



The Computerworld Honors Program

Honoring those who use Information Technology to benefit society

Final Copy of Case Study

LOCATION:
Pasadena, CA, US

ORGANIZATION:
HaoSolar

YEAR:
2011

ORGANIZATION URL:
<http://www.haosolar.com>

STATUS:
Laureate

PROJECT NAME:
Solar Environmental Technology Transformation Project

CATEGORY:
Environment

PROJECT OVERVIEW

Client Profile: CGNPC/Enfinity is a central corporation under the leadership of the SASAC with nuclear power as its core business. It is the only clean energy corporation in China which centers its business on solar power. HaoSolar developed the Hybrid solar tracking system, which resulted in China's largest and first Photovoltaic power station. This is the largest solar tracking system to have ever been implemented in Asia. Client Issue: The National Energy Administration embarked on establishing the FIT Tariff for PR China. HaoSolar was the single source provider of Solar Trackers for this project. CGNPC/Enfinity provided the complete solar solution to the National Energy Administration in the winning bid, which utilized all solar tracking technology from HaoSolar. The National Energy Administration's focus was to deliver the FIT Tariff standard that would be used to provide guidelines for future solar subsidies in China. From a technology standpoint, there was no uniform technology that would enable dual use of solar technology. The technological issues stemmed from either being able to facilitate optical or time tracking, but not both. This becomes an issue as Hybrid technology is necessary so that when solar energy is blocked because of environmental issues such as cloud coverage, snow or other elements, it becomes important to enable optical tracking. Tracking technology allows for 40% greater output with solar. So when energy consumption is encumbered, it has a dramatic effect on the overall output. There are many constraints as to why optical and timing technology cannot be integrated starting with the integration between Oracle Middleware and Java. The other element is the proprietary Siemens PLC software which does not natively have PIPS or AIAs into the other platforms. Technology Solution: One of the major business drivers for this project was related to a limited architecture that did not support CGNPC/Enfinity's future growth. Implementation of SOA provided the scalable foundation required to create and maintain improved product master data without impacting the current solar architecture. Flexible and Scalable Architecture – Implementation of Oracle SOA provided CGNPC/Enfinity with the option of integrating most of their spoke systems with the PDH (SOR) in real-time, enabling the organization to execute transactions at a faster pace. This ability to execute environmental transactions



allowed for quick response on the Hybrid technology that was implemented. Energy Quality – Improved the solar output rate to 74% for all newly-created Hybrid Tracking Systems by using a business-driven rules engine. Prior to go live, SKU data was inaccurate and as a result, many downstream systems, processes and customer-satisfaction issues were present. With the Siemens PLC integration, timing and optical integration, solar output and tracking were increased dramatically. The Hybrid system also allowed for an override of the timing element so that all external factors ranging from snow and wind to the cloud halo effect would be optimized. Efficiency – Activities related to managing the new Hybrid system was also minimized as all manual processes of checking and validating solar tracking positioning were now not necessary.

SOCIETAL BENEFITS

This project benefits society in 2 ways. The first it increases overall clean energy output, thereby reducing reliance on carbon producing energy. The second is that with the Hybrid technology in this project, it provides greater incentives and ROI so that clean energy will be financially viable for future investors.

PROJECT BENEFIT EXAMPLE

The Solar Environmental Technology Transformation Project (SETT) benefited current and future clean energy production at a macro level, and also from a micro level at a country perspective. At a macro level, China has an extensive carbon footprint that has grown significantly in the last decade. The Netherlands Environmental Assessment Agency noted that China had 9% growth in emissions and has overtaken the US as the world's greatest greenhouse gas polluter. At a macro level from a global perspective, clean energy has the greatest impact starting with China. Solar energy is one of the primary channels to reduce emissions. HaoSolar's Hybrid tracking technology has allowed for 70% greater throughput of clean energy in Solar investments. This project was the largest clean energy project in Asia from a solar perspective and the only project to use Hybrid technology. By being able to shift from carbon emission production to solar energy production, the benefit is net gain of cleaner environment both for the current and future generation. HaoSolar's integration and technological development of the optical and time tracking system will allow greater reliance on solar technology in the future because of the associated return on investment. In addition, this project provided the overall FIT Tariff standard that would be used to provide guidelines for future solar subsidies in China. Solar Environmental Technology Transformation Project provided the baseline that will be used in all solar projects in China for the next 25 years. At a micro level, HaoSolar has had a direct impact on the Dunhuang region of China. There is a greater reliance on solar technology in this region because of the sparse and rural nature of the population. By implementing solar tracking, large parts of the region have access to clean energy that would have been previously un-serviced. Also, with the Solar Environmental Technology Transformation Project, investors in the Dunghuang region are now incentivized by the province to invest in solar technology. Before the project, the incentive did not exist. This is seen to be a catalyst for future solar projects both in the short-term and long-term. Enfinity Project Manager, Jing Zhang provided some perspective on the project. "The SETT project was the catalyst for solar growth in not just Dunghuang, but for greater P.R. China. This project is the largest solar project in the country as well as the APAC region. By showing that both the project is doable but also that it is financially viable, it opens the doors for future clean energy projects of similar magnitude. HaoSolar was instrumental in both the design and implementation of the project. By integrating optical and timing technology, which have not been integrated until now, there is a much greater business case to be made for solar technology and tracking. HaoSolar's research and design of the Hybrid tracker was the tip of the spear that drove this project."



IS THIS PROJECT AN INNOVATION, BEST PRACTICE? Yes

ADDITIONAL PROJECT INFORMATION

For more information on the project, please see:
http://www.enfinity.biz/EN/news/enfinity_will_develop_china_s_largest_and_first_pv_power_station.html

