

The invention relates to measurement technology, namely to extensometry, and can be used for measuring strains of solids, subjected to tension, including irreversible ones, for example, critical residual strains in pressure vessels, in particular in high-pressure composite cylinders.

The noncontact strain gauge comprises at least two segments of microwire - a sensitive wire (2) and at least a reference wire (3), made of alloys with amorphous structure and bistable magnetization behavior, mounted on a solid body (1). Upon application of an alternating magnetic field, generated by a sinusoidal current, the gauge gives a response in the form of pulses, induced by the remagnetization of the wires, readout by an excitation and reading device (4). The area of the hysteresis loop and the coercive force of the sensitive wire (2) with high magnetostriction increase simultaneously with tensile strain, and the corresponding parameters of the reference wire (3) with close to zero magnetostriction do not depend on tensile strain. Calculating the area ratio of the hysteresis loops makes it possible to measure strain and is independent of distance. The reference wire (3) is made of alloys with a Curie temperature slightly higher than the maximum temperature of the gauge operating range, and the Curie temperature of the sensitive wire (2) is much higher.

Claims: 5

Fig.: 5

