THE BURGKIRCHEN C-RPP PLANNERS CUT THE GORDIAN KNOT OF RESOURCE RECOVERY

Discussion by

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The authors have presented an extremely helpful overview of a comprehensive resource recovery project. The ZAS project incorporates technologies in air pollution control and ash disposal/utilization which are not commonly considered at resource recovery facilities in the United States. In addition, integration of sludge disposal and medical waste incineration into the project is an interesting addition to resource recovery.

A review of this paper raises the following question: How does the ZAS project, specifically the air pollution control system and the ash disposal/utilization technologies, compare to systems that are currently being proposed and built in the United States? It would be informative to address this question on both an economic and technological basis.

I recognize that such an analysis was most likely beyond the intent of the authors, but some general comparisons would be extremely helpful in understanding the differences between the ZAS design and a modern resource recovery system typically proposed by United States vendors. I believe that the following information would allow the reader to better understand the ZAS system in relation to a domestic resource recovery facility. I have attempted to divide this “data request” into economic and technical sections, although it is obvious that answers to these inquiries probably overlap these two areas.

ECONOMIC

(a) The ZAS project is designed with a spare chute-to-stack system. Is this additional system solely for redundancy or is it intended to accommodate an anticipated increase in the waste stream? With respect to cost, what is the increase in installed cost ($/ton) for this redundancy, and what is the increased guarantee in plant annual capacity?

(b) Air Pollution Control equipment for the ZAS project consists of components not typically found in a domestic resource recovery facility. What is the cost of this system as compared to a lime slurry scrubber-baghouse system that would meet the proposed NSPS standards? As an additional item, have the capital and operational costs been established for the ash vitrification system?

(c) The integration of the medical waste incinerators into the facility is an interesting concept. Is it possible to estimate the separate cost of medical waste disposal?

TECHNICAL

The ZAS project is designed to meet the emissions regulations established in TA Luft 86. It would be extremely helpful to the reader if these regulations and the vendor guarantees could be compared to the pro-
posed NSPS standards or at least converted to units of measurement that are more familiar. With respect to the emissions limits on Table 2 of the paper, it is interesting to note that there does not seem to be a specific limit on dioxin/furan emissions. Further, the required furnace combustion temperature of 1472°F is less than the USEPA standard of 1800°F typically associated with dioxin/furan destruction, although the residence time required under TA Luft 86 is 2 sec as compared to 1 sec under USEPA regulations. Is there an explanation of these differences with respect to dioxin/furan destruction?

The issue of control of Nitric Oxide emissions was raised, but a method of control was not selected. If SNCR using ammonia is selected as the control, is this effective at a 1472°F combustion temperature or is some other reagent planned to be used?

A final point of information regards the final disposal of heavy metals. Did the addition of sludge incineration and medical waste incineration to the project influence the selection of a wet scrubbing system based on the heavy metals content of these feedstocks? Does the use of the ESP and the wet slurry system, as opposed to a lime slurry system, require the addition of the fly ash, ash vitrification subsystem?

Overall, the paper presents an example of an advanced resource recovery project and, in addition, presents much “food for thought” in the analysis of future domestic resource recovery facilities. The clarifications suggested in this discussion would help in identifying the trade-offs between emissions control systems. Messrs. Feindler and Hofer are to be congratulated for an informative paper.