Mansion House uses geothermal technology to green its business

By **The Martha's Vineyard Times** - August 12, 2010

A geothermal heat pump system, run by the stored solar energy found in the abundant groundwater below the Mansion House, along with a sophisticated energy control system, now make the hotel one of the greenest hotels in Massachusetts, according to a press statement released this week by Susan Goldstein, the owner with her husband, Sherm, of the Vineyard Haven business.

Mansion House's cooling system now uses geothermal heat pumps to remove heat from the hotel and store it deep underground for use in heating the hotel during the winter. The new energy control system carefully controls where this green heating and cooling is used to maximize energy efficiency and maintain guest comfort.

All of these advances result in a marked decrease in energy usage and pollution by the hotel, Ms. Goldstein reports. They also limit fossil fuel use, energy waste and carbon dioxide production.

Until recently roughly 16,000 gallons of groundwater a day ran under the Mansion House untapped, a nuisance to be pumped away instead of used as a valuable source of "stored solar energy". The recently completed geothermal heat pump system uses this energy source for cooling the guest rooms and common spaces. The heat removed from the hotel by the heat pumps is sent to the groundwater running under the hotel. This heat energy and water is ultimately redistributed back into the water table where it is stored.

A proposed second phase to this geothermal project will expand the system to harvest this heat energy using the heat pumps. Year-round, all of the hotel's domestic hot water and pool heating will come from the "stored solar energy" in the groundwater. In addition, a planned roof top garden, irrigated by the groundwater before it returns to the water table, will supply fresh produce to Zephrus Restaurant.

In the fall of 2007, Martha's Vineyard-based green contractor Nelson Mechanical Design (NMD) met with the owners of the Mansion House, to discuss energy efficiency possibilities at the hotel. Jay McMann, the hotel plant engineer, had attended a geothermal open house that NMD held. Mr. McMann, who also is the principal of a small company that delivers fuel to the hotel, saw that NMD could be of benefit to the Mansion House.

Sherm Goldstein asked NMD to do a study of the Mansion House's energy use and to create a roadmap of how to make the hotel greener. A careful study of the heating, cooling, and hot water systems led to the development of several key projects discussed in an energy proposal that would make the hotel the greenest in Massachusetts – including a geothermal heating and cooling system, a comprehensive control system (DDC or direct digital control), and the use of ground water to heat the pool and domestic hot water.

In 2009, the Goldsteins brought RISE (administering the Cape Light Compact rebate programs) to the Mansion House to work on lighting retrofits. It became apparent that a partnership between RISE and NMD could work to make the Mansion House green vision a reality.

Several projects were proposed and ultimately two were formalized and funded for installation at the Mansion House in 2010. They are the DDC system installation to control and monitor all guest rooms and common spaces, and a geothermal ground water system to retrofit the heating and cooling system. RISE and NMD provided engineering and technical data to support the project applications, and the Cape Light Compact administered their rebate funding program to pay for a significant percentage of the work.

Mansion House Inn, Health Club & Spa will host a reception and presentation on its new geothermal heating and cooling systems, including a questions and answers session with Brian Nelson and Jay McMann, at the Mansion House Inn in Vineyard Haven, Monday, August 23, from 5 to 6 pm.