ENDURANCE FATIGUE TEST ANALYSIS OF MEDIUM CARBON STEEL AISI 1045 WITH FULL ANNEALING HEAT TREATMENT USING ROTARY BENDING TESTING MACHINE

By

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ABSTRACT

Steel is a material that is widely used in the industrial world. One of the widely used type of steel is AISI 1045 steel as the material of the shaft for the engine components maker. On its use, the axis of operation receive dynamic load in a long time, so that the vulnerable experienced a failure when used due to experiencing fatigue failure. A weary resilience steel affected by mechanical properties and microstructure of the steel. Heat treatment is one way that can be done to change the mechanical properties and microstructure of steel and one of a kind of heat treatment that can be given on the steel AISI 1045 is full annealing method which can improve the

steel ductility. To find out the fatigue strength value of AISI 1045 steel that has been granted full annealing heat treatment, can be done by performing testing using the rotary bending testing machine. As for the testing method is done by giving the variation of load by 20%, 30%, 40%, 50% and 60% of the ultimate tensile strength value, as well as do macroscopic observations by taking action against the pattern of the fracture that occurs in the test specimens. The test results show that the value of the maximum fatigue strength is able to accomplish is 1.112.645 cycle on the 20% loading, accompanied by the presence of symptoms of ductile to brittle transition between 40% and 50% load from ultimate tensile strength value.

Keywords: Fatigue Test, Rotary Bending, Medium Carbon Steel AISI 1045.