ARIAS®, integrating Morningstar, an Apeiron Remote Integrated Arctic Solar solution

Hybrid System Helps Major Telecom Provider Track Progress Toward ESG* Goals

"Morningstar's seamless compatibility with industry-leading component suppliers, such as Polarium, is why Morningstar is our preferred vendor of choice."

Kurt Chelsberg
Apeiron Energy, Vice President, North America, Energy Group

Summary

When a tier-one telecom company sought to power a remote cell tower with clean energy, while tracking progress toward its environmental, social, and governance (ESG) goals, Apeiron Energy's innovative hybrid integrated container system with Morningstar charge controllers provided an ideal solution.

Situation

Apeiron supplies energy solutions including diesel, natural gas, propane, hydrogen, and hybrid power products for diverse applications, from telecom to mining, military, and oil and gas throughout the U.S. and Canada. As the push to mitigate climate change increases, Apeiron sees customers looking for solutions to reduce fossil-fuel dependencies and their associated emissions, and track data as part of growing carbon abatement programs. For example, in 2021, a tier-one telecommunications client enlisted Apeiron to provide a way to reduce its cellular tower's reliance on two AC diesel generators to meet ESG goals, all while maintaining 99.5% reliability. The tower's remote location in Northern Manitoba's arctic conditions added to the appeal of using renewable energy. Unlike the diesel generators, a solar electricity system requires no fueling and, with no moving parts, very little maintenance.

Project

Apeiron's Remote Integrated Arctic Solar solution (ARIAS®) is a natural fit for a remote telecom site and has additional applications in mining and remote community work. The system provides operators with complete off-grid communications using peak solar electric production and reserving surplus electricity by storing it in a 1,200Ah lithium-ion Polarium battery bank. When solar energy production isn't adequate, the system automatically engages an intelligent 15kW/48VDC diesel combined heat and power (CHP) generator to support critical infrastructure. What's more, the ARIAS® system monitors and reports data (security, environmental, fuel consumption, carbon offsets, etc.) on a single, web-accessible dashboard through a private URL/IP address.

Project

The building rests on a concrete foundation and consists of a 20-ft insulated shipping container, split down the middle into generator and equipment rooms. It has everything it needs to excel in a harsh environment. A hinged 13.4kW array of 40, 340W solar modules folds out from the structure. The black Qcells modules prevent snow accumulation, and Apeiron's solar racks are designed to withstand extreme snow and wind loads. Each module is insulated to prevent rodent and pest infestation, and equipped with bird deterrents to keep them clean.

Four strings of ten panels feed into four industrial-grade Morningstar TriStar MPPT 600V charge controllers (sold through distributor Charge Solar), proven to accommodate high voltages reliably. The TriStar controllers also allow longer, fewer strings of solar modules for simpler installation. Their exceptional ability to manage heat eliminates the need for cooling fans, enabling 97.9% peak efficiency and unmatched reliability. This is critical for remote installations, where replacing cooling fans and dealing with their contaminating effects (by pulling in dust and debris) is a major cause of on-site service calls. The high-low voltage barrier of TriStar controllers and ground fault protection ensure the safe operation of the 48VDC site.

Solution

Using the ARIAS® and moving from an AC to a DC genset helped eliminate one generator and increased efficiency, reducing about 90% of the client's annual fuel costs because the generator now only runs when the solar resource is insufficient, rather than 24/7 as it previously did. The system also provides data on the client's greenhouse gas emissions savings allowing tracking and reporting as the telecom company moves closer to its ESG goals—and enjoys some positive PR as an added benefit.

Apeiron Energy takes its name from an ancient Greek term describing the harmonious balance of energy found in nature.

"We see ARIAS® as part of a portfolio of products that enable the transition of energy from what were vicious cycles to now more harmonious, virtuous, and sustainable cycles for the production and consumption of energy," Gurmeet Sahani, CEO of Apeiron Energy, said.

"We strive to achieve that same balance in our relationships with customers, stakeholders, and our innovative product solutions," Kurt Chelsberg, Apeiron Energy, Vice President, North America, Energy Group, said. "Morningstar's seamless compatibility with industry-leading component suppliers, such as Polarium, is why Morningstar is our preferred vendor of choice."

*Environmental, Social, and Governance

Morningstar Corporation
8 Pheasant Run | Newtown, PA 18940 USA
+1.215.321.4457
morningstarcorp.com

MORNINGSTAR
WORLD'S LEADING SOLAR CONTROLLERS & INVERTERS