
Solar Powered Food & Beverage Manufacturing

Photovoltaics (PV) on food and beverage manufacturing facilities offer a number of advantages ranging from high return-on-investment, the reduction of the carbon footprint to the creation of an environment-friendly image and a secure position in a world of rising demand for “green” products and services.

Manufacturing sites often feature low-sloped, low-load bearing roofs - a large area of unused space, which could contribute to emission savings if made available for PV systems. However, conventional PV systems - framed in glass and tilted - are often heavy with additional wind loads and are thus often unsuitable for clean energy production on manufacturing facilities.



One of four sites of the
Coca-Cola Hellenic Bottling Company,
Monticchio, Italy
472 kWp of total 3.3 MWp

As a turnkey EPC-contractor, Solar Integrated has developed an approach based on lightweight *UNI-SOLAR*® PV-technology meeting all clean energy production requirements for sustainable building design - regardless of load bearing capacity, roof inclination or contour.

Blue chip brands like Coca-Cola, the French chocolatier CEMOI, the German Ustersbach Brewery, Italy's Compania del Pane and the Ernst Sutter AG – Swiss fresh meat market leader already profit from building integrated solar installations on their premises.

Following other installations in Europe and the U.S. the Coca-Cola Hellenic Bottling company followed Contour Global's suggestion and decided again on Solar Integrated's systems based on *UNI-SOLAR*'s PV-technology. The PV-systems in Marcianise (905 kWp), Nogara (1249 kWp), Oricola (622 kWp) and in Monticchio (472 kWp) were grid connected by the end of

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2010 and combined will generate an estimated amount of 3 330 megawatt hours per year saving about 1 770 tons in CO₂ emissions.

The decision for the 550 kWp installation at the chocolate manufacturer CEMOI in Perpignan was part of the management's conviction for sustainability. On 11 000 m² of roof area the system generates 650 megawatt hours per year and saves 1 740 tons in CO₂ emissions. With a payback period of just over six years it provides a profitable asset.



CEMOI Chocolatier,
Perpignan, France,
550 kWp

The 65 kWp PV-system of the Ustersbacher Brewery in Germany is already running since five years and generates approximately 60 MWh of clean electricity annually.



Ustersbacher Brewery, Ustersbach, Germany, 65 kWp

On the new fresh meat center of the Ernst Sutter AG in Bazenheid, Switzerland, a 150kWp PV-system was installed as part of the objective to meet the green building standard SwissMinergie[®]. The solar panels produce more than 140MWh electricity per year, avoiding a minimum of 70 tons of CO₂ emissions, which would otherwise be produced by fossil fuels. The installation was realized by utilizing Solar Integrated's PowerMembrane - a combination of a high-end roofing membrane with integrated UNI-SOLAR[®] PV-laminates.

Stefano Martinetti, Head Projects & Investments at Ernst Sutter AG, explains: "For us, the main advantage of the SolarRoof compared to conventionally mounted systems is the low weight of only five kilogram per square meter and having no extra wind loads as it is welded around all edges directly to the roof membrane underneath. Furthermore, it perfectly adapts to the existing roof structure and does not have any negative impact on the overall aesthetical design of the building."

Benefits of clean energy generation

Through the installation of a PV system, owners or managers of manufacturing facilities achieve more than a reduction in the carbon footprint of their company, products and buildings.

PV installations openly display environmental corporate responsibility and sustainable thinking and can therefore be beneficial for a facility's image. In turn, this can lead to increased customer loyalty, employee identification and other competitive advantages.

PV installations increase the building's value and attractiveness for investors, while securing stable, long-term revenues for the manufacturer - be it through government funding, the reduction of power costs or roof rent of otherwise unused space.

Many countries worldwide actively promote photovoltaic installations through government incentive programs like feed-in-tariffs (FIT). FITs make the generation of solar energy economically profitable by paying more per kWh produced and fed into the public electricity grid than for kWh bought directly from the utility. For an installed system, the FIT is fixed for a longer period of time and therefore enables long-term planning and financial investment security. Other promotional schemes include tax incentives as used in the United States, government grants and the encouragement of self-consumption of solar energy from production - a particularly interesting alternative in Germany and Italy. These countries offer so-called net-metering, which has two benefits. On the one hand the electricity bill is reduced by the amount of consumed, while on the other hand additional incentive rates are provided for the kWh produced and consumed onsite.



Fresh meat center, Ernst Sutter AG,
Bazenheid, Switzerland, 150 kWp

One goal, various approaches

Owners can either operate a solar roof themselves and benefit from the generated energy directly, or rent the roof to a PV investor who then owns and operates the PV system installed, offering the owner stable rental incomes and minimized risks.

Furthermore, major banks offer financing for large projects delivered by Solar Integrated worldwide. In any way, the site is turned into an energy generating asset, beneficial to both business and the environment.

Low weight, highly ecological

Lightweight solar energy systems can be integrated into large roofs with limited additional load-bearing capacities, increasing the area and number of buildings available to clean energy generation. The minimal weight is made possible by the combination of flexible PV modules with traditional roofing materials or light substructures for tilted installations. Particularly the lack of heavy glass and metal add to the product's lightness.

Idle roof space turned into profitable energy generating assets

UNI-SOLAR[®] multi-junction technology ensures high energy yields. Multi-junction means the thin-film layer consists of several specific semiconductor layers. Every layer collects the light in a specific range of the light spectrum. This maximizes the light absorption even when it is overcast and allows the PV cells to collect light over a longer time period throughout the day. Furthermore, PV-cells are less sensitive to orientation and tilt angle, allowing an almost horizontal installation to the roof. As amorphous silicon cells have a very low temperature coefficient, they are less affected by rising module temperatures and do not need ventilation or cooling, making them ideally suited for building integration.

High durability for less maintenance

Durable materials guarantee long-term availability, low maintenance and minimized related down-times of the PV system, even when exposed to severe conditions. With a performance guarantee of 25 years, all material related to the roof construction should have a similar minimum lifetime. However, PV systems are capable of producing energy beyond this time.

Easy installation & building integration

Easy to install means no specific tools are required for installation. The focus lies on non-penetrating solutions, which leave the water tightening function of the roof intact and maintain the original roofing warranty.

By integrating the solar system into the building, it becomes part of the roof and melds into the appearance of the building, underlining its architectural design.

About Solar Integrated

Solar Integrated is a renowned pioneer and leader in commercial, industrial and institutional solar applications. As a global solar solutions provider, Solar Integrated combines various technologies to develop the best PV system for every customer's specific needs for utmost reliability, productivity, financial performance and environmental benefits. Founded in 2002 as a spin-off of Southern California Roofing, Solar Integrated is the roofing expert and draws on more than 80 years of experience in construction and project management. Combined with our incomparable team of experienced engineers, designers and service technicians, Solar Integrated provides proven quality and dependable long-term performance. Today, Solar Integrated is part of Energy Conversion Devices Inc. (ECD – NASDAQ:ENER) to which also United Solar belongs- the world leader in the manufacture of lightweight, flexible solar modules and the second largest thin-film supplier in the world. Being part of ECD secures access to financial and technological resources, which allow us to further develop Solar Integrated's business activities and strengthens our market position as a turnkey EPC contractor of MW-size photovoltaic installations. Our blue chip customer base includes Aldi, Carrefour, Coca-Cola Enterprises, Colruyt, FM Logistics, Honeywell, IKEA, La Poste, Lidl, Metro, Picard, ProLogis, San Diego Unified School District, Tesco, Toyota, Unibail-Rodamco, UPC Solar, U.S. Air Force, Westfield and many more.

About United Solar

United Solar is part of Energy Conversion Devices Inc. (ECD – NASDAQ:ENER) and is the leader in building integrated and commercial rooftop photovoltaics, one of the fastest growing segments of the solar power industry. The company manufactures and sells thin-film solar laminates that convert sunlight to energy using proprietary technology. Our *UNI-SOLAR*® brand products are unique because of their flexibility, light weight, ease of installation, durability, and real-world efficiency. Solar roofing systems using *UNI-SOLAR*® brand products are generating clean energy in more than 19 countries around the globe. ECD also pioneers other alternative technologies, including a new type of nonvolatile digital memory technology that is significantly faster, less expensive, and ideal for use in a variety of applications including cell phones, digital cameras and personal computers. For more information, please visit www.uni-solar.com.

Media Contact

Andrea Bodenhausen
Tel. +49-6131-33363-2024
Fax: +49-6131-33363-99
Email: abodenhausen@solarintegrated.eu
Solar Integrated Technologies GmbH