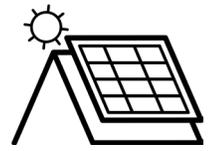




VersaGard™ & S-5-S Mini

Case Study — Honolulu Covanta H-POWER Plant



At-A-Glance

Project

The City & County of Honolulu Covanta H-POWER Plant

Location

Kapolei, West Oahu, HI

Architect

HDR

General Contractor

Solar Building GC: PSI; H-POWER Roof GC: Covanta
PV Contractors: Engie & Hawaii Unified Industries

Vendor

Pacific Island Construction

Industry

Government

Situation

The City of Honolulu added solar PV to six of its facilities rooftops, which required roof replacement. Additionally, a new “solar building” was constructed to meet the City’s full commitment of solar energy production and provide the balance of solar power requirements—designed with cost-effective solutions for the long-term.

The Result

The S-5! VersaGard™ and S-5-S Mini provided a simple and economical solution for mounting solar PV.

Project Stats

Total Project Size: 3.25 MW+ of rooftop solar PV

Property: Covanta Honolulu Plant Facility (six buildings)

Building Type: Steel Structure, Exposed-Fastened, Trapezoidal Rib, Metal Roofing

Roof Profile: Taylor Metal Products, PBR

Roof Measured: 151,876 sf (combined)

Roof Pitch: 1:12

S-5! Product: VersaGard™ (5,700)

Number of Panels Installed: 3,096 (400w modules)

Property: H-POWER Solar Building (one building)

Building Type: Varco Pruden Steel Building

Roof Profile: Varco Pruden Standing Seam Metal Roof

Roof Measured: 138,305 sf

Roof Pitch: 1:12

S-5! Product: S-5-S Mini (7,200)

Number of Panels Installed: 5,040 (400w modules)



The Project

The Honolulu Program of Waste Energy Recovery, or H-POWER, in Kapolei, West Oahu generates up to 90 megawatts of energy for Hawaiian Electric Company – enough to meet nearly eight percent of Oahu’s energy needs. The facility processes 700,000 tons of waste annually, which is combusted to generate steam, converted into electricity and sold to Hawaiian Electric for use by Oahu’s residents and businesses.

The city added solar photovoltaics (PV) to six existing rooftops at the City and County of Honolulu’s Waste-to-Energy Recovery facility operated by Covanta Honolulu Resource Recovery Venture (H-POWER). However, there wasn’t sufficient space to meet their full commitment of solar energy production at the facility, so a new metal “solar building” was constructed on the adjacent lot, which would house and provide the balance of solar power requirements.

Elevating the PV panels on rooftops would reduce shadowing from adjacent properties and maximize power generation, and was therefore more favorable to achieve reliable and consistent system performance.

In total, the project involved installing a 3-megawatt system – one of the largest rooftop solar projects in the state of Hawaii – consuming 290,181-sf of rooftop space for the PV system. The system would offset some of H-POWER’s in-house demand of 7 megawatts to run the plant.

“The S-5! VersaGard™ roof mount works extremely well with traditional PV racking systems and simply saves installation time. VersaGard eliminates the additional L-Foot component, and the slotted channel allows for as much adjustability as you’d possibly need with a traditional L-Foot assembly.

Every project requires a unique application, and I believe S-5! offers a vast array of products for just about any metal roofing situation, for a simple and easy solution.”

—Dan Johnson, Project Manager, Hawaii Unified

A Varco Pruden steel building was selected as the product of choice for the structure of the “solar building” and for the facility’s rooftops. Taylor Metal Products, PBR Exposed-Fastened, Trapezoidal Rib, Metal Roofing was chosen to replace existing roof panels for the six buildings at the H-POWER plant facility. S-5! metal roof attachments were chosen to secure the solar panels to the metal rooftops of all buildings for this project.

The Challenge

The newly constructed metal “solar building” had to be designed with cost-effective solutions for the long-term both for the PV project and various recycling programs within the building. In addition, the 30+ year-old metal roofs on the six buildings at H-POWER facility were in need of replacement.

Since the service life of a PV system is typically between 28 and 37 years (source: Berkeley study), the new roof and the replacement roofs would need to meet the expected service life of the PV system.

The entire project had to be completed within a tight timeframe and without disruption to H-POWER’s operations, which is a key component of the island’s waste management infrastructure.

The Solution

Metal was selected for this project because it was the lowest cost and best use option. The “solar building” structure is steel framed with metal roof and siding, supported by a concrete slab on grade foundation. It is enclosed with overhead doorways and man doors.

Metal Roofing was chosen for all the roofs as it provides an ideal platform for mounting PV and is the only commercial roof type that features a service life that exceeds that of the solar PV system. A standing seam metal roof was chosen for the “solar building” since it was also easier and less expensive to mount solar PV to this metal roof type over any other.

The **S-5-S Mini clamp** was selected as the preferred attachment method to secure solar modules to the roof of the new “solar building” to allow a penetration-free attachment for the solar racking system.

S-5!’s VersaGard™ was selected to secure PV racking to the newly replaced trapezoidal exposed-fastened “PBR” (purlin bearing rib) metal roofs at the Covanta Honolulu plant facility, to meet the service life expectancies for both the roof and the solar PV system.



VersaGard™ by S-5!



S-5-S Mini

Long-Term Outlook

The H-POWER plant and adjacent “solar building” utilize metal building components to achieve lasting performance and durability, while allowing the City to process and manage the island’s solid waste, converting trash to power, and to further explore recycling and renewable efforts for a more sustainable Hawaii.

S-5! components provided a simple, secure and economical PV mounting solution.



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