Characterization of Low Cycle Fatigue Parameters of Rotor Steel using Sub-sized Specimens

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Abstract:

The paper is dealing with strain controlled cyclic testing method employing a novel strain-control technique based on digital image correlation (DIC) in low-cycle fatigue (LCF) region. The cyclic behaviour of 22CrMoNiWV 8-8 rotor steel was investigated on sub-sized round specimens with a diameter of 2 mm in gage length and total length of 20 mm. These results were compared with results obtained using conventional specimens designed in accordance with the ASTM E606 standard. The attention was paid to confirm the suitability of the proposed sub-sized geometry, testing set up and procedure. The test procedure and results obtained enabled to record hysteresis loops, construct Manson-Coffin curves and obtain cyclic material properties in LCF region.

Key words:

Low cycle fatigue, sub-sized specimen, digital image correlation