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Pühajärve Spa and Holiday Resort runs only on green energy

Pühajärve Spa and Holiday Resort has built a new environment-friendly heating system – the building is heated with wood and water with solar panels.

Description of the case study:

Pühajärve Spa and Holiday Resort is located too distant from the central heating system of Otepää and was not able to join district heating or use natural gas for heating. After five years of preparation biofuel fired boilerhouse and a solar heating system were built. The old boilerhouse was demolished.
Costs of heating are very important for spa and holiday resort due to quite large number of rooms and high need for heating for water procedures and a spa center. This green solution helps to heat all the buildings throughout the heating period and to produce hot water in a more environmentally friendly way. Using alternative fuels instead of natural gas is also more economical solution.

The new boilerhouse of Pühajärve Spa is equipped with two boilers, flue gas washer, accumulation tanks and heat exchangers for solar heating system, and heating wood storage facilities. Automatic boiler with a capacity of 1.5 MW is fueled by wood chips and it supplies all buildings with the heat energy throughout the heating period. The second and smaller, 1 MW boiler running on wood billets is used to produce hot water in summer and as additional boiler in very cold winters. There are 400 m² of solar panels placed on the roof of the boilerhouse that heat most of the warm water during the summer and cover one fifth of the resort's energy needs. Flue gas washer helps remove heat from the flue gas. Flue gas that enters the washer is about 200 degrees Celsius, smoke that leaves the washer is about 50 degrees.

Solar heating system allows saving annually an estimated 547 tons of woodchips and nearly 182 tons of ash from combustion.

The period for return on investment is calculated for 12 years. The whole cost of this project was two million euros, of which 371 000 euros were provided by Estonian Environmental Investment Center.
There were researchers from the University of Tartu involved in the process to calculate the cost-benefit of the project. Integrated heating system is also important for education. New boilerhouse is used as an environment-friendly example in the study programmes in local schools.

Pühajärve Spa and Holiday Resort is interested in expanding the solar heating system to be able to use solar heat in the production of all the hot water used in the spa and hotel. Pühajärve Spa and Holiday Resort is also investigating the possibilities to producing electricity from solar energy.

What was the type of green solution? Please select the type of solution.:
Technology/Product [1]
Which technology area(s) does the case study belong to?:
Materials [2], Bio-based materials [3], Energy production [4], Alternative energy [5], Solar energy [6], Biomass energy and waste-to-energy [7], Resource efficiency [8], Energy efficiency [9], Protection of natural resources [10], Air pollution prevention and mitigation [11], Greenhouse gas (GHG) emissions [12], Waste treatment and recycling [13], Other waste treatment and recycling [14], Buildings [15], HVAC (heating, ventilation, air conditioning) [16], Other [17]
How was the green solution financed?:
Private funds [18]
Bank Loan [19]
Other [20]
Capital costs description:
Estimated payback time 12 years.
Emission reductions description:
6 t (2012 compared to 2014) according to the reports of the Environmental Board of Estonia.
Energy consumption description:
4365 kWh per year (through physical measurements)
Water consumption savings description:
413 t per year
Cost savings description:
16 000 € per year (electricity, heating, water, waste)
Operating and maintenance costs:
Yes, low O&M costs
Would you characterize the green solution as:
High capital intensive investment (i.e. above €30,000)
Partners:
Company name

- AS Pühajärve Puhkekodu [21]

Relationship type:
Company that went 'green' by adopting the green solution

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