



Thermoplastic Single Ply and Multi-Ply Roofing Systems

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SOLAR INTEGRATED ROOFING **(S.I.R)**

WHAT IS S.I.R.?

Recent advancements in the design and production of photovoltaic modules along with rising energy costs have increased the interest in utilizing the roof top area to gather solar power for electrical generation. Over the last decade or so the cost of Solar Energy Systems has been reduced almost 600 percent. Government bodies have recognized the value of producing Solar Energy Systems and have instituted cost incentive programs to stimulate the solar energy market and industry. As the solar energy market continues to increase creating additional manufacturing volume, the cost associated with the systems will decrease proportionately.

Solar Integrated Roofing (S.I.R.) accessorizes a photovoltaic energy producing panel or module with the energy saving cool roof Flex Thermoplastic Single Ply Roof Membrane. The Building Owner not only realizes savings from installing the cost efficient heat reflecting Flex Cool Roof Membrane but creates electricity by installing a S.I.R. reducing the facilities utility cost. Large flat roof areas such as those typically found on low slope roof installations have been determined to be the best locations for the installation of Solar Energy Systems. Due to its unique chemical composition and proven longevity PVC (polyvinyl chloride) based roofing membranes have been the membrane of choice when incorporating in a photovoltaic roof system.

The two most common forms of S.I.R. are the familiar photovoltaic glass module usually mounted on racks or posts. The glass module photovoltaics consist of crystalline silicon modules to generate electricity. Silicon based photovoltaics have the highest per square foot electrical output of any other photovoltaic material. A second relatively new technology is emerging and rapidly gaining ground in the marketplace. Thin film photovoltaics are the newest technology and are made by manufacturing semiconductor material on thin metal sheets or flexible plastics and encapsulating the module with a solar transparent plastic polymer. The conductor materials most commonly used in thin film photovoltaics are amorphous silicon or poly crystalline materials such as copper indium gallium diselenide (CIGS) and cadmium telluride (CdTe). Thin film photovoltaics are less costly than silicon modules.

WHY CONSIDER A S.I.R

The Solar Integrated Roof panel uses the free energy of sun power to produce electricity. The central driving force comes from the desire of individuals or companies to obtain their electricity from a clean, non-polluting, renewable source for which they are prepared to pay a small premium. The most desirable function of the S.I.R panel is the ability to tie the system into the electricity grid. This function is also known as net metering. Net metering is an economic arrangement with the electricity provider that allows customers to sell the excess electricity generated from the S.I.R panel back to the utility company at the same rate as the customer is charged for electric supplied by the utility company. This type of system is considered the optimum configuration from an economic standpoint. The S.I.R generated electricity is consumed by the building owner during the day, any surplus electric is sold and added to the grid. During hours of the day when the S.I.R cannot generate electric the customer draws from the power id in the normal manner.

Electric rates vary dramatically from one region to the other. The higher the electric rate, the more economical S.I.R systems become. Solar Energy Promotion campaigns also vary through out the country. It is necessary to contact your local utility and or government energy agency to determine what programs are available in your area. Utility and Regional programs may be available that subsidize the cost of a S.I.R system by anything from 10% to 60% of the total cost. Further incentives or credits may also be available through National or Regional Government agencies to assist in off setting the initial expense of installing a S.I.R... The U.S. Green Building Council LEED program recognizes the benefits that can result from installing a S.I.R... Installing a S.I.R can qualify for up to 3 points under Energy and Atmosphere credit for Renewable Energy.

HOW IS A S.I.R INSTALLED?

While the S.I.R. system is installed on the roof area it is considered an accessory item and does not contribute to the water tight integrity of the roof system itself. Because of the capital expense involved with adding a S.I.R system to a roof area it is prudent to install the most reliable and enduring roof system available. The roof system needs to be designed to perform throughout the life cycle of the S.I.R. and the S.I.R. installation must be executed in conjunction with the roof system requirements. The S.I.R. installation and the waterproofing installation combines in a partnership starting through the design phase, installation, and proper maintenance of both systems as components of the total building envelope.

The installation and connection of the S.I.R is governed by applicable electrical and fire codes. National Electrical Code (NEC) article 690 applies to photovoltaic installations as well as the Institute of Electrical and Electronic Engineers (IEEE) Standard 929-000. ANSI /UL 1703 provides a consensus developed basis for evaluating photovoltaic modules including specific requirements regarding construction, ratings and testing for external fire resistance.

Considering a S.I.R system is a complex process particularly because it involves roof top construction. It requires consulting with roof designers, the roof manufacturer, the roof installer, solar design consultants or electrical engineers, solar integrators and electrical contractors. Design considerations should include financing options, preliminary roof information which includes a survey of the roof conditions regarding roof system suitability and roof information concerning the layout of the S.I.R system. Other design information that must be compiled is power analysis data, preliminary PV system processing and design, and comparing system life cycles and warranty options. It is a complex process but as solar power systems become more common the application possibilities will continue to develop. The S.I.R is here to stay.