

# PERFORMANCE TESTING OF THE SOLID WASTE SORTING PLANTS

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## Discussion by

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It is my pleasure to have the opportunity to join this discussion. I would like to present the following views for your consideration:

1. As a whole, this paper initiates a very important topic in solid waste management in a developing area or a nation. This solid waste management should be an integrated system which includes waste generation analysis, collection, transportation, handling, processing, and final transformation or disposal.

2. What is the composition of solid waste in Taiwan? Situation in different countries will generate different planning and policies; but as a rule, the foundation for planning and design of any waste management system is governed by the amount and characteristics of the waste generated. This information should be included.

3. On figure 1, "The flow diagram of Pai-Ying presorting process", ferrous metals are separated by a magnetic separator before shredding. The non-ferrous metals should be separated manually or by eddy current before shredding.

4. According to this paper, the capacity of this plant is 30 TPD (tons per day); however, in Figure 2--Mass flow diagram, the figure of 21.0 TPH is used for discussion. The figures don't correlate.

5. From Figure 2--Mass flow diagram, we should be able to determine how much material (by percentage) of waste stream is recycled and what portion will be disposed of by incineration or landfilling. This is not clear.

6. What is the purpose for presenting Figure 3 and Figure 4? The reasons for presenting them are unclear. Perhaps the Legend is missing.

## AUTHORS' REPLY

1. This analysis investigation the performance of first solid waste presorting plant, developed by a local machinery firm in Taiwan. According to the characteristics of local solid waste, this sorting process, consisting of several essential unit operations, such as bag ripping, magnetic separation, shredding, air classification, and screening, was designed to isolate the non-combustible and food waste from the waste stream, and generate the qualified refuse-derived fuel for subsequent treatment and disposal. The authors agree that the solid waste management should be an integrated system. But this is not a paper focusing on system planning for solid waste management here. Readers may get more information of systems analysis for solid waste management from the references cited below.

2. The composition of solid waste is listed in Table 1 in this paper.

3. The authors agree that one more unit operation of either manual sorting or eddy current separation is required for recovering the non-ferrous metal.

4. The sorting capacity is 30 tons/hr.

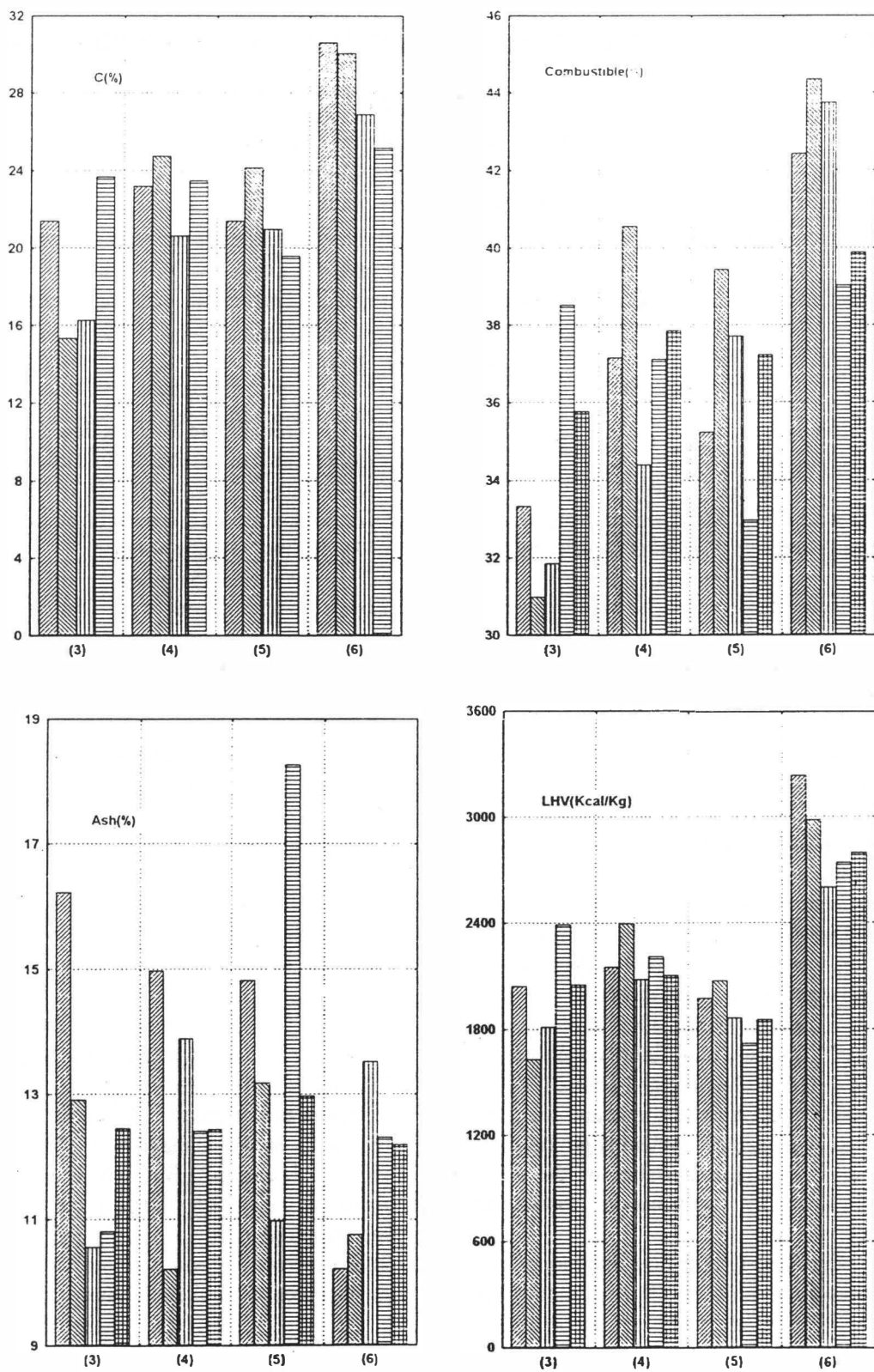
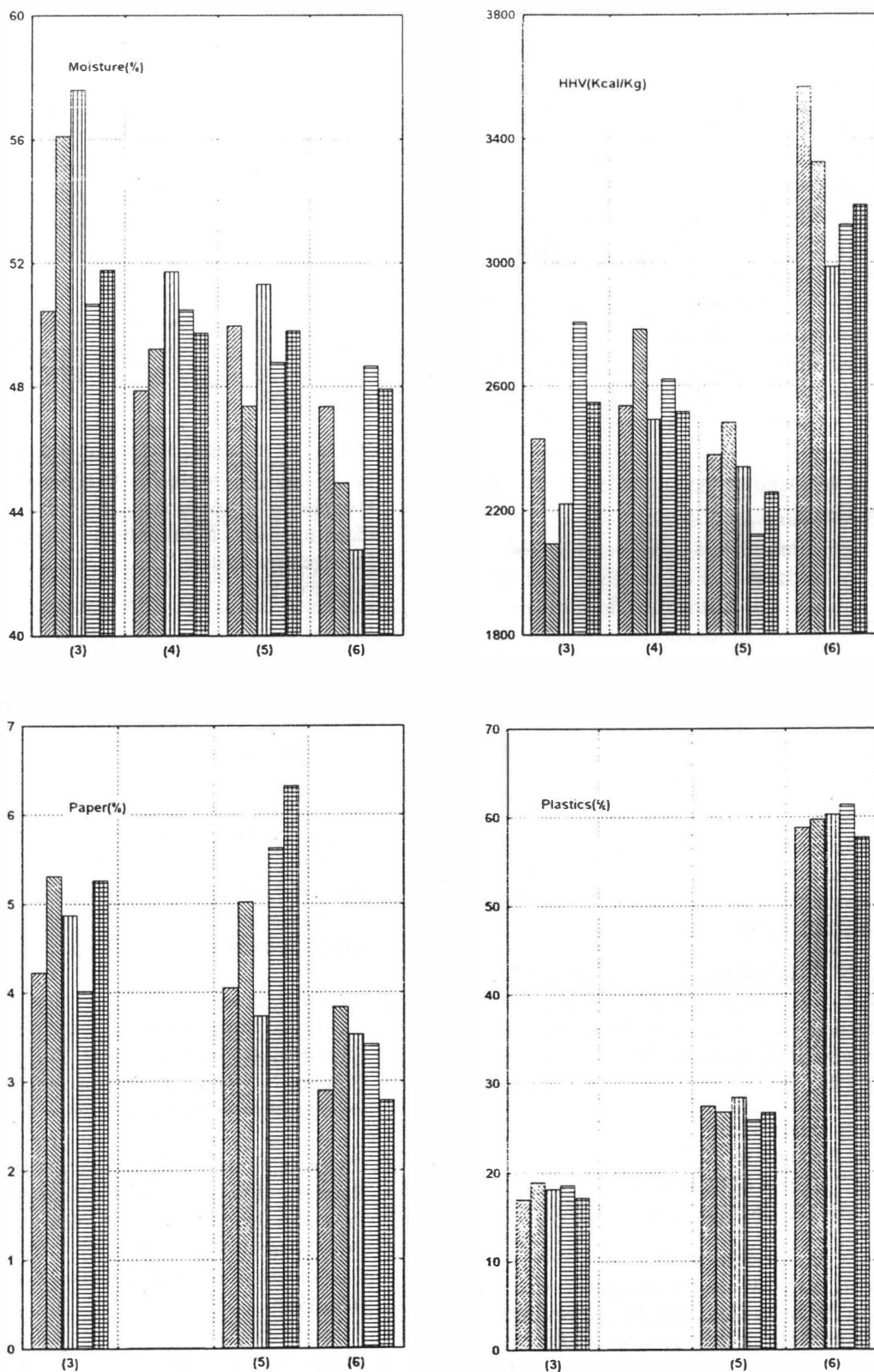


Figure 3 Comparative study of carbon content, combustibility, ash, and LHV



**Figure 4** Comparative study of moisture content, paper, plastics. and HHV

5. The authors agree that we should be able to determine how much material (by percentage) of the waste stream is recycled and what portion will be disposed or by incineration or landfill according to the mass balance diagram (Figure 2). It shows that about 50% of the waste (RDF) can be incinerated, 2% of the ferrous metal can be recovered, and 5% of the material can be composted.

6. The purpose for presenting Figures 3-4 is to illustrate the variation of paper and plastics, moisture, and heat values over the sorting process. It shows that the trommel overflow possesses the highest content of plastics, heat value, and lowest moisture. The legend is arranged at the upper left corner of each bar chart.

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## Discussion by

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The authors provide a detailed, well-presented review of a municipal solid waste recycling facility. The information regarding the quality and quantity of the various recovered waste streams will be valuable for the planning and design of future recycling plants in Taiwan.

More information on the sources of the waste would be helpful, such as the percent from residential and commercial sources and whether there is any separation being done by the residents.

There are also two technical problems: the numbers on the graphs are unclear and the tables are missing.

## AUTHORS' REPLY

The information on the sources of the waste from residential and commercial sources is very difficult to be identified due to the mixtures of residential and commercial are existing in everywhere in the city of Taiwan. We do not have [a] very distinct urban planning program. However, source separation by the residents was promoted in those big city, such as Taipei, in the past few years.