I believe this paper is an excellent contribution to the literature as it is the first detailed report of shear shredder performance compared directly to hammermill performance. Several thoughts come to mind which would further enhance the quality of the paper:

1. What were the shaft speeds?
2. Was any variation in shaft speeds or shaft speed differential tested? If so, what were the effects on throughput and output particle size?
3. An availability of 85% is indicated. What were the primary causes of downtime and how may they be overcome?
4. It is stated that in theory, maintenance costs for a shear shredder are less than for conventional hammermills. Have you found this to be true? What is the cost per ton for maintenance? My actual experience in operating a shear shredder on MSW is that maintenance costs are about the same for shear shredders and hammermills.

Thank you for an excellent presentation and a very worthwhile contribution to the literature.
(4) What's the hardness of the cutting surfaces and the spiders?
(5) What happens when one feeds, say, an 8 in. diameter forged shaft that is, say, 2 ft long? How does one remove it?

AUTHORS' REPLY

To Ken Woodruff

(1) The shaft speeds were 36 and 42 rpm.
(2) Variation in shaft speeds were not tested. The effect on throughput and particle size is not known. The difference in maximum shaft speeds is determined by the gear ratios between the hydraulic motors and the shafts. The speed of both shafts can be simultaneously attenuated by the adjustment of a single potentiometer, but the ratio of the shaft speeds remains the same.
(3) The low availability of 85% was predominantly caused by scheduled modification to the equipment. Without this downtime, availability would be much higher. There is occasional downtime caused by an unshreddable object.
(4) Thus far, we have found the maintenance cost for the shear shredder to appear less than that for conventional hammermills. However, this has not been calculated on a dollar per ton basis. It is more related to the elimination of maintenance labor and materials required for rebuilding of grates and hammers. The same general feeling exists for the installation in Elmira, New York. A more detailed cost analysis will have to wait until additional experience is gained.