

EVALUATION OF MECHANICAL STRESS EFFECT ON THE PROPERTIES OF STAINLESS STEEL SURFACES BY SECM, SKP, SVET AND LEIS

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Abstract : Mechanical stress or fatigue cracks originate from various surface imperfections, such as inclusions, pits, or residual stress. It is very important to use a method to predict the likelihood of environment-assisted cracking or pitting corrosion. The austenitic stainless steel shows high corrosion resistance level. It is known that plastic deformation decreases its resistance. The corrosion form in case of this steel is very special and the corrosion tests are difficult. The investigation of Scanning Kelvin Probe (SKP), scanning vibration electrode technique (SVET) and localized electrochemical impedance spectroscopy (LEIS) to evaluate the influence of mechanical stress on the electrochemical properties of austenitic stainless steel 316L. We tested the selected steel about its corrosion behaviour after high rate deformation. We wanted to find a relationship between the corrosion resistance decreasing and the rate of the plastic deformation. Plastic deformation effect of the corrosion resistance in case of austenitic stainless steel

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