TO STUDY THE EFFECT OF VARIABLE LOADING ON FATIGUE PROPERTIES OF HEAT TREATED ALUMINUM ALLOY 6063-T5

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" I/We declared that this thesis is the result of my/our own work except the ideas and summaries which I/We have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

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ABSTRACT

The application of the heat treatment to aluminum alloys is widely practiced in order to attain some desired property. Thus, by one type of treatment, the strength and hardness can be raised, whereas by another type of treatment, ductility may be improved. Suitable heat treatment thus serves to improve the mechanical properties of both cast and wrought alloys. Futhermore, fatigue behavior of heat treated aluminum alloy 6063-T5 is studied where variable loading are applied. Microstructure study is done to enhance the understanding on this topic.Type of specimens and heat treatment that used in this final project are :

1. As Received Specimen (Aluminum Alloy 6063-T5)

2. Heat Treatment 1 Specimen
   I/we heated the specimen at elevated temperature 550°C for 5 minutes, quenched in cold water for less then 10 seconds, reheated at 250°C for 2 hours and than natural aged for 24 hours.

3. Heat Treatment 2 Specimen
   I/we heated at 550°C for 1 hour, quenched in cold water for less then 10 seconds and than natural aged for 24 hours.

4. Heat Treatment 3 Specimen
   I/we heated the specimen at elevated temperature 550°C for 1 hour, quenched in cold water for less then 10 seconds, reheated at 250°C for 2 hours and than natural aged for 24 hours.

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