EFFECT OF ANNEALING PROCESS TO HARDNESS AND MICRO STRUCTURE ON PIPE SA 179 WHICH HAS BEEN BENT

Name : **Lanal Septiawan Nugroho**
NRP : **2114 030 017**
Department : **D3 Mechanical Engineering FTI-ITS**
Supervisor : **Ir. Gathot Dwi Winarto MT.**

Abstract

Steel alloy is a steel that is often used as a boiler pipe or heat exchanger. Extreme operational conditions and pipe bending processes that are not done properly cause changes in the value of violence, therefore heat treatment is required. Annealing is one method of heat treatment used to improve the mechanical properties of steel. The purpose of this study was to see the effect of annealing treatment on hardness and microstructure of SA 179 alloy steel.

In this experiment the annealing process is carried out in a manner the steel is heated to a temperature of 850^0C, then testing hardness to determine the effect of heat treatment on the change of hardness value and also observation through optical microscope to know the micro structure of SA 179 material.

From the results of hardness testing, it was found that the pipe material that has been bending increased the hardness of the pipe before the bending and when the bending pipe heat treatment by annealing process has decreased the hardness value of the bending pipe before the heat treatment. While the results of metallographic testing, on pipes that have been heat treatment by annealing process there are grains of ferrite and pearlite which tend to be more uniform and smoother than the pipe before the heat. So it is proven that by doing annealing process on this bending pipe can improve the mechanical properties of the pipe.

Keywords: Effects of Annealing, Bending Process, Hardness Test, and Metalography Test

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