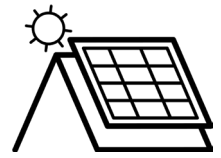




# Case Study — Vaisala U.S. Headquarters, Louisville, CO



**PVKIT® | S-5-U™ Clamp | S-5-U™ Mini**

## At-A-Glance

### Architect

OZ Architecture

### Structural Engineer

Brett Robinson of JVA Consulting Engineers

### Solar Designer & Installer

Namaste Solar, [namastesolar.com](http://namastesolar.com)

### Module Manufacturer

Hanwha QCell

### Inverter Manufacturer

CPS

### Roofing Contractor

B&M Roofing

### Roof & Façade Wall Profile

Berridge Zee-Lock 24-gauge standing seam metal

### Industry

Commercial Office Space

### The Situation

The customer sought the most aesthetically pleasing, lightweight, and wind-resistant solution for vertically mounting its solar array to a standing seam façade wall, without compromising the integrity of the profile.

### The Result

They selected the direct-attach, rail-less PVKIT solar mounting solution paired with the S-5-U clamp. This low-profile, lightweight solution not only surpassed their aesthetic expectations, but was also engineered to withstand the high winds typical of the area.

### Project Stats

#### Roof Measurements:

Upper roof 60' from eave to ridge;  
x 112' at the eave and 87' at the ridge

Wall façade 36' x 104'

**Roof Pitch:** Upper roof 5°; façade wall 90°

**Project Size:** 228kW + a pre-existing 101kW system on the south building

#### S-5! Products Supplied:

- PVKIT® Black (315)
- S-5-U™ clamp (420)
- S-5-U™ Mini clamp (425)



## The Project

Finland-based Vaisala, a global leader in weather, environmental, and industrial measurements, embarked on a visionary project to erect a cutting-edge U.S. headquarters in Colorado, showcasing their unwavering dedication to sustainability. The endeavor encompassed the construction of a new building seamlessly integrated with the existing one, fostering a fluid indoor-outdoor campus designed to cater to customers, employees, researchers and partners alike.

Inspired by the sleek, minimalist design ethos of their Scandinavian headquarters, the new structure embodies modernity while prioritizing eco-consciousness. Notably, the project achieves net-zero energy through a fusion of sustainable design features. Among these are a state-of-the-art, 492-panel rooftop solar array, a highly efficient VRF mechanical system, and a striking, vertical, double-skin curtain wall façade, all meticulously orchestrated to minimize energy consumption.

The project has achieved an impressive Energy Use Intensity (EUI) of 28, demonstrating exceptional energy performance. This achievement not only exceeds standard energy codes but also positions the headquarters as one of Colorado's foremost sustainable office buildings.

The building incorporates a lower TPO roof hosting a tilted solar array, an upper standing seam metal roof utilizing the **S-5-U Mini/UniRac** rail-based solar racking system, and a vertical façade wall featuring the **PVKIT** and **S-5-U** clamp solar mounting system.



## The Challenge

The owner desired a sleek-looking, low-profile system that would complement the look of the roof and the hi-end, architecturally designed building. The main challenge was to provide an aesthetically pleasing, vertically mounted solar PV array on the existing standing seam façade wall, including engineering sign-off on the solution. A conventional, heavy rail-mounted system was deemed unsuitable for the façade wall.

The array not only needed to look impressive, as it would be highly visible for those who arrived at the Vaisala building, but it also needed to withstand tremendous wind loads. This area of Colorado experiences around 145 mph wind speeds and Category C exposure so Vaisala needed a system that could withstand extreme wind conditions.



## How Did the PVKIT Help?

- Cut material costs in half
- 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
- Minimized the amount of time workers must spend in harnesses
- Improved system aesthetics
- Automatic, UL2703-certified electrical bonding of module frames
- Eliminated the risk of a voided wall panel manufacturer warranty—no holes/no damage

## The Solution

Namaste Solar recommended the direct-attach PVKIT rail-less solar mounting solution paired with the S-5-U clamp, for the façade mounted array. Together, the solar mountings provided a low-profile, sleek, lightweight solution to secure the solar array to the standing seam wall.

Additionally, it enabled the owner to achieve a design engineered to withstand the region's high winds. By directly attaching the PV to the seams, it provided installation efficiency and flexibility, and distributed the load more uniformly into the structure.

The clamps perform a secondary function as wind clamps, often referred to as "External Seam Clamps" (ESC). These wind clamps measurably increase the roof's wind uplift resistance capacity, preventing multiple modes of failure, including seam separation and clip disengagement when used at roof clip locations.

"S-5! was chosen for this project because they are the most trusted clamps for standing seam applications," said Ash Bowersock, Namaste Solar Commercial Technical Designer.

"Also having the option to use the S-5-U Mini clamps (for the rooftop array with the railed system) and the S-5-U standard clamps for the façade mounted array was essential. Considering the uncommon forces being exerted on racking for a vertical array, having clamps with two set screws certainly helped alleviate concerns about clamps rotating under load. The low-profile of the S-5! PVKIT really helped with the wind loading, and of course aesthetics."

## Long-Term Outlook

Over time, the solar system will offset 69% of the building's electrical consumption. The PVKIT solar attachments provided the ideal mounting solution and aesthetic appeal the customer desired without penetrating the standing seam profile.

"Namaste Solar has been utilizing S-5!'s family of quality engineered products on our solar projects for many years. We haven't come across a metal roof profile that their products could not handle. Their customer service is also top quality, and their responsiveness and expertise have always stood out for us. When we started the façade-mounted portion of this project, we worked through our S-5! options and knowing aesthetics were a top priority for the customer, the PVKIT solution was a natural choice. We had yet to dip our toes into rail-less solutions on the commercial side as we were concerned about wire management for the field. With a little pre-planning, before placing modules, it turned out to be a non-issue. Our crews loved installing this system and said they would be perfectly happy installing more projects just like this."

—Briana Morris, Commercial Principal Engineer, Namaste Solar, Boulder/Denver, CO

Photos "Courtesy of Namaste Solar"



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