NightSolar® Solar Cooling System

NightSolar®; The first commercially available solar cooling system that reduces the cooling load on a building by up to 50%.

The patented NightSolar® systems remove energy from the air to cool buildings without the use of compressors or refrigeration systems. This solar cooling technology is partly based on the scientific principle of nocturnal radiation, which can cool a roof by as much as 10°C (18°F) below ambient temperature on a clear night. As warm night air touches the cooler surface of the NightSolar® system, it transfers its heat to the surface. The chilled air is then drawn in through perforations in the collector and enters the HVAC unit via an economizer cycle. This cooling has the ability to reduce or even displace conventional air conditioning from sunset to sunrise. During the daytime, the NightSolar® system keeps the roof in the dark and thereby reduces daytime heat gains normally received through the roof.

Recent field monitored NightSolar® installations are reporting as much as a 50% overall cooling savings on buildings using existing fans and economizers.

Features & Advantages

A NightSolar® system is an extremely versatile energy system that can be configured to deliver a myriad of other benefits as well, including:

- Solar space heating in the winter
- Above sheathing ventilation (ASV) for both steep and low slope roofs
- Virtually eliminates solar gain through roof
- Significantly reduces the expansion and contraction issues that occur with a majority of metal roofs
- Optional integration with photovoltaics (PV)
- Optional solar water heating
- Rainwater catchment compatible
- Extends roof life

SolarWall®

by **Conserval**

www.solarwall.com

NightSolar® Solar Cooling System

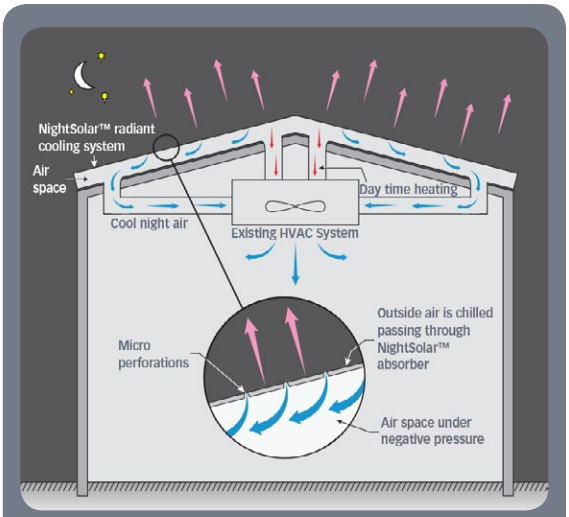
Benefits of NightSolar® Ventilated Roof

NightSolar® systems utilize a ventilated roof design (also known as above-sheathing ventilation) that is highly desirable for all buildings with metal roofs. This reduces daytime cooling by shading & ventilating the roof, meaning that unwanted solar heat is naturally vented while drying any condensation that may have occurred on the roof.

Oak Ridge National Laboratory states "*we serendipitously discovered* ***the second major advance in roofs for our century:*** *We found that elevating the roof cover from the roof deck to induce above-sheathing ventilation is as important as increasing solar reflectance and may be the stronger player in reducing heat gain into the attic. The two combined can reduce heat gain through the roof by 50% compared to nailed asphalt shingle roofs.*"

Solar Energy; 24/7

NighSolar® systems are unmatched in the realm of solar energy systems in that they can be configured to offer solar energy generation and conventional energy displacement up to 24 hours a day, all year long. This has been made possible because the solar collector surface can be used for both cooling (in the warmer months) and also heating (in colder months). The end result to the building owner is substantial energy savings that occurs from reducing on-site cooling and heating costs by up to 50%. The system also qualifies for the 30% federal solar tax credit.



The NightSolar system was developed by the inventors of the SolarWall® technology, and it utilizes the same vent-slip-perforated collector that is used in the SolarWall® air heating system. This allows for both summer space cooling and winter solar space heating. Storage of heat and cold energy is also possible with separate thermal storage tanks via heat exchangers

On a clear night, a NighSolar® system can cool a roof by as much as 18°F (10°C) below ambient temperature.

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