Low-cycle fatigue characteristics of Cr18Mn18N0.6 austenitic steel under strain controlled condition at 100 °C

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Abstract

Low-cycle fatigue characteristics (e.g. cyclic stress-strain curves, strain-life curves, stress-life curves, and transition fatigue life) of austenitic stainless steel Cr18Mn18N0.6 used for supercritical turbogenerator retaining rings were studied under an axial strain controlled condition with total strain amplitudes ranging from 0.005 to 0.0085 at working temperature 100 °C. Cr18Mn18N0.6 was found to be cyclic softening during low-cycle fatigue with the extent and rate of cyclic softening increasing with strain amplitude. Stress amplitude decreased more