

TITLE: Keys To Best Practice Comminution

John Starkey¹, Hassan Moussaid²,

¹ Starkey & Associates Inc., Oakville, ON, Canada,

² Starkey & Associates Inc., Oakville, ON, Canada,

ABSTRACT

There are three reasons for this paper. For operators to manage good operations; for designers to produce workable designs; and for educators to provide useful education for mineral process engineers. In all cases, understanding of the transfer size (T80) to the ball mill is critical to achieve best economics in a SAG mill grinding plant.

T80 is important to operators because when SAG energy and Bond Ball Mill Work Index on SAG ground ore are measured, accurate prediction of future throughput in any SAG circuit is possible. Without the plant T80, it can take many months to figure out how to correct what is really a SAG mill grinding problem, because that problem is hidden if the T80 is not measured.

Best practice comminution means running a SAG mill at its best conditions, and avoiding overloading, overspeeding and using excessive steel additions, during the design and operating stages of plant setup. When normal limits for these parameters are exceeded in the design stage, production shortfalls result and operating costs are high. Extra SAG mill capacity is a bonus while lack of capacity is a disaster.

This paper shows how to design workable grinding circuits on the same ore, using either single stage SAG milling, SAB grinding, SABC grinding, or HPGR pre-crushing followed by ball milling. There are many ways to set up a SAG plant and future expansion should always be considered at the design stage. This opportunity is often overlooked because the designer did not understand the options available.

250 words