

The purpose of this project is to clarify the heat reclaim potential in wastewater from factories with their own wastewater treatment plant facility. In addition, to develop a guide for energy consultants to assist in analyzing energy consumption and heat reclaim potential.

For 3 factories there has been made a waste water analysis, Danpo, BHJ and HK Scan. For each factory the internal wastewater processes has been analyzed together with the public wastewater treatment plant capacity.

On basis of these analysis there has been made recommendations where in the wastewater process it is possible to take out the potential energy.

Each factory was screened and analyzed to establish the potential for using the reclaimed heat internally and externally.

The internal setup for heat supply for each factory were analyzed and documented. The payback time for each case must include any rebuild of the heating systems. These costs are NOT included in this report.

The heat reclaim potential for each factory is calculated and can be seen in the below table:

	Summer continous potential [kW]	Winter continous potential [kW]	Yearly energy reclaim potential in wastewater [MWh]	Own energy consumption [MWh]	Own consumption that can be covered [MWh]	External possible consumption that can be covered [MWh]
HK Scan	1.400	1.000	11.600	5.800	4.700	5.800
Danpo	1.450	1.450	10.500	5.800	4.900	4.700
Essentia	490	490	3.900	-	-	3.900

Table 1 shows Energy reclaim potential for each factory

In this project following tools were developed to be used by energy consultant advisers:

- Guide to help analyzing a factories wastewater setup.
- Calculation tool to establish the reclaim energy potential for wastewater including a guide how to use the tool.
- Reports about the possibility for heat reclaim together with simple payback time for each factory.

For each factory the technical setup is very different, because both the temperature levels and need for heat is different for each factory. Common for all factories is that a heatpump is an available option. And that the heatpump can be used with any refrigerant.

Based on the reports made for each factory following table shows the available potential heat reclaim:

	Essentia (BHJ)	Danpo	HK Scan
Heat reclaim potential [MWh pr year]	3.855	10.516	11.613
Surplus af 5 years [Kr]	487.000	1.091.000	1.256.00
Comments	Cannot use reclaimed heat internally. Could sell reclaimed heat externally.	Here can be issues with temperature level of wastewater to surroundings, since local wastewater treatment plant is small.	

Table 2 Shows the total heat reclaim potential and surplus for each factory in the project.

General comments:

- Rebuild of internal piping in factories can be a high cost and can prevent from a successful heat reclaim business case.
- Temperature levels for internal use of water can disturb business case.
- Composition of wastewater is extremely important for selecting heat exchangers.