

Inauguration of a Microhydro Installation in El Roblar, Nicaragua

The Microhydroelectric System

On Saturday the 30th of January 2010, we traveled to El Roblar, a very remote community in the eastern part of Nicaragua, to take part in the inauguration of a brand new microhydroelectric installation there. Asociacion Fenix, a part of the Grupo Fenix since 1999 had organized the event to celebrate the biggest project they had ever accomplished. Jaime Muñoz, the director of AsoFenix, as the group is normally called, has been working with HIVOS, a Dutch NGO who paid the entire \$40,000 cost of the 17 Kw hydro installation. This sum included not only the hydroelectric Pelton wheel generator installation but all the costs of running the electric lines to three different locations and wiring up 100 homes plus community buildings for electricity, including furnishing all the 11 and 5 watt compact fluorescent lamps in the homes. The homeowners each pay a flat \$3 per month for the service, since there are no electric meters. The actual Pelton generator cost \$15,000.



Photo 1. The new microhydroelectric building being inspected by the local children

All the materials for the installation, including the rather heavy Pelton wheel generator, bags of cement powder, heavy plastic pipe and miles of electric wire had to be carried about 4 miles by hand by a group of 30 volunteers. These workers included local people as well as about a dozen student volunteers from all over the world. At any particular time, the Grupo Fenix, including AsoFenix as well as the other branches, such as the Solar Women of Totogalpa and Suni Solar have groups of volunteers who work with us on our various renewable energy projects. For more information on the Grupo Fenix or their volunteer program, go to the www.grupofenix.org website.



Photo 2. Examining the Pelton wheel generator.

With a head of 120 meters (almost 400 feet) the generator produces 17 KW at maximum output, but an automatic throttling control adjusts the water flow to keep the generator spinning at 1800 rpm to produce 60 Hz three phase electricity at 480 volts, independent of the load. Transformers at the end of the three transmission lines drop this to the usual 120 volt ac used in Nicaragua (the same as we use in the US).

The system operates without a true dam; a small diverting weir collects the necessary water from the upper part of a mountain stream and runs it through a 4" diameter pipe to the generator building. This is normally less than half the stream's flow but can be a larger percentage in the dry season if the generator is operating at near full output. One of the Grupo Fenix rules for Microhydro installations is: *Never build a dam or take all the water.* AsoFenix has a contract to install another similar microhydroelectric system this month, and possibly more in the future.

The Inauguration Fiesta

The Inauguration ceremony was a big local event. Not only members from all the different parts of the Grupo Fenix came, but volunteers from the Green Empowerment and Blue Energy NGOs were invited, and Martha Sarria, the mayor and other dignitaries of the nearby town of San Jose de los Remates also took part. Since El Roblar is in a very remote valley, we drove as far as we could in "real SUVs": Manual transmission, diesel engine four wheel drive pickups with the backs filled with people (ours included a brass band in the back). Then we all got out and walked up one side of a mountain and down the other to the steep valley, about 4 miles. Some people rode horses, taking a slightly different, longer path with fewer stairs.



Photo 3. Climbing the mountain with the brass band

When we got to El Roblar, we were welcomed by the committee who are in charge of the microhydro installation and walked around the tiny village until the band was tuned up and the dignitaries arrived. It was a festive event with lots of live music and dancing, as well as the usual speeches and shaking of hands.



Photo 4. The mayor and Jaime Muñoz cutting the ribbon on the electric sewing machine, part of the ceremony inaugurating the start of the flow of electricity

Susan Kinne, the organizer of the Grupo Fenix and I were asked to start thing off by dancing with the people in charge. (What good is a renewable energy revolution without dancing?) I danced with the mayor of San Jose de los Remates, a very dynamic woman who played a part in getting the system installed. The brass band had a nice loud sound and could play salsa music as well as the traditional Nicaraguan music. After the ceremony and the lunch served to all of us, we had a tour of the Microhydro installation.



Photo 5. The brass band



Photo 6. Susan Kinne dancing



Photo 7. Kids watching the fun. They also danced.