



SUCCESS STORY

Against great odds: Solar power in the Antarctic

Many countries have installed research bases in the Antarctic to conduct various studies in this very special landscape and its unique climate. Temperatures below -89 °C, winds over 200 km/h, extreme variances in hours of sunlight, with up to 16 hours in the summer and only two during winter, pose tremendous challenges for both research teams and equipment. PV connectors from Stäubli are part of a demanding new field of application: installing solar power in the Antarctic.

The Uruguayan government is a strong advocate for the integration of renewables and following a ten-year program to reduce its dependency on fossil fuels. 97% of the electricity now comes from hydroelectric, solar, wind and biomass. The country has been maintaining a research base in the Antarctic for over 30 years. The Artigas Base, opened in 1984, is home to ten research scientists and 15 crew members in summer.

The base was traditionally powered by diesel generators. Besides the environmental impact, the logistics involved made the use of fossil fuels an inefficient and costly solution for generating energy.

The government selected Technova Renovables, a Tecnogroup subsidiary, to review the potential and lead on the integration of renewables at the Artigas base. Tecnogroup is a conglomerate of Uruguayan companies with extensive international experience in the development, procurement, construction, operation and maintenance of renewable energy plants. The project included the delivery and installation of a pioneering solar system designed to withstand the environmental challenges within this delicate ecosystem.

The importance and challenging nature of project required collaboration between several partners, including the government and the energy ministry MIEM, the local utility company, UTE, and the Instituto Antártico Uruguayo.



Market Segment:
Renewable Energy



PV connectors: MC4-Evo 2

Application: connection of solar modules for safe power transmission under harsh environmental conditions

- Safe and reliable operation
- Easy installation
- Internationally certified with IEC, UL, JET, cTÜVus
- Suited for use in harsh environments
- Proven MULTILAM Technology

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The challenge

The Antarctic is one of the most inhospitable places in the world. Spanning 14,000 square kilometers and with extreme climatic conditions including temperatures as low as -89.2 °C and winds more than 200 km/h, the challenge was to develop, install and test the performance of PV technology in such a fragile environment. Due to the variances in sunlight hours, the timeframe was very limited: the installation had to be completed before the seasons changed.

The solution

To successfully implement the pilot plant with 1.2kW, all partners worked closely together. Both the extreme temperatures and variances in hours of sunlight had to be considered for the installation of the PV system: The solar panels were vertically mounted onto the wall of an existing machine room, with a 90° tilt and N orientation and at a considerable height to overcome heavy snow

accumulation as well as wind present at the site.

The success of the project is based on thorough planning, mutual harmonization and the careful selection of components to be installed. To secure constant and dependable energy feed-in, Tecnogroup relies on PV connectors from Stäubli. The MC4-Evo2 connectors have been proving their worth from the very beginning and withstand the extreme, unprecedented climatic conditions.

The added-value provided

The effective implementation will not only help the Artigas Base to reduce the environmental impact and its operational costs, but also represents a further milestone in the global expansion of renewable energies.

Customer benefits

- Reliable, high-quality connection withstanding harshest climatic conditions (extreme temperatures, strong winds and saline environment)
- Trustful, long-standing business partner relation
- On-site consulting through global service network

About Stäubli

Stäubli is a global mechatronics solution provider with three core activities: Connectors, Robotics and Textile. The international Group has a presence in 29 countries.

Stäubli Electrical Connectors is a specialist for advanced contact technology and technically mature solutions with a product portfolio ranging from miniature connectors up to high-power connectors for various industries.

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