

**MARINE CORPS RECRUIT DEPOT,  
PARRIS ISLAND**

*Beaufort, South Carolina*



## Project Overview

In September 2011, Vanir Energy completed a solar thermal air-conditioning system for the Parris Island Marine Corps' Recruit Depot in Beaufort, South Carolina. MCRD PI is using the system as the primary source of cooling for the 1st Battalion mess hall. The Department of Defense accounts for the majority of energy consumption by the U.S. government, and is the largest single consumer in the United States. Aware of its dependence on energy, it has been identified as one of the military's top 25 transformational priorities.

The solar thermal air-conditioning system at MCRD PI consists of 85 Ritter XL evacuated tube collectors- roof mounted for 125 mph hurricane rating. These collectors produce more BTU's per square foot across a wider range of weather conditions than any other certified solar thermal collector. A unique advantage of using the Ritter XL evacuated tube solar collectors is the "Aqua System" technology that utilizes water as the heat transfer medium in the solar collectors with absolutely no concentration of glycol.

Working closely with Southern Research Institute, Vanir Energy designed the system to utilize the available solar hot water required for the refrigeration cycle. If solar energy is unavailable, the chiller can operate utilizing the bases' backup steam operations. The 85 panel solar thermal array provides hot water up to 200° F to power an 80 ton (RT) adsorption chiller that uses water as the refrigerant and silica gel to adsorb and desorb the water during the refrigeration cycles. Any excess solar hot water can be used by the mess halls' domestic hot water system.

The solar thermal air-conditioning system is a pilot project with national implications. This project was funded by the DoD's Environmental Security Technology Certification Program (ESTCP) as a result of a grant written by the Southern Research Institute. Central Carolina Air Conditioning was the mechanical subcontractor. By implementing this solar system, MCRD PI is taking the initiative to reduce its energy consumption through innovative, renewable energy solutions.



## PROJECT INFORMATION

**Client:**

Marine Corps Recruit Depot, Parris Island  
Beaufort, South Carolina

**Summary:**

- Powered by 85 CPC Ritter XL evacuated tube collectors
- Penetrating roof-mount racking system
- 1000 gallons of hot water storage and 80 ton adsorption chiller
- Offsetting approximately 14,000 therms of natural gas annually

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