
U.S. TRADE AND DEVELOPMENT AGENCY



EXECUTIVE SUMMARY

Waste to Energy Plant January 2001

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Region: Europe
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Sector: Water & Environment

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1. Executive Summary

LA Project background and history

I.A.1 Name and address of project promoter

The City of Valasske Mezirici

City Hall
Namesti 7
757 01 Valasske Mezirici
Czech Republic

I.A.2 Project background

This study was generated with the support of the US Trade and Development Agency. The main goal of this study is to assess the feasibility of using the solid waste and biomass as a fuel for the central heat supply system to the town of Valasske Mezirici, and to replace the existing heat distribution lines which are in need of repair and upgrade.

New technology has been proposed for this study which uses thermal processes to convert municipal waste and biomass to usable energy while maintaining required emissions in effect in the Czech Republic and in the EU.

I.A.3 Basic project strategy

The basis for the financial and engineering assessment of the feasibility of the waste to energy conversion are two methods of thermal treatment, i.e.:

- 1) The gasification of solid fuel and the subsequent burning of synthetic gas, under high temperature, in a special combustion chamber.
- 2) Fluidized bed combustion of solid fuels

As shall be described later, both technologies are proven worldwide as to their operation with current operating installations. These will be compared from the point of view of fuel supply and the connection to the existing engineering networks.

Linked to these basic thermal treatment methods are other systems, such as:

- 1) The fuel supply system
- 2) Fuel pre-treatment
- 3) Electric power production
- 4) Combustion product boilers
- 5) Water system of combustion product boilers
- 6) Flue gas cleaning
- 7) Ash treatment
- 8) System of collecting and utilizing of landfill gas.

Simultaneously, the impact of the amount of consumed waste was assessed, in view of the plant economy, such as:

1. The amount of waste necessary to ensure enough heat for the heating of the town and to ensure a continuous operation of the heating plant,
 2. The maximum possible use of the plant capacity and the waste resources in the city of Valasske Mezirici and
- When making the assessment of the project, temperature losses in the currently existing distribution systems were taken into consideration as well as the investment necessary for their reconstruction, and the total economy of the investment.

I.A.4 Project location towards the market and towards resources

As a primary fuel for the new heat plant in Valasske Mezirici the solid municipal waste and various kind of biomass shall be used. The solid municipal waste will be collected from the Vsetin, Novy Jicin and Prerov districts. According to the data available, the amount of waste generated in these three districts is nearly 90 000 metric tons a year. The biomass, i.e. the wood waste of all kind will be made available by purchasing it from wood processing companies. The total quantity of wood waste, as reported by that companies from the Vsetin district, is 29 217 metric tons a year.

I.A.5 Economic and industrial policies supporting the project

The heat source serving as the heat supply utility in the city of Valasske Mezirici is the company DEZA a.s. in which liquid fuels and the so called "end type" gases from chemical production are burned. The age of the heat distribution system in Valasske Mezirici varies in the range of 5 to 28 years. The system of remote heat transmission uses hot steam of 0.6; 1.6 and 5.6 MPa pressure. Because of the poor condition of the heat distribution systems and the media used the heat losses are estimated to be 20 to 30 per cent. This situation requires a comprehensive re-construction of the central heat generation plant.

Experiences gathered by Duke Engineering & Services show that there exist a comparably broad fuel base in form of combustible solid municipal waste and biomass. The contents of this study should demonstrate the technical and financial feasibility by using these "optional" energy resources.

LB Balance of raw materials and wastes

This chapter makes an assessment of the raw material and energy input into the heat plant and the municipal waste produced which influence significantly the economy of the plant.

I.B.1 General availability of raw materials

1. B. 1. 1 Combustible Waste

Solid municipal waste is currently deposited at waste landfills, specifically allocated to this purpose. The usual waste fees at the area considered, i.e. the Vsetin, Prerov and Novy Jicin districts, is 400 to 500,- CZK/metric ton of waste. This price shall also be necessary to accept as the highest price invoiced for the municipal waste disposal.

The main energy source for the heat plant considered will be the combustible solid municipal wastes. Investigation to the territory concerned for the new heat source for the city of Valasske Mezirici, i.e. the Vsetin, Novy Ecin and Prerov districts has shown that there is the following quantity of combustible solid municipal waste available: Vsetin district This district registers annually 27 860 metric tons of combustible waste.