COMPOSITION DETERMINATION FOR CONVEYANCES MINING TOOL (DUMP TRUCK) USING SIMULATION MODEL
(Case Study: PT.United Tractors Semen Gresik, Tuban)

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Abstract

PT. United Tractors Semen Gresik (PT.UTSG) is a subsidiary company of PT.Semen Gresik (SG PT.) which is engaged in mining industry. The main activities of PT.UTSG itself is mined limestone (Limestone) as the main raw material in cement production. To maintain continuity of supply of limestone, PT.UTSG is demanded to always be ready at the mines that provide the major equipment digger (excavator) and conveyances (Dump Truck). Determination of the number and type of major equipment such mining dump truck is especially difficult thing to do because the demand pattern of SG limestone is fluctuates on a daily basis and also operation of the crusher itself is not fixed on its every shift in one day. Besides mining system conditions that are probabilistic, making the determination of the main mining equipment becomes more complex. Therefore in this research will be conducted to determine the number and types of mining equipment using a simulation model with the help of ARENA software. This simulation model can describe probabilistic variable nature of existing in a mining area with a model that has similarity to the real system and by doing some experimentation scenarios will then obtained the number and type of major mining equipment that is better than ever before to achieve the desired production target.
Based on the simulation results of some experiments carried out in scenarios results indicate the composition of the number of dump trucks with a capacity of 30 tons 32 units and 20 units of dump trucks with a capacity of 50 units (10 units 40 units owned and lease) has been able to meet the annual demand of limestone requested PT.SG. The total cost of the dump truck combination is far more economical with total cost of the experiment compared to other scenarios. Hence, this combination can be said quite efficient for PT.UTSG

**Keywords:** limestone mining main tools, simulation models, the concept of cost