Tapping the hidden power

Energen International Ltd., Sri Lanka (EIL), a member of the Ceylinco Group plans to set up a 200 MW solar chimney power plant in Jaisalmer, in the Indian State of Rajasthan.

EIC, comprising Shartanval Investments Ltd., Schlaich Bergermann, Consulting and Design Engineers based in Germany, and Larsen & Toubro in India, bagged the much- coveted global tender to implement the first phase of this US$ 500 million solar project in November, 1995.

The Rajastan State Energy Development Authority (RSEDA) had called for international bids from power developers to set up a 50-300 MW capacity plant-using either solar thermal or solar photovoltaic (PV) applications on a 'Build, Own, Operate and Maintain' (BOOM) basis.

The Rajasthan government offered to provide the land and purchase the entire electricity generated by this project.

EIL, won that tender amidst stiff competition from among several US and Indian companies. USA's Amco Enron and the Kentech-Solar Energy Venture and India's Goyal Gases Ltd., Sun Source India Ltd., and the Prudential Power Corporation of Calcutta were some of the other bidders.

Energen's edge over its competitors was that their technology was cheaper and thus they were able to offer per unit of energy at Rs 2.25 or more, depending of course, on inflation.

Besides, their technology was based on a system that operated 24 hours a day and one that is not wholly dependent on direct sunshine.

According to Managing Director MD Senanayake, ever since EIL won the tender they have been working towards meeting a number of requirements like getting the land approved, carrying out a techno-economic study, having the feasibility report prepared and also commissioning Schlaich Bergermann and partner to developand perfect the design.

"Our engineers are at the moment working in Rajasthan conducting the soil and road tests", said Senanayake.

The solar chimney power plant that has been designed consists of a tall chimney in the middle of a large glass-roofed collector area with wind turbines and generators arranged at the base of the chimney. This will be located in the middle of a 10,000 hectares plot of land.

This model has been designed, developed and perfected on the lines and results of Schlaich Bergermann's first pilot solar chimney power plant built in 1982 in Manzanres, Spain, and considered a big success.

"They have been producing 'Francis Turbines' for over 100 years and at present manufacture the full range of Atial Flow Turbines, Francis Turbines, Pelton turbines and pump turbines."

As far as EIL is concerned, Senanayake says they have built two demonstration plants in Katunayake. The first in 1991 and the second in 1993 and that the second plant is in operation both during day and night. "We have proved to ourselves that this is possible", he said.

One reason why the Ceylinco Group ventured into the energy sector was its desire to be among those genuinely interested in helping to solve the energy problems confronting Third World countries. Senanayake believes that to satisfy the energy needs with conventional fuels like gas, oil, coal and wood would not be possible in the future and that the ideal solution to the energy problem caused by the increasing pollution and depletion of natural resources, is solar energy which is safe, renewable and a promising system for the generation of electrical energy from the sun's radiation.

Among the many advantages are that it is free, original and in- exhaustible being generated from the sun and also the technology involved is simple and easy to operate. This system is also cheap to maintain though expensive to build.

"We are scouting around for possibilities in Pakistan. We have made representations to the ministries of Jordan and Egypt and we have been approached by the state of Gujarat. Any country with good sunshine is an opportunity for us", says Senanayake.

As a result of the successful handling of the first phase of the project, the EIC which has undertaken the building of this power plant, has mandated EIL to carry out the next stage which is the construction and installation of the pressure-

staged wind tur bine, the cost of which is roughly estimated at US$ 100 million, and several other aspects of this project too.

The plant will be completed in five stages to ensure that each stage is carefully and successfully implemented. At the end of the whole exercise, the generation capacity of this solar plant in Rajasthan will be 1000 MW.

The first phase according to Senanayake will take 18 months and the whole project five years. “We might be able to finish in four years”, he says.

He said they were hoping to train Lankan engineers and other staff to work on this project but that the technology would be from the USA and the materials from India.

EIL’s investment in this venture is 100 percent but “we are working on various aspects of its funding through international agencies and when it gets off the ground, we will have the funding from these agencies so that eventually our share of the investment will only be 20 percent of the equity”, said Senanayake.
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