

---

**LECTURE TITLE: Sustainable Comminution: Giving Mining Clients What They Need, Expect and Deserve****ABSTRACT:**

A comminution circuit in recent history, is one of the most difficult parts of a mineral processing plant to design with confidence. It is usually the most costly part of a plant to build, and it can consume up to half or more of the energy used on a minesite. To suggest that comminution energy usage is sustainable in the long term is not possible at this time. But what we have to choose from today, based on more than 50 years of experience, does include the best available technology, and the best way to design it. There is controversy in the industry as to how to properly approach the subject of comminution design, with many of the optional solutions requiring a level of training and expertise beyond the ability of a non-specialist engineer. Semi-autogenous grinding technology in particular, has not been properly appreciated because of many recent mistakes in its application and design which have blurred the positive perception about what SAG technology is, how it can be used, and how it needs to be designed and built. In order to change this, mine owners and senior managers need to take responsibility for, and learn to understand the fundamental challenges that a comminution circuit poses to the project, to the design process, to the operators who use the equipment, and to the resulting metallurgy. This address is intended to summarize these challenges and offer fundamental engineering solutions which are clear, specific and in a format which is directly applicable to the mining and mineral engineering community.

**KEYWORDS:** Sustainable, Comminution, SAG technology, SAG mill design, Energy, SAGDesign

**THE SPEAKER:**

*John Starkey is a Mining Engineer from U of T with 15 years' experience in mines and process plants, 15 years in process design. He first received a Consulting Engineering License in 1989.*

*His career included work at Kam Kotia, Kidd Creek, and INCO mines and mills. He also worked at Kilborn for 12 years designing the Gays River lead zinc, East Kemptville tin and Quintette coal process plants.*

*He invented and co-developed the SPI and SAGDesign tests which are both widely used in industry today for the measurement of ore hardness for AG and SAG mill designs and geometallurgical modelling.*

*John has presented thirty papers describing his work and progress in ore testing, and SAG mill design.*

*He is a frequent lecturer globally at universities, teaching the fundamentals of AG/SAG grinding mill operation and design.*

*He received the Art MacPherson Award in 2004, and the Fray International Sustainability Award in 2016 and was appointed CIM Distinguished Lecturer in 2017.*

*His primary mission is to capture for clients, the rich benefits of autogenous and semi-autogenous grinding technology, and to help them find the most economical and profitable way to grind their ore.*

**John Starkey, BAsC, P. Eng., FCIM**

**Principal Consulting Engineer and President,  
Starkey & Associates Inc., Oakville, ON**

Please contact [John.Starkey@sagdesign.com](mailto:John.Starkey@sagdesign.com) to see the power point slides used for this presentation.