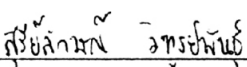


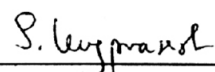
Sureeluck Witoonpun 2006: Using Cleaner Technology for Biomass Management of Cement Industry. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Mr. Suchat Leungprasert, Ph.D. 145 pages. ISBN 974-16-2375-5

Cement manufacture is an energy intensive process. Fossil fuels such as oil and coal were used as main energy sources producing carbon dioxide, the most important Greenhouse Gas causing climate change. To reduce carbon dioxide emission, biomass is used as substitution fuels for fossil fuels. Carbon dioxide emission from biomass fuels is considered climate-neutral because emission can be compensated by re-growth of biomass in the short term. Nevertheless, using biomass fuels could bring about environmental impacts if there are no proper management practices during the storing-up process.

The aims of this thesis were to study and apply Cleaner Technology (CT) in Biomass Management of Portland Cement Industry, emphasizing on the storing-up process before any utilizations. This study was carried out at a Portland cement production plant of more than 200,000 tons biomass fuel consumed per annum. The evaluation showed that, the approximate losses of the biomass fuel during the storing-up procedures were 17,000 tons per year, approximately 8 million Baht in equivalent. The mentioned losses occurred mainly in three storage areas, which are the wood chipper 8,760 ton/year, wood storage pile 5,882 ton/year and biomass silo 2,964 ton/year, equivalent to annually give away of 4,642,800 , 2,352,600 and 1,080,425 Baht respectively. Moreover, wastewater and dusty air environment were found in those storage areas as a result of improper practices.

The economically-sound options were installation of a supply system together with a conveyor belt to the wood chipper machine and concrete flooring of the biomass silo. An investment of 390,000 Baht for the wood chipper machine seemed to be a better alternative in terms of priority and economical point of view, compared to an investment of 4.8-million Baht for the biomass silo. The annual saving resulted from renovation of the wood chippers alone was 13-million Bath. Based on economic consideration, improving of wood storage pile was not a suitable option. However, in the long term, wood storage pile improvement could yield much more storage space of the biomass fuels and better the environmental conditions in that area.

  
Student's signature

  
Thesis Advisor's signature

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