

Standing Seam Metal Roofs and Solar Technology: Perfect Together

By Kevin Corcoran, Vice President, Englert, Inc.

Most architects recognize the value of solar technologies and LEED offers several credits for solar projects that save energy. A standing seam metal roof provides both the critical platform and the shelter for two of its energy sources--renewable energy from the sun that can provide heat and power through solar electric and solar thermal technology using the sun to heat domestic hot water.

Architects leery of solar systems because of their unattractive design should realize that picture is changing. New photo voltaic and solar thermal technologies are emerging that are much simpler to install and have been designed to work specifically with standing seam metal roofing.

The use of photovoltaic material meets the requirements of LEED Energy and Atmosphere Credit 2, (Renewable Energy), which incrementally awards up to three points for generating 5 percent, 10 percent, or 20 percent of the building's energy use with renewable power.

The Optimize Energy Efficiency credit awards up to 10 points based on percentages of energy cost reductions. For example, a 60% reduction will earn the maximum 10 points and is likely attainable with use of a metal roofing system with an integrated photovoltaic system. The project team gains a credit for successfully demonstrating energy cost savings of 10.5 percent and one point for each additional 3.5 percent of savings. Meanwhile, the energy efficiency gains created by the solar thermal technology are captured by LEED Energy Credit 1.

Breakthroughs in PV design and thermal technology and the ability to inexpensively coat the metal roofing material in custom colors have produced materials that are attractive, virtually invisible to the naked eye and work very effectively together.

Witness the newest photovoltaic material, an extremely lightweight and unbreakable self-adhesive laminate material less than a quarter-inch thick that is attached to the standing seam panels with a hand roller. They are made exceptionally durable by encapsulation in UV stabilized polymers. The material is bonded to a standing seam roofing panels which can be coated in the same color as the laminates. They are then installed on any south facing roof with good solar access. The laminates can be attached before or after the standing seam material has been installed and in many cases, provides all the electricity that a building needs.

The newest solar thermal collection system is comprised of a one-inch thick conductor that employs glycol protected fluids to collect and transfer solar energy to building systems using closed loop heat exchange technology. The system is concealed under the standing seam metal roof laminated with the amorphous silicon PV system. Upon completion, the solar thermal system becomes an integral part of a hardened building envelope that provides storm resistance, energy security and lower operating costs by replacing fossil fuels and electricity with solar energy.

Because they are fully integrated, they reduce cooling loads on buildings and can directly contribute to process and space cooling by dissipating excess heat through radiational cooling. And building owners can realize immediate economic benefits from the reliability and operational simplicity of these modern integrated mechanical systems.