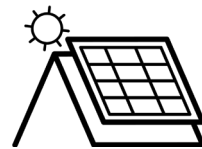




Case Study — ENWIN Utilities & Essex Energy

PVKIT® | S-5-V™ Mini Clamp



At-A-Glance

Location

Windsor, ON, Canada

General Contractor

Essex Energy Corporation

Engineer

Andy Smyrnis

Solar Installer

Essex Energy Corporation

Module Manufacturer

Longi LR5-72HPH 550M, Qty (2,618)

Inverter Manufacturer

SMA Sunny Tripower CORE1:

- 62-US, 62.5 kW, Qty (15)
- 50-US, 50 kW, Qty (1)

Roof Profile

Butler MR 24, 24-gauge standing seam roof

Industry

Industrial

The Situation

Essex Energy required a non-penetrating mounting system that offered flexibility in module placement to work around roof obstructions and shading from elevation changes, while maximizing the number of solar panels installed.

The Result

They chose the PVKIT® DirectAttach™ system, paired with the S-5-V™ Mini for its flexibility in module placement, allowing them to install the maximum number of panels.

Project Stats

Number of Roofs: 5

Roof Measurements:

- Roof A: 39,000 ft² - standing seam
- Roof B: 47,000 ft² - standing seam
- Roof C: 12,000 ft² - standing seam
- Roof D: 25,000 ft² - Bitumen (flat roof)
- Roof E: 13,000 ft² - Bitumen (flat roof)

Roof Pitch:

- Roof A: 1.5° South
- Roof B: 1.5° North
- Roof C: 1.5° North

Project Size: 1.44 MW (DC)

S-5! Products Supplied:

- PVKIT (2,400)
- S-5-V Mini clamp (5,500 for panel racking & cable tray installation)



The Project

ENWIN Utilities Ltd. (ENWIN), the licensed electricity distribution provider for the City of Windsor, Ontario, partnered with Essex Energy Corporation, a leading energy technology company, to install an impressive 1.44 MW rooftop solar array at ENWIN'S net metering facility and head office. This installation is one of the largest rooftop solar arrays of its kind in Canada.

The new solar array is designed to generate enough clean, renewable electricity to power approximately 300 homes annually. This ambitious project marks a significant advancement in ENWIN's ongoing commitment to sustainability and reducing its reliance on fossil fuels.

The system will prevent the emission of 623 tons of carbon dioxide per year, which is equivalent to:

- Removing 644 cars and light trucks from the road
- Turning off 6,553 light bulbs for a full year
- Offsetting the carbon absorption of 2,700 acres of forest
- Powering 387 homes for an entire year

The facility features five roofs, including a Butler MR 24, 24-gauge standing seam metal roof system, and a flat roof system that hosts a separate solar PV installation. To secure the 2,618 solar modules to the standing seam roofs, the project utilized the PVKIT solar mounting solution, paired with S-5-V Mini clamps.



The Challenge

The primary objective was to maximize the number of solar panels installed on the standing seam roof, while avoiding obstructions and shading caused by elevation changes. One of the key challenges was identifying a mounting system that would enable optimal panel placement, allowing for maximum module coverage without limiting the flexibility of module positioning.

The initial system design revealed that a conventional rail-based mounting solution would only accommodate about half as many solar panels as the S-5! DirectAttach™ system. Additionally, it was critical to provide ample space for the installation of other essential equipment, such as inverters and wiring. With the S-5! system, they were able to achieve both the required capacity and equipment installation.

The roof, which was at least 25 years old, presented several challenges due to varying roof elevations complicating the logistical planning. Furthermore, the roof presented several obstructions, including HVAC units, vent stacks, natural gas piping, and other rooftop equipment, all of which required careful planning to ensure unobstructed panel placement.

With the building's annual energy consumption at 1,600,000 kWh, the project's goal was to match this electrical load with a renewable, sustainable energy source. The aim was to offset the building's total power needs, reduce utility costs, and ensure the system was designed and installed to reliably achieve these objectives.

The Solution

To successfully install the rooftop solar system, Essex Energy utilized three different types of mounting systems to accommodate the different roof types, elevations and pitches:

- **DirectAttach mounting** with the PVKIT and S-5-V-Mini clamps
- **Tilted racking** secured with S-5-V-Mini clamps
- **Ballasted racking** on the single ply roof

S-5! was selected due to its superior engineering, quality and certified extensive load testing conducted on its clamps across various metal roof profiles. The team chose S-5! with confidence, knowing that all their clamps had undergone rigorous testing both in a laboratory and on real-world roof installations of more than 8 GW, ensuring reliability and performance.

The PVKIT DirectAttach system, paired with the S-5-V Mini clamps, provided a seamless and efficient installation process. The design enabled the solar panels to be securely mounted on the standing seam roof while navigating around obstructions and minimizing shading caused by elevation changes. Additionally, the flexibility of the S-5! system allowed the panels to be installed in non-continuous rows, maximizing available space and ensuring optimal panel placement.

This non-penetrating mounting solution not only protected the roof from potential damage but also preserved the roof warranty, offering a cost-effective, reliable, and high-performance installation that met both technical and practical needs.

How Did the S-5! Products Help?

- Cut mounting material costs in half (compared to railed systems)
- Reduces installation time by up to 50%
- Up to 50% savings in freight costs due to lightweight solution
- 85% lighter than rails, providing 25% better load distribution
- Automatic, UL2703-Certified electrical bonding of module frames
- Eliminated the risk of a voided roof manufacturer warranty—no holes/no damage



Long-term Outlook

Over time, the solar system will offset 100% of the building's electrical consumption. The PVKIT solar attachments provided the ideal mounting solution the customer desired without penetrating the standing seam profile.

"The S-5! Clamps and PVKIT solar mounting system enabled us to place the panels exactly where we needed them, effectively avoiding roof obstructions—without the need for long rows of rails. This not only streamlined the installation process but also significantly reduced both time and material costs. Additionally, we used the S-5! clamps extensively to securely mount inverters, cable trays and wiring over the standing seam roof. What really stood out was the ability to complete the entire installation without any roof penetrations, preserving the integrity of the roof."

— Andy Smyrnis, Manager of Engineering, Essex Energy Corporation



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