Flash pulse phase thermography for a paint thickness determination

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Abstract:

The contribution describes a fast contactless measurement of a paint thickness non-uniformity using flash pulse thermography. Specimens sprayed by a paint were thermally excited by a flash lamp and temperature responses were recorded by an infrared camera. The recorded sequences were post-processed with Fast Fourier Transform to obtain phase angles. Differences in the resulting images showed phase differences which corresponded to a paint thickness non-uniformity. Furthermore, the phases were correlated with the thickness by means of calibration curve so that the paint thickness could be determined with flash pulse phase thermography measurement. The method showed a promising potential in the contactless evaluation of the paint thickness. Average error of the thickness determination was less than 10 % for samples with paint thickness from 41 to 74 μm on AISI 304 substrate. Advantages, disadvantages and limitations of described method were discussed.

Key words:

IRNDT, flash pulse thermography, thickness measurement, quality control