

하나로 잔류응력 측정 장치를 이용한 용접된 스테인리스 스틸
304 판재의 잔류응력 측정
Residual Stress Measurements of Welded Stainless Steel 304 Plate
Using the HANARO Residual Stress Instrument

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요 약

금속재의 두께에 따른 응력의 변화를 비파괴적으로 측정하기 위해서는 중성자 회절에 의한 잔류응력의 측정이 유일한 방법이다. 본 논문에서는 중성자회절을 이용한 잔류응력 측정 원리를 기술하였다. 하나로에서 개발된 잔류응력 측정장치를 이용하여 측정된 스테인리스 스틸 304 판재의 용접부위에 대한 잔류응력 측정 결과를 기술하였다.

FIV Analysis for a Rod Supported by Springs at Both Ends

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Abstract

An axial-flow-induced vibration model was proposed for a rod supported by two translational springs at both ends. For developing the model, a one-mode approximation was made based on the assumption that the first mode was dominant in vibration behavior of the single span rod. The first natural frequency and mode shape functions for the flow-induced vibration, so-called FIV, model were derived by using Lagrange's method. The vibration displacement at reactor conditions were calculated by the proposed model for the spring-supported rod and by the previous model for the simple-supported(SS) rod. As a results, the vibration displacement for the spring-supported rod was larger than that of the SS rod, and the discrepancy between both displacements became much larger as flow velocity went up. The vibration displacement for the spring-supported rod appeared to decrease with the increase of the spring constant. As flow velocity increased, the increase rate of vibration displacement was calculated to go linearly up, and that of the rod having the short span length was higher than that of the rod having the long span length although the displacement value itself of the long span rod was larger than that of the short one.