

Summary of Session 7

Anticipated Trends and Needs
in Industrial Waste Utilization

by

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The session was opened with a statement by the session chairman that the papers to be presented could in no way cover the broad field of industrial waste utilization in detail. The function of the papers was to present a few schemes for recovering energy from industrial wastes, and in so doing to act as a catalyst to stimulate response from the entire assembly.

The introductory paper, entitled "Industrial Waste Utilization - An Overview," discussed the various ways of disposing of industrial wastes and identified in general terms some of the problems encountered and obstacles to be overcome in order to make maximum use of the material and/or energy content of the wastes.

The second paper "Prospects of Energy Recovery from the Incineration of Chemical Plant Wastes," addressed some of the specific problems to be considered when attempting to generate steam from the combustion of a mixture of chemical wastes.

The third paper, "Experience with Burning Industrial Wastes in Steam-Generating and High-Temperature Heat Recovery Systems," described one installation which has generated steam by burning wood wastes, phenolic scraps, battery cases, tires, dynamite manufacturing residue, cow manure, rubber buffings, low grade coal, paper, cardboard, plastics, corn cobs, and shredded garbage as well as a variety of liquid and gaseous wastes.

The fourth paper, "Overcoming Obstacles to Energy Recovery from Industrial Wastes," dealt with the economics of energy recovery from wastes and the advantages and problems associated with the burning of wastes in fluidized bed combustors.

The final paper, "Combustion and Heat Recovery from Polymeric Materials," described a specific process for burning and recovering heat

from waste plastics, primarily atactic polypropylene. Three such systems are currently being installed, two in the U.S. and one in Norway.

Based on information presented in the papers and comments from the assembly, the following research needs were identified. They are listed in order of importance, with number 1 being considered the most urgent.

Industrial Waste Utilization Research Needs

1. Develop a classification system for industrial wastes which would indicate--
 - Physical properties
 - Chemical properties
 - Burning properties
 - Combustion products
 - Ash characteristics
2. Determine the technical and economic feasibility, and the value to industry, or regional chemical waste incinerators.
3. Develop more information on the optimum boiler/furnace designs for burning various classes of industrial wastes.
4. Develop in-situ continuous monitoring equipment to measure harmful materials and monitor the effectiveness of industrial waste blending operations.
5. Investigate further the corrosive effect of HCl vapors in combustion products under various conditions of temperature, concentration, etc.
6. Develop more information on refractory performance when burning various classes of industrial wastes.
7. Develop on-line BTU measuring equipment for various classes of wastes.
8. Develop a list of potential waste fuels such as fly-ash from hog fuel, fly-ash from residual oil, coal washings, contaminated spent activated carbon, etc., and investigate the feasibility of heat recovery by burning in a fluidized bed.
9. Investigate ways to raise the eutectic ash fusion temperature of various classes of wastes by the use of additives or other methods.
10. Evaluate the effectiveness of various types of combustion equipment and various methods of burning to reduce POM (Polycyclic Organic Matter) emissions.
11. Develop effective hot gas cleaning equipment to condition pyrolysis gases for gas turbine fuel.

12. Investigate the problem of "ash blanketing" (i.e., retardation of combustion) when burning certain plastics.

List of Speakers for Session 7

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Lloyd J. Westin
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Rudy G. Novak and
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Combustion Equipment Associates, Inc.

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Copeland Systems, Inc.