ANALYSIS OF EFFECT SURFACE ROUGHNESS ON FATIGUE RESISTANCE STEEL AISI 1045 WITH ROTARY BENDING TEST

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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. Surface roughness of a component affects the fatigue strength (fatigue) because the rough surface of an object or component resulting in easy early onset of crack that led to the fracture resulting component service life becomes shorter.

To find out the fatigue strength value of AISI 1045 steel which affected the surface roughness, 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%, 60 and 70% of the ultimate tensile strength value, as well as doing macroscopic observations by taking action against the pattern of the fracture that occurs in the test specimens. The results show that the value of the maximum fatigue resistance that can be achieved is 829 080 cycles for surface roughness 0.5μm - 1μm at 20% loading and continues to decline against the increasing roughness.

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