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Continuous AE Measurement Using an FBG Sensor during a Pressure Test of a CFRP Pressure Vessel

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Acoustic emission during a pressure proof test of a CFRP pressure vessel was measured using an FBG sensor, as well as a conventional piezoelectric sensor for reference. Part of an FBG-inscribed optical fiber other than the grating section was affixed to the vessel so that the Bragg wavelength of the FBG was not affected by the strain applied to the vessel. The FBG sensor showed resonant characteristics and could detect AE continuously throughout the test where the maximum strain reached 1 %. Acoustic emission detected by the FBG sensor exhibited a cumulative behavior similar to that detected by the piezoelectric sensor. The FBG sensor was demonstrated to have comparable AE detection capability to conventional piezoelectric sensors.

Ключевые слова:

Содержание.

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