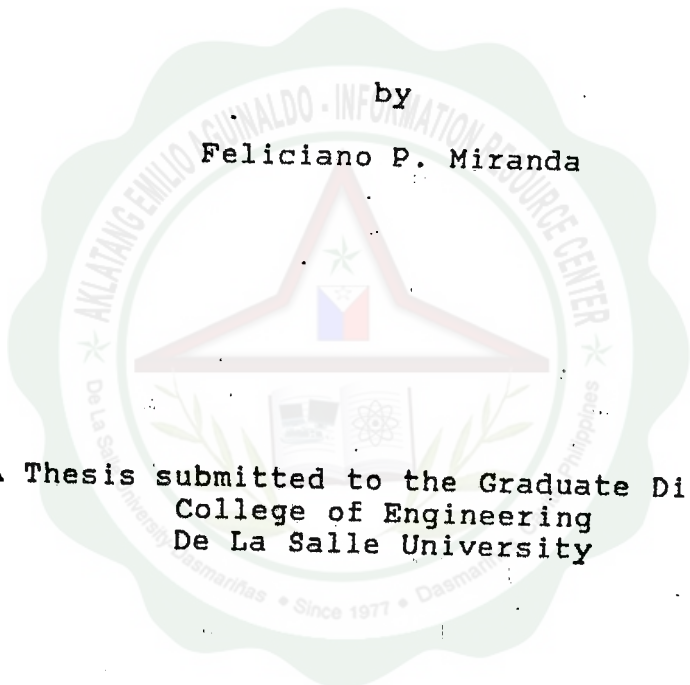


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INVESTIGATION OF THE PHYSIO-THERMAL PROPERTIES OF LIQUID CHARCOAL AS SUBSTITUTE FOR BUNKER OIL IN INDUSTRIAL PLANTS

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ABSTRACT

A study was made of the thermal characteristics of liquid charcoal to determine the best charcoal slurry that would closely approach the fuel characteristics of bunker oil. This study also involved testing the liquid charcoal in a retrofitted bunker oil burner.

The basic components of the mixtures were pulverized charcoal made from saw-dust and ipil-ipil, and bunker oil and water as the blending media. The amount of charcoal for each mixture varied from 15% to 50%.

To determine which among the sample mixtures closely approach the physio-thermal characteristics of bunker oil, the following properties of the mixtures were taken into consideration: a) flash point and fire point, b) viscosity, and c) heating value. The results of the tests on the physical and thermal properties of liquid charcoal indicates that the optimum percent charcoal in the mixture is 30% with 70% bunker oil as the blending medium.

The 30% charcoal - 70% bunker oil mixture was used as the test fuel in retrofitting a commercially used bunker oil burner.



The desired atomized fuel oil formation of the liquid charcoal was obtained by increasing the diameter of the nozzle tip ports without necessarily changing other test conditions like oil preheat temperature, oil pressure and atomizing air pressure.

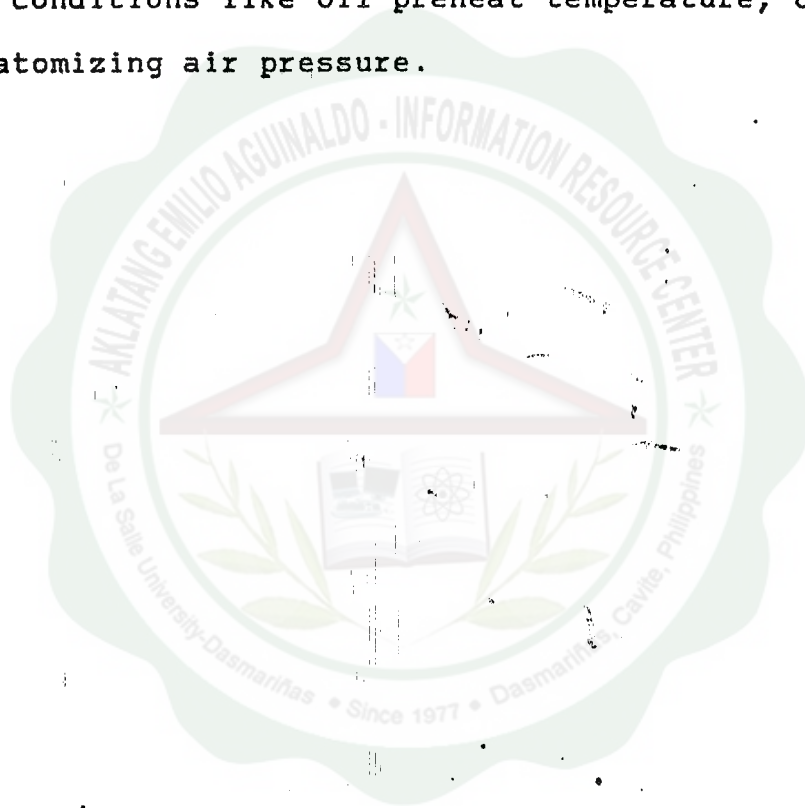


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