

Pengaruh heat input terhadap ketangguhan patah dan struktur mikro pada sambungan las pipa api 5L = Effect of heat input on fracture toughness and micro structure in weld connection api 5L pipe

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Abstrak

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Pipa jenis API 5L adalah yang sering dipakai untuk sistem transportasi tersebut. Dari berbagai peraturan yang terkini masih terdapat kegagalan pada sambungan pipa tersebut sehingga sering timbulnya terjadi kebakaran akibat tumpahnya minyak dari kegagalan sambungan las. Pada saat proses pengelasan yang berdasarkan peraturan atau rekomendasi seperti prosedur pengelasan (Welding Procedure Specification - WPS) sering kali tidak dapat diikuti secara benar sehingga akan mempengaruhi struktur mikro daerah terpapar panas lasan (Heat Affected Zone - HAZ). Pada penelitian ini akan diperbandingkan perbedaan Heat Input terhadap ketangguhan dan kekuatan sambungan las. Kemudian dilakukan pengujian tidak merusak (Non Destructive Test-NDT) seperti Radiographic Test yang berguna untuk mengetahui cacat yang mungkin timbul dalam las-lasan. Kemudian pengujian merusak (Destructive Test-DT) seperti uji ketangguhan, uji keluluhan, uji impact, uji Crack Tip Open Displacement-CTOD untuk mengetahui kekuatan dan ketangguhan dari sambungan las. Dari hasil pengujian diatas Heat Input adalah unsur utama yang harus diperhatikan dalam proses pengelasan.

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ABSTRACT

API 5L pipe is type of pipe very often used for the transportation system. From various current regulations there are still failures in the pipe joint, the frequent occurrence of a fire occurs due to the oil spill from the failure of the welded joint. During the welding process based on rules or recommendation such as welding procedures (Welding Procedure Specification - WPS) found cannot be followed correctly and will impact to the microstructure of the weld area exposed to heat (Heat Affected Zone - HAZ). This research will be compared to the difference Heat Input with toughness and strength of welded joints. Then Non-Destructive Test (NDT) as Radiographic Test useful to know the defects that may arise in the welding-weld. Then destructive testing (Destructive Test-DT) such as toughness test, impact test, test Crack Tip Open Displacement-CTOD to determine the strength and toughness of the welded joint. The result showed Heat Input is one of the elements that must be considered in the welding process.;API 5L pipe is type of pipe very often used for the transportation system. From various current regulations there are still failures in the pipe joint, the frequent occurrence of a fire occurs due to the oil spill from the failure of the welded joint. During the welding process based on rules or recommendation such as welding procedures (Welding Procedure Specification - WPS) found cannot be followed correctly and will impact to the microstructure of the weld area exposed to heat (Heat Affected Zone - HAZ)

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