

Solar Water pumping and desalinization in Brazil



Solar power will play an important role to develop the groundwater resources of northeast Brazil, where some 25 million people living in an area the size of Ontario are affected by severe droughts related to El-Niño phenomenon, and many live off the electric grid. Groundwater is not only scarce but is commonly too saline for human consumption.

A farming community of twenty-five households in North East Brazil with no electricity was not able to use water from its well due the high salt content. Tanker trucks brought in "Survival" water until a solar electric

system was installed to pump and treat the water with a reverse osmosis system to remove the salt to a potable level.

A few Key facts

- Solar production: twenty-seven 75 watt modules
- Peak pumping: 2600 l/hour at 36 m
- Solar RO treatment to supply 1,000L/day drinkable water for families.
- Cost: \$40,000
- Funding: Joint venture CIDA & Brazil government
- Completion Date: November 2001

Supplier of Solar Equipment

Sunmotor International Ltd.
Telephone: (403) 556-8755
(www.sunpump.com)

Project Manager

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The Canadian Geological Survey, which is the project manager for CIDA, contracted Alberta based Sunmotor International Ltd. to design the solar equipment. Sunmotor supplied the photovoltaic array and water pumps. They worked with local engineers from the Water Resource Secretariat of the State of Ceara who supplied the reverse osmosis water treatment system. The system is designed to operate for a minimum of six hours a day under clear conditions to supply of 1,000 litres of potable water per day.

Opening up the region to groundwater development will require new wells to be drilled away from the conventional electric grid that currently supplies only the major centres of population. Clearly, solar energy has a crucial role to play in bringing new water resources to the consumers.

Submersible pumps available locally do not operate on the type of voltage provided by photovoltaic power. Sunmotor adapted a popular line of Brazilian pumps to work with electric solar power, and developed a special motor for desalinization of ground water. Thanks to Canadian technologies, NE Brazil large supply of solar power can now be utilized to supply potable water.

The project was sponsored by a joint effort of Canadian International Development Agency (CIDA) and Natural Resources Canada (NRCAN). The funding was provided by a joint venture between CIDA and the Brazil government.

The project is being used as a showcase for Canadian technologies and engineering and as a model for replication throughout the northeast of Brazil and other parts of the world.