

## **Thundermist Hydroelectric Facility Tour**

### **Led by the URI Outreach Center**

On Thursday, October 13, 2011 Rhode Island community members, students, and stakeholders visited the Thundermist Hydroelectric Facility in Woonsocket. The tour was organized by the URI Outreach Center and offered as part of the URI Renewable Energy Siting Partnership (RESP) project. Thundermist Hydropower is a small hydropower facility that utilizes the Woonsocket Falls Dam on the Blackstone River. It is operated by Putnam Hydropower, a company based in Connecticut that also owns hydro dams in both Pawtucket and Putnam. Charlie Rosenfield, owner of Putnam Hydropower, led the group on a tour through the



facility exploring the outside dam and water intake as well as the generator and dry transformer inside the plant. While on the tour, Charlie provided us with answers to the following questions in order to understand more about the construction of the facility, daily operation, and how energy is produced and transmitted to National Grid.

#### **1. Can you give us a little history on how the Woonsocket Thundermist Hydroelectric Plant came to be?**

The Woonsocket Falls Dam was originally built as a flood control structure in the 1950's. The dam is located on the Blackstone River, which runs through the City of Woonsocket. The falls at this location was used by multiple historic mills. The plant itself dates back to 1982 when a license was issued to the City of Woonsocket for ownership, who ran it until 1999 when it shut down. In 2007 the city put out a Request for Proposals (RFP) for companies to lease, repair, and run the plant. Although currently the city still owns the plant, Putnam Hydropower started operating the Thundermist Hydroelectric Facility in 2009 as part of a 20 year lease. Although the company has faced high construction and interconnection costs, they have reported success with the 1.2MW hydro plant. The total costs of the project were paid for entirely with private money.

#### **2. How does it work and who takes care of it?**

Part time employees work to operate the facility daily. To prevent debris from entering the hydroelectric facility, debris is automatically raked from the water flowing into the dam and inorganic material is removed, leaving the river cleaner. Water then passes through an adjustable pitch Kaplan turbine system inside the plant. The turbine turns the shaft, which is connected to the gearbox and generator, which produces electricity. A dry transformer converts the generated voltage inside the plant into a form of electricity that National Grid can use. The plant operates around 40% of its maximum capacity as the amount of electricity it can generate is entirely dependent on the amount of water resources available at the dam site. The plant, therefore, has shut down for part of the two summers it has been in operation due to scarce water resources and the lack of a steady flow. During the winter and spring months, the flow is usually adequate to supply the maximum capacity of 800 cubic feet per second (cfs). The threshold flow for operation to occur is about 250cfs, which is not always reached during the summer months.

### **3. What happens with the energy created by the turbine?**

The facility produces about 5 million kWh each year which is sold back to National Grid at the clearing price for electricity. In order to sell the energy back into the grid, the company had to establish interconnection with the grid, a lengthy and costly process accounting for about 15% of the project's total costs. Interconnection was complete in about 9 months and there have been no reported issues with the equipment since the plant has been in operation.

### **4. Has the project been considered a success by the Town decision makers & bean counters/finance dept?**

Residents of the City of Woonsocket are aware of the benefits of the hydroelectric facility.

### **5. What is the most interesting thing about hydropower to you?**

Hydropower is an interesting business with many problems including mechanical and regulatory issues. Green energy, though, is a minimal impact energy source – the hydropower facility at Thundermist is very inconspicuous and passersby's often don't even realize that it is there!

Thundermist Hydroelectric Facility is located at 118 South Main Street, Woonsocket, RI.

For more information on the Renewable Energy Siting Partnership project visit <http://seagrant.gso.uri.edu/resp/>.

Additional upcoming tours:

Thursday, October 27, 2011 at 5:00PM

Solar array at Toray Plastics America

50 Belver Avenue, North Kingstown, RI 02852

Please RSVP to Kristina DiSanto at [kdisanto@my.uri.edu](mailto:kdisanto@my.uri.edu)