

# **Analysis of The Effect of Variations in Welding Current with Dissimilar Metal SS 304 and ST 37 Welding Joints on HAZ Area and Tensile Strength**

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## **ABSTRACT**

The current during the welding process is directly related to the penetration of the weld. The amount of current used can affect the atomic structure, the higher the heat when welding takes place, the more heat-affected the recrystallization process can be. The larger the grain, the lower the strength of the welded joint. This study aims to determine the effect of varying currents of 110 A, 130 A and 150 A on the HAZ area and Ultimate Tensile Strength. The method used was experimental using SS 304 and ST 37 plates with a thickness of 6 mm each plate. The research was conducted at the Polytechnic of Malang. The results showed that the best current was obtained at a current variation of 110 A with the lowest HAZ area of 78.32 mm<sup>2</sup> and the highest tensile strength of 214.7 MPa. The greater the welding current used, the greater the area of the HAZ area and the tensile strength will also increase, but when the current used is too high, the tensile strength will decrease, because too high a current can make the electrode melt faster resulting in a welding surface. which is wide and the penetration is too deep and results in the value of the tensile strength and brittleness of the welding results.

**Keywords:** *Dissimilar Metal, SS 304, ST 37, Heat Affected Zone, Ultimate Tensile Strength*