Discussion by M. Dvirka, P.E.

As in the case of other innovative resource recovery processes presented at recent technical meetings and seminars, the paper falls somewhat short of its purpose of showing the true merits and shortcomings of the system.

In presenting the mass and energy balance in Figure 2., the author includes the auxiliary fuel as an input to the system envelope, but neglects to add the energy needed for the I.D. Fan, Pulverizer, F. D. Fan and secondary F. D. Fan. Since this equipment is an integral part of the fuel producing process, the energy required to run it must be added as input to the system envelope, most likely changing the energy conversion efficiency of 83% given by the author.

The mass and energy balance diagram (Figure 2.) further omits heat losses from the I. D. Fan and secondary cyclone. It is doubtful that the “I.D. Fan-in-gas”, the “Export Fuel Gas” and the “Combustion Chamber-in-gas” can be all at 550°F.

One of the three major “Export Fuel” components are by hydrocarbon vapors/tars, which are in a gaseous phase when above 550°F. Assuming that at least the dry gas fraction and the vapor/tar fraction of the “Export Fuel” are used on site without any cooling, there is no need for a sophisticated gas cleaning and condensing system, according to the paper.

The author does not say, however, what must be done in the case where the “Export Fuel” must be transported over a certain distance resulting in heat losses and temperature drop below the dewpoint of the vapor/tars.

In the same paragraph the pyrolysis gas temperature is given as 430°C (750°F.), while Figure 2, shows a temperature of 430°C (800°F.). The correct equivalent of 430°C would be 806°F. Which temperature is correct assuming that the 6°F. differential is negligible for all practical purposes?

Describing further the characteristics of the “Export Fuel” the author mentions that no corrosion was observed after 3,000 hours of intermittent operation. It is not clear whether the 3,000 hours represent actual net operating time or an overall period. The actual 3,000 hours operating time would represent a total of 125 days (24 hrs/day), which, in the writer’s opinion, is too short a period to ascertain a corrosion potential of the “Export Fuel.”

It is significant to note that Figure 7, shows only SO2 and NOx as potential pollutants. No mention is made of HCl. Typical refuse composition would suggest at least a trace of HCl in the flue gas.

Finally, operational and maintenance problems, if any, should be mentioned. It is only proper to inform a potential user what has to be expected in terms of useful life of the system components, periodic replacement of materials and parts, etc.