

## Scanning Pulse Phase Thermotgraphy with inductive line source

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### Abstract

Thermographical investigation with a line heating source has been carried out, to localize small subsurface defects. The object is moved along an induction coil, used as heating source. The infrared camera records either in reflection or in transmission mode the temperature distribution. From the recorded images the pixel columns are extracted to create a new image sequence. After adjusting the images according to the shift between two consecutive recorded images, the sequence represents the temporal change of the temperature after a short heating pulse. With Fourier transformation a phase image is created, therefore the technique is called scanning pulse phase thermography (SPPT). Finite element simulations and analytical calculations are used to determine the optimal parameters. Experimental results are presented, showing that in reflection mode a 6 mm defect in a 9 mm thick slab in a depth of 7 mm can be detected. In contrast, in transmission mode, even a 4 mm defect in 8 mm depth could be made visible.

Keywords: thermography, induction heating, line heating, PPT, SPPT

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