



Properties of coarse fraction in terms of incineration - Liezen

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1. Summary

By order of the Styrian Provincial Government, Specialised Department 1c, and the Waste Management Association Liezen, the fine fraction separated from household waste in the Waste Treatment Plant Liezen was, in the course of the project "Mechanisch-biologische Behandlung der Feinfraktion als Maßnahme eines Optimierungs-konzeptes in Bezug auf vorhandene Abfallbehandlungsanlagen am Beispiel der MBA (Müllbehandlungslage) Liezen" ("Mechanical-biological treatment of the fine fraction as an action that is part of the optimising concept relating to existing waste treatment plants by taking the Waste Treatment Plant Liezen as an example") [1], analysed for its decomposition behaviour and suitability to be put on the landfill acc. to the Landfill Regulation.

In the course of these studies, the total flow rate of waste through the Waste Treatment Plant was balanced. When sorting and processing household waste, there will also be a coarse fraction rich in calorific value, whose study for the properties in terms of incineration have offered themselves as a supplementary order after the project mentioned above.

The present final report "Verbrennungstechnische Eigenschaften der Grobfraktion" ("Properties of coarse fraction in terms of incineration") studies the viable treatment options on the basis of comprehensive analyses of samples taken.



2. Starting Position

The Waste Management Association Liezen intends to meet the specifications of the Waste Management Act and the Landfill Regulation and to ensure the further operation of the existing plant by optimising the operations at the site of the Waste Treatment Plant Liezen.

For these reasons, a project has been commissioned by the Waste Management Association Liezen and the Styrian Provincial Government, Specialised Division 1c. This project has the following working title: Mechanisch-biologische Behandlung der Feinfraktion als Maßnahme eines Optimisierungskonzeptes in Bezug auf vorhandene Abfallbehandlungs-anlagen am Beispiel der MBA (Müllbehandlungsanlage) Liezen Mechanical-biological treatment of the fine fraction as an action that is part of the optimising concept relating to existing waste treatment plants by taking the Waste Treatment Plant Liezen as an example

In order to help to take a decision on the path to be trodden by the Waste Management Association Liezen from 2004, this project is supplemented by the study and assessment of the "properties of coarse fraction in terms of incineration".

This additional project is to allow a technical and economic overall assessment of the treatment steps required for keeping the legal specifications. For though what has been elaborated does prove the achievability of the specified goals, the financial expenditure for the complete treatment and the commensurate financial burden of the population cannot be defined.

If the findings from the additional project justify the additional investments in additional rotting tunnels, surfaces for piles and personnel, the Waste Management Association Liezen will be in the position to meet its obligation of providing for ecologically beneficial waste management even on a long-term basis (beyond 2004). This waste management is made up of an appropriate pretreatment while winning secondary raw materials, of putting the fine fraction whose risk potential is as low as possible on the landfill and of thermally treating the coarse fraction that is rich in calorific value to the state of the art.



3. Procedure

From September 1997 to August 1998, the total waste flow in the Waste Treatment Plant Liezen was exactly balanced on seven days. The amount of waste fed into the waste bunker was exactly weighed as input. Furthermore, the fed waste was comminuted (hammer mill) so that the individual partial flows from the plant, e. g. coarse fraction (screen overflow), fine fraction (screen passage), metal fraction, fine, metal fraction, coarse, and bulky waste, (which was taken out of the bunker), could be recorded in exact quantities as output.

Due to the balancing of the waste flows, it was, among other things, also samples of the coarse fraction that were taken on seven individual days (in summer as well as in winter). When doing this, several single samples were taken in the course of the day. All the samples were, in a further step, analysed for their material composition. Then the single sample whose material composition was most similar to the mean composition of the coarse fraction was analysed for the properties in terms of incineration. The facts that the fed waste was comminuted before sampling and that the further studies were made with the single sample that was most representative statistically are to allow reliable statements on the quality of the



4. Goals

These studies were aimed at gaining data on the composition of the rough fraction, in particular as far as the calorific value and the pollutant content were concerned. These characteristics are of central importance for the further deliberations on a thermal treatment or a thermal use, which may be implemented in industrial incineration plants.



5. Result / Benefits

As compared to conventional fuels (fuel oil, hard and brown coal, biomass), the material properties of the coarse fraction of the Waste Treatment Plant Liezen are well equivalent. On the other hand, it is, of course, a matter of considering the large variation range relating to the substances of content that is typical of waste.

In view of the current debate on also incinerating waste in industrial incineration plants, there are intensified efforts to use defined waste categories as substitute fuels. Of course, the fact that these waste categories are incinerated as well must also be considered in connection with the influence on product quality. In fields of industry that constantly place stringent requirements on the purity of their product, such as lime production for steel industry, the use of substitute fuels produced from waste is excluded. In fields of industry that use substitute fuels, such as used oils, used tyres, etc., even today, however, the use of the coarse fraction is a serious alternative in view of profitability. Besides, the studies imply that the coarse fraction can be used in thermal power plants.

As for the industrial thermal treatment of the coarse fraction, it will be of utmost importance to guarantee a waste quality in narrow tolerances in view of the defined process conditions. Fixing standardised processes for internal quality management and a corresponding external auditing by authorised bodies will be indispensable.

Based upon the applicable Austrian legal position, the following conclusions can be drawn:

- Due to the origin of materials and due to the existing non-homogeneity, the coarse fraction must be regarded as being waste.
- This means that it is subject to "waste management" and not to free trade, which means that a notification for transporting it abroad will be necessary.
- From 2004 ("prohibition of putting waste on the landfill"), the coarse fraction may only be treated in authorised thermal plants. The authorisation requirements are stated in Chapter 4.1 depending on the processing capacity.
- Right now Austria does not have sufficient treatment capacities in such waste incineration plants. If the preparatory time due to authorisation procedures are also taken into account, the authors think it is uncertain whether a sufficient treatment capacity will be available in 2004.