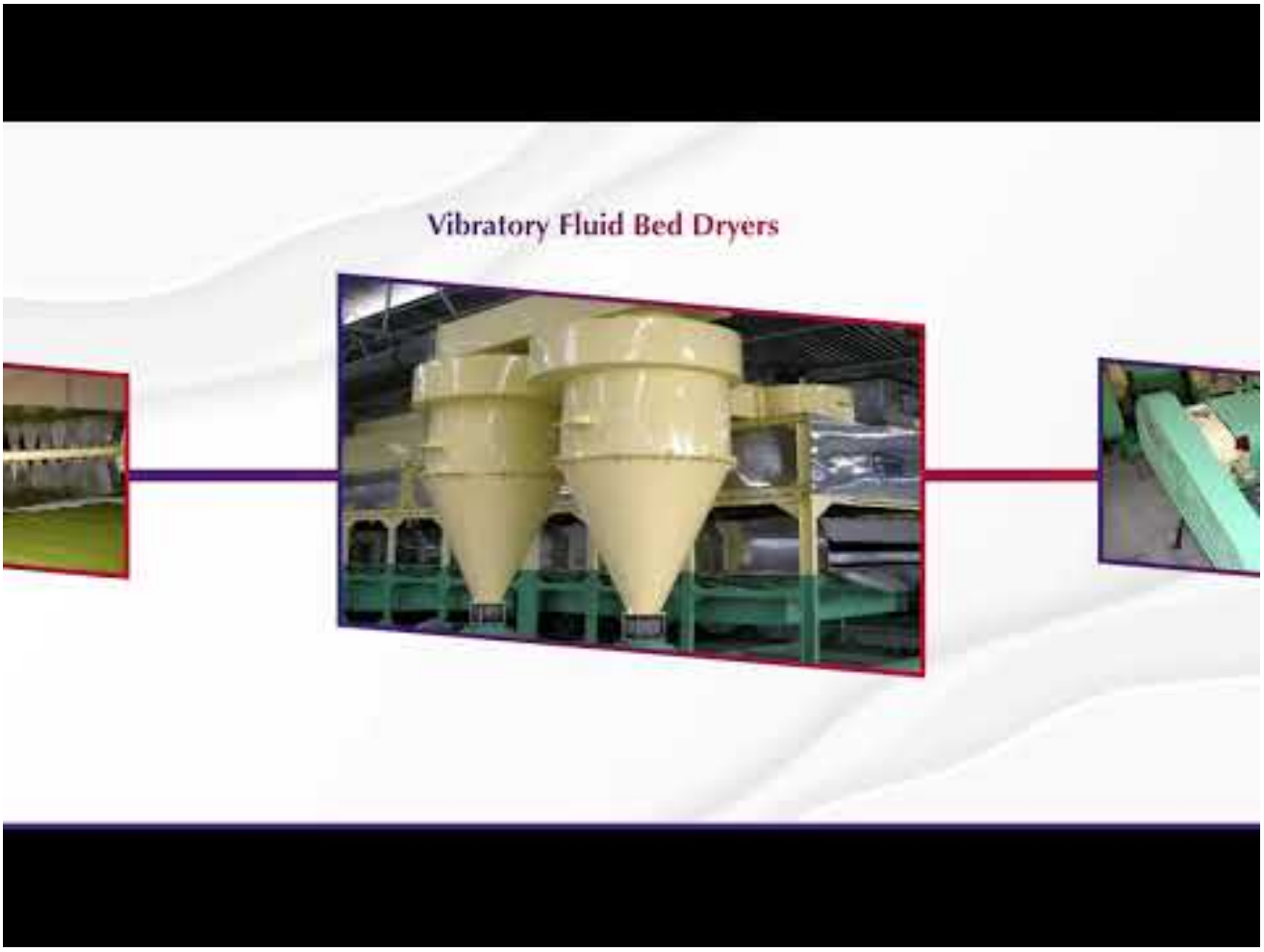
What to Check When Planning a Commercial Rooftop Solar Installation

Getting the Basics Right Before You Start

Planning a commercial rooftop solar installation involves more than choosing panels and an inverter. The structure of the building, the local climate, and the way the system connects to the grid all affect how well the installation performs over its lifetime. For businesses in Africa, where industrial energy demand can be high and grid supply variable, a well-thought-out plan makes the difference between a system that delivers reliable power and one that underperforms. Below are the key points to check before work begins.

Structural Integrity of the Roof

The roof must support the additional weight of solar panels, mounting rails, and ballast or fastening hardware. A structural engineer should assess the load-bearing capacity, taking into account the age of the building, the type of roof deck, and any previous modifications. Metal roofs, concrete decks, and membrane roofs each have different requirements. For instance, a standing-seam metal roof may allow clamp attachments without penetrations, whereas a flat concrete roof might need a ballasted system. If the roof is old or has signs of sagging, leaks, or corrosion, repairs or reinforcement may be needed before installation. Skipping this step can lead to safety hazards and void warranties.



Roof Orientation, Tilt, and Shading

Solar panels produce the most energy when they face the sun directly. In the southern hemisphere, north-facing roofs generally receive more irradiance, but local conditions vary. A professional site survey should measure the available irradiance using tools such as a solar pathfinder or a shading analysis device. Trees, nearby buildings, chimneys, and rooftop equipment can cast shadows that reduce output significantly. Even partial shading on one panel can drag down the performance of an entire string if the system uses string inverters. Modern solutions such as microinverters or power optimisers can mitigate shading, but avoiding shade altogether through careful panel placement is more cost-effective.

Electrical Infrastructure and Grid Connection

A commercial solar system must integrate with the building's existing electrical service. The main switchboard, transformer capacity, and the distance from the roof to the inverter location all matter. In many regions, the utility company requires an application for grid connection before installation begins. This process includes a review of the system size, the type of inverter, and the protection devices. For businesses in Africa, where grid codes can differ

between countries, it is wise to confirm the requirements early. A qualified electrical engineer can verify that the system will not overload the service entrance or cause voltage fluctuations. Battery storage may be an option if the site needs backup power or wants to avoid peak demand charges, but that adds complexity to the design.



Roof Condition and Waterproofing

Installing solar on a roof that leaks or has a short remaining lifespan is a recipe for trouble. The mounting system must not compromise the roof membrane. For flat roofs with a single-ply membrane, ballasted systems that do not penetrate the membrane are common. For sloped roofs, flashing kits around each penetration are essential to maintain waterproofing. A good practice is to have the roof inspected and any necessary repairs completed before the solar installation. Some property owners take the opportunity to re-coat or replace the roof covering, knowing the panels will protect it from UV for decades. The warranty for the roof and the solar system should align so that any future roof work does not require removing the panels.

Solar Resource and Climate Considerations

Africa receives abundant sunlight, but local weather patterns vary. Coastal areas may have high humidity and salt spray, which can corrode aluminium frames and electrical connections. Inland regions might experience dust storms or frequent hailstorms. The choice of panel type,

mounting hardware, and inverter enclosure should match the local conditions. For example, bifacial panels can capture reflected light from light-coloured roofs, but they may not suit dusty environments where the rear side quickly becomes soiled. Similarly, microinverters placed under the panels in a hot climate need adequate ventilation to avoid derating. A site-specific solar resource assessment, using historical weather data and on-site measurements, gives a realistic estimate of annual generation.

System Sizing and Energy Demand Profile

The size of the solar array should match the building's electricity consumption pattern. A commercial facility that operates during daylight hours, such as a factory or an office, can benefit from a system sized to cover the daytime load. A hotel or a cold storage facility that runs 24 hours a day might need a larger system with battery storage to offset night-time consumption. Reviewing at least twelve months of utility bills helps identify the peak demand and the base load. Oversizing the system can lead to excess energy exported to the grid at a low feed-in tariff, while undersizing leaves the business paying high grid rates for the remaining consumption. A good designer will model the system's output month by month and compare it with the load profile.

Access and Safety During Installation

Installing commercial solar requires moving heavy equipment onto a roof. The site needs safe access for delivery vehicles, cranes, or forklifts. Once on the roof, workers must have fall protection, clear walkways, and a plan for materials handling. The installation company should have a health and safety plan that covers working at height, manual handling, and electrical safety. For the building owner, checking that the contractor holds the relevant certifications and insurance is prudent. After installation, the roof should remain accessible for cleaning, inspection, and maintenance without creating trip hazards. Walkways and guardrails around the array can be included in the design.



Water Treatment

Treated Water



Biomass Boiler

Energy / Heat

Energy



Industrial Accessories



Chillers

Efficient Steam systems

Manufacturing Chemicals



Cooled Raw Materials or finished goods

Processed Tea

Factory



Industrial Chemicals



Tea Machinery

Raw Tea

Used wastewater

Treated Water

Energy

Energy



Wastewater & Effluent Treatment



C&I Solar PV

Warranty, Maintenance, and Monitoring

Solar panels typically carry a performance warranty of 25 years or more, but inverters and batteries have shorter lives. The warranty terms should be clear: what is covered, what is excluded, and who handles claims. A maintenance plan is essential for commercial systems. Dust and bird droppings accumulate on panels, reducing output. Inverters need periodic inspection of cooling fans and filters. Monitoring software should alert the owner to underperformance, so a drop in production is detected quickly. Some providers offer a remote monitoring service that includes analysis of the data. For businesses that cannot afford downtime, a maintenance contract with a local service provider is a worthwhile investment.

Regulatory Approvals and Incentives

Depending on the country and municipality, commercial solar may require building permits, electrical permits, or environmental approvals. Some African countries have introduced net metering or feed-in tariffs that affect the economics. The project timeline should include the permit application period, which can take weeks or months. In some cases, the utility company may require a dedicated transformer or a protection relay. Working with an experienced engineering, procurement, and construction (EPC) contractor can simplify this process. Spenomatic Group provides turnkey industrial solar energy solutions across Africa, which means they handle the entire process from design to commissioning, including navigating local regulations. That kind of end-to-end service reduces the risk of delays and ensures the system meets all applicable standards.

Choosing the Right EPC Partner

An EPC contractor takes responsibility for the design, procurement, and construction of the solar system. The quality of the EPC partner directly affects the system's performance and longevity. Look for a contractor with a track record in commercial rooftop installations, references from similar projects, and a team that includes licensed electricians and structural engineers. The contract should specify the equipment brands, the warranty terms, the timeline, and the payment milestones. A good EPC partner will also help with the grid connection application and provide training for the facility's maintenance staff. The relationship does not end at commissioning; ongoing support matters. **Spenomatic Group** has experience in industrial solar energy, boiler, steam, water treatment, and related engineering solutions across Africa. That breadth of expertise can be valuable when the solar system needs to integrate with other plant equipment, such as steam systems or water treatment processes.



Planning a commercial rooftop solar installation is a multi-step process that touches on building structure, electrical engineering, climate science, and regulatory compliance. By working through each of the points above with a qualified team, a business can avoid costly mistakes and build a system that delivers reliable energy for decades. The key is to start early, ask the right questions, and choose partners who understand both the technology and the local environment.

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