THE PLACE OF THE TROMMEL IN RESOURCE RECOVERY

JEFFREY W. SULLIVAN, RODGERS M. HILL, AND JAMES F. SULLIVAN
Triple/S Dynamics, Inc.
Dallas, Texas

Discussion by:

H. Gregor Rigo
Rigo & Rigo Associates, Inc.
Berea, Ohio

The authors do a good job of summarizing trommel developments and lessons learned over the past 20 years. Hopefully, this paper will be read and grossly mis-sized trommels become a thing of the past.

I would appreciate the authors' comments on the principal features of published efficiency equations (see, for example, Rigo and Davis in the *1984 Proceedings*) as they relate to trommel sizing:

(a) Barrel capacity is governed by the amount of material larger than the hole size (oversized loading) rather than total mass flux when separation efficiency is a design constraint.

(b) Separation efficiency is different for rocks and feathers — that is, a 60:40 split does not tell you that most of the glass falls through and half of the small paper ends up in the oversize.

(c) Efficiency displays an exponential, not linear, decline with length.

(d) The design must consider a screens open area, web design and hole shape.

(e) Barrel diameter and web design determine the exponent of glass breakage.

AUTHORS' REPLY

Dr. Rigo makes good points regarding trommel efficiency — all of his specific points are valid. The equations with which the authors of our paper are familiar fall into two categories: statistical and theoretical. The theoretical models tend to be more broadly applicable, but are difficult to work with, or require data that is ill defined for such heterogenous mixtures as MSW. Furthermore, they tend to exhibit results that are inaccurate, or apply well only with rather narrow sets of feed materials. The statistical models, like that of Rigo and Davis, do a better job of predicting, but require large amounts of data which may not be available, or even obtainable in fields less broadly studied than MSW, in advance of order placement and design commitment.

Anyone specifying trommels benefits from having a good understanding of the available efficiency models, even if only to know what variables are important. Again, our intention in presenting our paper was to discuss some of these variables, present volumetric sizing criteria, and emphasize the need to not only understand the uncertainties, but also encourage designs that follow the judgement of the customer, the experience of the manufacturer, and are as conservative as the economics of the project allow.