

The influence of moisture in the vibrating screen sizing and selection processes

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Abstract

Vibrating screens are widely used in comminution circuits in many different applications throughout the mining industry. They can be used to classify, from large pieces of rock in the scalping screens, to very small particles as millimetre fractions. Besides classification, they are also utilised in many other applications such as dewatering, desliming, washing and trash screening. Although the screening process is simple and is easily understood, it may involve high complexity in certain conditions that occur quite often in mining applications. One of those conditions is the screening process involving high moisture contents, particularly common in tropical regions around world, where important mineral deposits are located. For low natural moisture, the screen size estimations done by traditional methods normally show proper correlation compared to actual results obtained in industrial screens. However, when the moisture content is high, calculations may show significant deviations as compared to real operations. This fact indicates that traditional screen design methods are not able to cover moisture issues properly. Moreover, traditional methods with high moisture ores may result in serious performance problems which will affect the entire comminution plant. The objective of this work is to present a vibrating screen sizing method developed by Metso for difficult dry screening duties. This method is based on laboratory testing work with a reduced quantity of samples, resulting in more accurate and reliable screen size estimation for high moisture ores. The conclusions demonstrate the technical feasibility of the method and its application limits.

KEYWORDS: Screen; Moisture; Testing; Sizing.