

Summary of Session 4

Practical Operating Problems of Energy Recovery
from Municipal Wastes

by

John Fernandes, session chairman
Combustion Engineering Inc.

Session 4 of the Engineering Foundation's Conference at Hueston Woods State Park in Oxford, Ohio - September 19-24, 1976 began with an overview and status report on energy recovery from municipal waste. It was the intention of this presentation to set the stage for the Session and offer a framework about which discussions could proceed following the panel presentations.

The topics covered by the panel members included a discussion of a methodology to evaluate the energy quality and characteristics of waste to energy systems. Further quantification of the methodology was suggested. A series of case histories that involved mass burning refuse fired steam generating systems were presented. They were reported as giving very satisfactory performance with from 75% to 85% on-line availability. It was pointed out that the presence of CO was an indication of reducing atmosphere with a high potential for corrosion and metal wastage. This condition must be avoided in solid waste fired furnaces. The solutions involve both furnace design and correct operating procedures. It was suggested that the superheater overheating and corrosion problems experienced during the start-up of a refuse fired steam generator was due to the overheating of the dry superheater. If the start-up procedure included a light flow of steam through the superheater, it would be kept cool and prevent the problem.

Another panel member reported on the present status of refuse burning and the various solid waste processing systems. He offered his evaluation of the various competing systems and the markets necessary for their success. A list of solid waste research needs was presented, which reflected the thinking of EPA. They were discussed and the reasoning behind the priorities given was presented.

The panel presentations ended by offering a few questions to the audience from an operator's point of view. The first question involved the actual reliability to be expected of the various new and innovative solid waste systems that vendors and engineering firms are promoting. It was suggested that more emphasis be placed on improving and making more reliable existing solid waste system designs rather than abandoning them to new and more innovative problem-prone systems that will involve all

the usual birth pains of a new commercial venture. Pleas were made to educate the public, and especially politicians on the real requirements of solid waste handling and to establish more effective training programs in solid waste handling. A final plea was made that we stop building monuments and start building easily operating, effective incineration systems.

The foregoing summarizes the thoughts offered by the various panel members. Much discussion ensued and the following research and development recommendations were offered:

1. Develop a calorimeter capable of determining the heating value of a large mass of heterogeneous material such as solid waste and correlate the results with field tests that use the refuse fired steam generator as a calorimeter.
2. Develop an accounting and reporting procedure for solid waste processing plants that will enable meaningful, economic comparisons between the various plant systems, from both a capital and operating cost standpoint.
3. Develop a system to enable the evaluation of not only cost but the risks and benefits of the various new and innovative systems coming on line so that we can develop a meaningful comparison.
4. Develop a program to determine the incinerator efficiency of a number of plants using the procedures outlined in the draft of ASME's PTC#33, that is about to be issued for "Trial Use and Comment." Summarize the resulting comments so they can be factored into the final version of this Performance Test Code on Large Incinerators.
5. Sponsor basic corrosion studies that interface with and support the extensive studies underway in many of the boiler manufacturers' research establishments.
6. Support the needed field verification of corrosion research being conducted by the manufacturers. This can be accomplished through organizations like the ASME Research Committee.
7. Conduct corrosion studies leading to a comparison between prepared and unprepared solid waste fired units and compare the different methods of firing and the various firing combinations of waste and fossil fuels as they relate to metal temperatures and tube wastage.
8. Compare the various solid waste firing systems touching on specifics such as steam conditions, waste fuel preparation, quantity fired, excess air use, combustion efficiencies, etc.
9. Explore activities which will gain the support of the Federal Power Commission and the State Public Utilities Commission for refuse firing in utility boilers.

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List of Speakers for Session 4

John Fernandes, session chairman
Combustion Engineering Inc.

Robert Sommerlad, session co-chairman
Foster Wheeler Energy Corp.

G. Stabenow
Consultant to UOP

M. Dvirka
W. F. Cosulich Associates

Stephen Leve
Environmental Protection Agency

Bruce Chimento
Norwalk, Conn.