

From the Editor

This last journal of the 2012 edition focuses in good mining practices on mineral and coal, particularly for the aspects of exploration, environment and economics according to the Law 4/2009 about Mineral and Coal Mining. Articles related to this law emphasise that holders of mining licences must increase value added of mineral and coal resources in the implementation of mining operation, processing and utilisation. The holders of mining licence of operation and production must domestically conduct process the mineral and coal. It is also stressed that environmental issues are the main points to be managed wisely. In addition, most small-scale mining always gives rise to degraded environment and causes air and water pollution to the communities around the mining operation. This issue must be solved in order to create a healthy environment and to make a harmonious living between the mining company and the surrounding communities.

Five papers presented in this journal are contributed by researchers and lecturers from R&D centre and university. Some of the authors are well-known figure for their discipline and have contributed their brilliant ideas to improve the mineral and coal technology. The rest is young researchers who are interested in managing a good environment due to mining operation in this country.

Excessive vibration causes damage like mine slope. This vibration can physically and numerically be modeled. The model indicates that the seismic loading affects the rock strength reduction. This condition is shown by the trend of the SRF decrease, if the g value increases. Moreover, the thickness of critical zone represented by the thickness of quartz sand layer would be more unstable, if the zone is thicker. This is indicated by the trend of the SRF decrease, if the quartz sand layer increases. This means that that thicker critical zone on the mine slope will reduce the rock strength and the mine slope will be unstable.

Governmental Regulation No 85 year 1999 related to management of hazardous material states that in order to identify and to define coal ash as hazardous material or non-hazardous material, coal ash should be evaluated by characteristic and toxicity tests. The properties of coal ash sample from Bukit Asam power plant were evaluated. The chemical analyses show that the main chemical compositions of the coal ash are categorized as non-toxic. The other result shows that mortality of mice was not found in every dose given, and it can be classified as a non-hazardous material. The results of the test reveal that the concentrations of all the heavy metals are invariably well below the permissible limits for discharge of effluents according to the regulation and the US EPA standard. Thus, it is also categorized as non-hazardous material. The results generated from this study indicate that the coal ash has a vast potential for reclamation of degraded coal mining land.

Effect of combustible content in coal ash refuse on the efficiency of thermal oil heater system was studied. The study investigated the discrepancy of the actual performance of the heater compared to the design specification. It is assumed that the coal type and the operational problem were the cause of deviation. This affects combustion efficiency and the amount of reactive materials within coal ash refuse. Combustible analysis in coal ash refuse can be used as an indicator of inefficient performance in a coal fired thermal oil heater system. According to the analysis, it is found that the design operating condition can be achieved within a low limit. It is concluded that the system operation plays an important role in the successful running of an efficient system.

Indonesia has not had a processing industry of bauxite to alumina, so large bauxite production is completely exported in the form of raw material. Meanwhile, alumina is imported to fulfill the domestic need of aluminum industry. In order to know the condition of the bauxite export trade, term of trade (TOT) analysis was conducted. Parameter measured is the bauxite export price compared with the import price. Results of the TOT values indicate that Indonesia was still the exporter of the bauxite raw material with an average of the export value was lower than the import value (deficit), although its volume was big due to the very low price. When the bauxite processing industry is able to be conducted immediately, probably it can improve the export value, surplus, increase of the national revenue and improvement of TOT of bauxite in Indonesia.

The processing method for gold comprises cyanidation, amalgamation and gravity concentration. Amalgamation is one of the most dangerous methods that pollute the environment. The process was conducted by artisanal gold mining extensively throughout the country and involving around 100.000 miners. The gold was obtained after the silver within the bullion is leached by HNO_3 equipment used for burning the Au-Hg is an open vessel that is operated in the kitchen at which the people also cook the food. This condition is very dangerous for the miner and their families as the Hg vapor is very toxic and can damage human lung. Another problem is that Hg-containing fine tailings are directly discharged to the river. This mercury can pollute the aquatic system and become dangerous for human through food chain. The efforts decreasing the negative effect of artisanal mining employ a retort to burn the amalgam, centralize the trommels; concentrate the gold ores prior to amalgamation. If tailing with relatively high gold content would be processed by gravity concentration or cyanidation, the location for tailing gold processing should be safe and far from the river and houses.

From all the papers published in this journal, R&D centre should do something new to anticipate all the above challenges rather than to cope with all problems. It is really expected that the Law 4/2009 must be implemented to accommodate the good mining practices including the aspects of exploration, mining environment and economics of the mineral and coal commodities, which are perfectly processed in line with the user demands. The applied technologies for mineral and coal should be improved to obtain value added of the commodities.

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