

ABSTRACT

ENDURANCE FATIGUE TEST ANALYSIS OF CARBON STEEL AISI 1045 WITH TEMPERING

By

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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 tempering method which can improve the steel ductility. To find out the fatigue strength value of AISI 1045 steel that has been granted tempering 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 1.107.150 cycle on the 30% loading, accompanied by brittle fracture on the 50% and 60% loading, ductile-brittle fracture on the 40% loading and ductile fracture on the 30% loading.

Keywords: Fatigue Test, Tempering, Medium Carbon Steel AISI 1045.