

ABSTRAK

Temperatur *flame straightening* berpengaruh terhadap kualitas hasil pengelasan yang terdistorsi. Permasalahan penelitian adalah pengaruh temperatur *flame straightening* terhadap sifat mekanis dan struktur mikro. Tujuan penelitian adalah menganalisis pengaruh temperatur *flame straightening* terhadap sifat mekanis dan struktur mikro dari hasil pengelasan yang terdistorsi. Metode penelitian adalah kuantitatif eksperimental dengan material S355J2 yang dilakukan pengelasan GMAW dan *flame straightening* pada hasil pengelasan yang terdistorsi antara temperatur 625-675°C dan 750-800°C menggunakan media pendingin air. Hasil penelitian spesimen pengelasan tidak terdistorsi yaitu nilai persentase perlit 37% ^A/_A, nilai kekerasan 198,01 HV, dan nilai kekuatan tarik 569,3 MPa. Spesimen pengelasan terdistorsi dengan *flame straightening* temperatur 750-800°C yaitu nilai persentase perlit 25% ^A/_A, nilai kekerasan 182,43 HV, dan nilai kekuatan tarik 545,7 MPa. Kesimpulan penelitian adalah nilai persentase perlit dari struktur mikro, nilai kekerasan (HV), dan nilai kekuatan tarik (MPa) mengalami penurunan diakibatkan peningkatan temperatur *flame straightening* dengan tidak digunakannya *holding time*.

Kata Kunci: Distorsi, Flame Straightening, Sifat Mekanis, S355J2, Temperatur.

ABSTRACT

The flame straightening temperature has an effect on the quality of distorted weldments. The research problem is the influence of flame straightening temperature on the mechanical properties and microstructure. The research aims to analyze the influence of flame straightening temperature on the mechanical properties and microstructure of distorted weldments. The research method is quantitative experimental, using S355J2 material welded by GMAW and subsequently flame straightened at temperatures ranging from 625-675°C and 750-800°C using water as a cooling medium. The research results show that the undistorted weldment specimen exhibits a pearlitic microstructure with a percentage value of 37% ^A/_A, a hardness value of 198,01 HV, and a tensile strength value of 569,3 MPa. The distorted weldment specimen which flame straightened at temperatures of 750-800°C exhibits a pearlitic microstructure with a percentage value of 25% ^A/_A, a hardness value of 182,43 HV, and a reduced tensile strength value of 545,7 MPa. The research concludes that the increase in the flame straightening temperature without the use of holding time results in a decrease in the percentage value of pearlitic microstructure, hardness value (HV), and tensile strength value (MPa).

Keywords: Distortion, Flame Straightening, Mechanical Properties, S355J2, Temperature.