

Case Study



Cinco Solar, Inc. - Army Residence Community High-Rise Apartment Building, San Antonio, Texas

Cinco Solar's award-winning solar thermal system at the Army Residence Community (ARC) is a state-of-the-art installation that provides practical, meaningful results to its residents and management. Cinco Solar's system serves as the primary source of domestic hot water for a 13-story residential apartment building and has drastically cut energy expenses for the facility. This local example of clean technology in action is achieving results previously unseen in the San Antonio community.

Preliminary test systems on smaller ARC facilities were commissioned and evaluated by ARC management before moving forward with the solar thermal system nominated for this award. Smaller systems servicing two residential cottages and a 30-room Assisted Living Facility were both shown to return significant value to the ARC. As a result, Cinco Solar was commissioned to design and install a solar thermal system on the roof of the ARC's 13-story residential apartment building.

Commissioned in May of 2009, Cinco Solar's system uses 176 evacuated tube solar thermal collectors to generate the majority of domestic hot water required for the 198 apartments located in the facility. The solar thermal collectors are installed on custom-designed adjustable racking that is capable of tracking seasonal changes in the sun's position in the sky, allowing for maximum efficiency throughout the year. Cinco Solar also designed a custom steel frame support system that raises the entire array of collectors above the roof's surface, allowing convenient access to roof space for maintenance and service of the ARC's other mechanical equipment.

Cinco Solar's solar thermal system uses three 4,000 gallon storage tanks to meet the domestic hot water demand for this facility. The use of multiple storage tanks is a design innovation that allows the system to operate in a more efficient manner than if one larger tank was used. A sophisticated controls system was also designed and installed to maximize system performance.

ARC management has been extremely pleased with the performance of Cinco Solar's solar thermal system. Bruce Chittendon, Chief Financial Officer of the ARC, says, "In our boiler rooms, the gas-fired burners just don't come on, which is exactly what I like to hear – NOTHING. Because I know I'm not using natural gas." Chittendon adds, "The ARC also benefits from Cinco Solar's solar project in less tangible methods. The value of these is hard to put in monetary terms but I would expect they equal the return on investment."

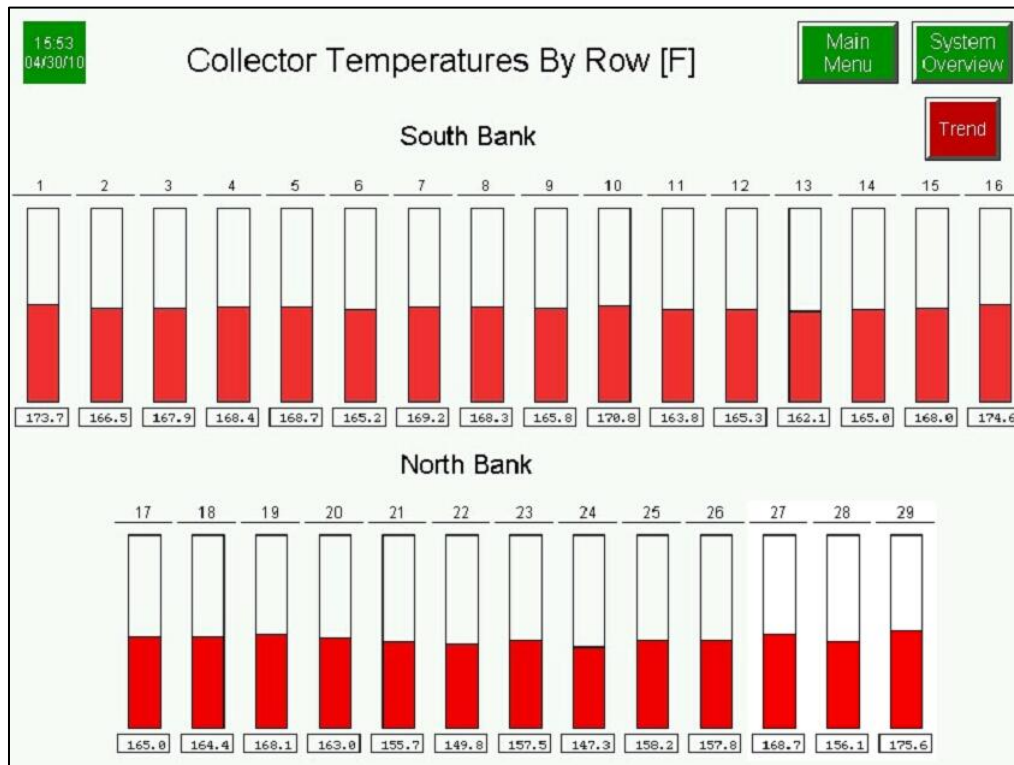
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At the time of commissioning, the 176-collector system at the ARC was the largest evacuated tube solar thermal system in Texas, and one of the largest in the United States. Since that time, Cinco Solar has commissioned a larger 216-collector system at the Bexar County Adult Detention Center Annex. The system at the ARC, however, was a ground breaking installation in the San Antonio community and Cinco Solar was recognized for this significant achievement when they were recently awarded the 2010 Bill Sinkin Solar Technology Award. This award is given as part of the City of San Antonio's Green Building Awards as recognition for exemplary application of solar technology in the San Antonio area.

Facts about Cinco Solar's system:

- Awarded the Bill Sinkin Solar Technology Award, City of San Antonio 2010 Green Building Awards
- 176 evacuated tube collectors installed
- One of the largest evacuated tube solar thermal systems in the United States
- Produces approximately 80% of the domestic hot water for 13-story residence community
- Services 198 apartment units with an estimated annual production of more than 2 billion BTU's
- Utilizes three (3) 4,000 gallon storage tanks
- Fully adjustable racking allows seasonal tracking of the sun
- Cinco Solar's custom-built control system monitors collector performance and gathers production data for future analysis
- Generates approximately 6% annual payback on initial investment. As the price of natural gas rises, so will the rate-of-return.



This screen shot was taken from the control system of the ARC and shows water temperatures leaving each row of solar thermal collectors on the roof. The data was captured on April 30, a cloudy day, yet Cinco Solar was still able to produce water as hot as 175 degrees. It is not unusual for the collectors to produce water at or near 200 degrees with storage temperatures in the tanks at or near 190 degrees.

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Cinco Solar, Inc., was founded in 2007 and is based in San Antonio, Texas. Cinco Solar uses state-of-the-art evacuated tube technology to provide solar water heating solutions on a commercial, industrial, or institutional scale. Solar thermal systems are a natural fit to provide domestic hot water for any facility or process that uses large amounts of hot water. Applications include, but are not limited to, domestic hot water, process heat, building heating and AC dehumidification and reheat. Properly sized, Cinco Solar's solar thermal systems can typically eliminate 80% of the energy costs associated with producing hot water. Cinco Solar is an exclusive commercial distributor of Kingspan Solar's Thermomax evacuated tube solar thermal collectors.

Kingspan Solar is part of Kingspan Renewables Ltd, a division of Kingspan Group PLC. As a major player in the building products sector, Kingspan Group is committed to energy conservation and the development of environmentally friendly solutions to generate hot water and building heating. Kingspan Solar packages reflect its on-going commitment to a zero carbon lifestyle and a brighter future for all. When it comes to creating efficient and cost-effective solar thermal and air source heat pump energy solutions that address today's growing environmental concerns, Kingspan Solar leads the way.

The **Army Residence Community** is South Texas' premier Continuing Care Retirement Community for retired career Military Officers, their Spouses, Widows and Widowers. At the ARC, 600 retired career military officers, their spouses, widows and widowers enjoy the camaraderie of shared community with fellow retirees who represent all branches of U.S. military service. Residence choices range from high-rise apartments with spectacular views to comfortable cottages, and a new development that will feature modern homes with abundant amenities.

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