

IMPROVEMENT OF CASSITERITE LEVELS WITH VARIATION OF FEED ROLL AND SEPARATION ROLL SPEED IN HIGH TENSION ROLL SEPARATOR (HTRS)

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Abstract

The separation of cassiterite mineral as a concentrate from tin ore was carried out by various gravity separation methods, one of which is using an electrostatic separator with the type of High-Tension Roll Separator (HTRS). This separation is often an obstacle because the level of cassiterite (SnO₂), which is a HTRS product, does not meet the requirements for smelting tin ore. The purpose of this study was to obtain cassiterite levels that meet the requirements of the melting unit, namely Sn \geq 70%. The method used in this research is research and development, where the research variable was carried out from the current condition and developing the research results obtained by optimization experiments. In addition, this study contributes to the process parameters of the HTRS separation. Feed was obtained from the jig with the cassiterite (SnO₂) level of 56.97%. Furthermore, the HTRS experimental variable was the feed roll speed varied from 20, 25 and 30 Hz, while the separation roll speed varied from 10, 15, 20, 25 and 30 Hz. As for the results of the research at the initial stage, the cassiterite (SnO₂) concentrate product \geq 70% was produce at a variation of the feed roll speed of 20 Hz and 15 Hz separation roll speed. The results of this study are expected to be use in the processing unit to obtain cassiterite (SnO₂) level that meets the requirements of the smelting unit.

Keywords: Cassiterite, Feed roll speed, High tension roll separator, Optimization, Separation roll speed.