



HOLDING TIGHT TWO MILES UP

The Gemini Observatory atop Mauna Kea Mountain in Hilo, Hawaii is home to a massive infrared telescope answering questions about our universe. In keeping with the Gemini mission's commitment to positive stewardship of our planet, leaders at the observatory determined that a photovoltaic solar array would provide valuable energy savings. However, a solar array mounted onto the standing seam metal roof of the telescope support building 13,775 feet above sea level would be the highest ever connected to the grid anywhere in the world. It would need to be held in place through extreme weather including hurricane-force winds.

■ What Worked?

The engineering team and contractors studied conditions atop Mauna Kea mountain calculating the strength it would take to keep the array secured to the observatory's metal roof. The group considered the available clamp options and S-5! was the pick. According to Gemini Lead Engineer Chas Cavedoni, "We chose S-5! clamps because they met the demanding specs of this installation and had independent test data to back it up." The project requirements included the ability to withstand winds up to 163 mph generating more than 50 psf of uplift force. It was also mandatory that the clamps be able to maintain their integrity for the full 35-year lifespan of the PV panels.

The 98.1 kW solar array would consist of more than 300 solar panels mounted to a standing seam 22-gauge metal roof. S-5! clamps would be used to attach not only the array but wire management and other equipment including HD Cameras, meters, and a weather monitor tower. The responsiveness of the S-5 team and the simplicity of S-5! clamp installation helped overcome unforeseen circumstances—and kept the job moving forward to meet important construction deadlines.

■ Long Term Outlook

The testing and quality of S-5! clamps made it possible for the Gemini Observatory to complete their solar array with confidence. The S-5! clamps have worked exactly as promised, withstanding high winds as well as freezing temperatures and fluctuations between sun, rain and snow year-round. Held securely in place, the solar array is generating a significant portion of the energy required for the Gemini telescope. At more than 2-miles high, this array receives enough sun exposure to surpass energy production efficiency of similar arrays at sea level by 39%. "While PV panels require a significant investment," says Cavedoni, "we predict that the investment will be recovered in less than four years." With the reliable anchorage afforded by S-5!, this mountaintop solar array helps maintain positive stewardship of our planet while powering the Gemini telescope to explore the universe surrounding us.



At A Glance:

Project:

Gemini Observatory Solar Array

Customer:

Gemini Observatory

Location:

Mauna Kea Mountain
Hilo, Hawaii

Industry:

Astronomy

Situation:

In keeping with the Gemini mission's commitment to positive stewardship of our planet, leaders at the observatory determined that a photovoltaic solar array would provide valuable energy savings.

Results:

- S-5! clamps were selected because they met the demanding specs of installation, with testing data to back it up.
- S-5! clamps have worked as planned, withstanding freezing temperatures and weather fluctuations throughout the year.
- The Gemini solar array receives enough sun to surpass energy production efficiency of similar arrays at sea level by 39%.

Stats:

- Consists of 300 solar panels mounted via S-5! clamps to a standing seam 22-gauge metal roof.
- Providing stability in up to 163 mph winds.

