Pengaruh konsentrasi klorida dan perubahan mikrostruktur terhadap ketahanan korosi baja tahan karat 316l pada larutan NACL dengan metode polarisasi siklik = The effect of chloride concentration and microstructure transformation to corrosion resistance of austenitic stainless steel 316l in NACL solution using cyclic polarization method

Muhammad Faisal Rendi, author

Abstrak

[Logam merupakan kebutuhan utama dari infrastruktur pada industri. Korosi pada logam merupakan suatu hal yang tidak dapat dihindari, dan seringkali menjadi penyebab utama kegagalan dalam berbagai industri, terutama industri minyak dan gas yang berada di lepas pantai. Pemilihan material yang sesuai dapat mencegah terjadinya korosi pada industri, sehingga meminimalisir penggantian komponen dalam waktu yang singkat.

Penelitian ini dilakukan untuk mempelajari perilaku korosi pada pipa baja tahan karat austenitik 316L pada lingkungan NaCl yang bervariasi. Parameter elektrokimia dievaluasi dengan menggunakan metode polarisasi siklik untuk mengetahui perilaku korosi yang terjadi pada lingkungan NaCl. Pemanasan dilakukan untuk mendapatkan perbedaan bentuk mikrostruktur dari keadaan awal. Kemudian diuji didalam lingkungan NaCl 3,5% yang memiliki kelarutan oksigen tertinggi dan bandingkan dengan logam yang tidak dipanaskan pada konsentrasi yang sama.

Hasil penelitian menunjukkan bahwa ketahanan korosi berubah berdasarkan konsentrasi NaCl, logam paling tahan dengan korosi pada NaCl 1%, dan paling lemah ketahanannya pada NaCl 3,5%. Perubahan mikrostruktur yang menjadi lebih tidak seragam dan kemunculan sensitasi menurunkan ketahanan korosi. Dari hasil polarisasi siklik didapati bahwa mekanisme korosi pada lingkungan NaCl adalah korosi sumuran.
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Steels are basic needs for industrial infrastructure. Corrosion in steels can?t be avoided and often plays a role as a major cause of failure in industries, especially offshore oil and gas. Proper material selection is one of the best ways to prevent corrosion and minimize component replacement caused by corrosion.

This study investigates corrosion behaviour of austenitic stainless steel 316L in various NaCl solutions. Electrochemical parameter is evaluated by cyclic polarization, and also to determine which corrosion behaviour has occurred. Heat is given to obtain different microstructure shapes from the initial one. Then tested in 3.5% NaCl solution and compared to the un-heated with the same solution concentration.

The results shown that corrosion resistance affected by Chloride presence, with 1% concentration was the strongest, and 3.5% was the most susceptible. Microstructure transformation to more un-uniform than before heated, and presence of sensitization decreases the corrosion resistance. From the cyclic curve, it is known that the corrosion behaviour that occurred was pitting corrosion., Steels are basic needs for industrial infrastructure. Corrosion in steels can’t be avoided and often plays a role as a major cause of failure in

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