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A Practice Model for Quality Improvement in Concrete Block Mini Plants Based on Merapi Volcanic Sand

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Abstract : Due to abundant Merapi volcanic sand in Yogyakarta City, many local people have utilized it for mass production of concrete blocks through mini plants although their products are low in quality. This paper presents a practice model for quality improvement in this situation in order to supply the current customer interest in good quality of construction material. The method of this research was to investigate a techno economic evaluation through laboratory test and interview. Samples of twenty existing concrete blocks made by local people had only 19.4 kg/cm2 in average compression strength which was lower than the minimum Indonesian standard of 25 kg/cm2. Through repeat testing in laboratory for fulfilling the standard, the concrete mix design of water cement ratio should not be more than 0.64 by weight basis. The proportion of sand as aggregate content should not be more than 9 parts to 1 part by volume of Portland cement. Considering the production cost, the basic price was Rp 1,820 for each concrete block, comparing to Rp 2,000 as a normal competitive market price. At last, the model describes (a) maximum water cement ratio is 0.64, (b) maximum proportion of sand and cement is 1:9, (c) the basic price is about Rp. 1,820.00 and (d) strategies to win the competitive market on mass production of concrete blocks are focus in quality, building relationships with consumer, rapid respond to customer need, continuous innovation by product diversification, promotion in social media, and strict financial management.

Keywords : concrete block, good quality, improvement model, diversification
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