

IR Spot Weld Inspect

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Copyright Summary

In the automotive industry, destructive inspection of spot welds is still the mandatory quality assurance method due to the lack of efficient non-destructive evaluation (NDE) tools. However, it is costly and time-consuming.

Recently at ORNL, a new NDE prototype system for spot weld inspection using infrared (IR) thermography has been developed to address this problem. This software contains all the key functions that ensure the NDE system to work properly: system input/output control, image acquisition, data analysis, weld quality database generation and weld quality prediction, etc.

When the software receives a trigger signal, it starts acquiring IR images, analyzing image data and calculating quality-related thermal signatures. Next step, the system can work in either "Training" or "Inspection" mode based on the user selection. In the first mode, the software compares the thermal signatures with the user input data and generates a weld quality database; in the second mode, the software compares the thermal signatures with the database and gives the quantitative prediction of the weld attributes. If any out-of-tolerance weld is detected, the software will send out a signal for further action.

Inventor

CHEN, JIAN

Materials Science and Technology Division

Licensing Contact

FRANCO, NESTOR E.

UT-Battelle, LLC

Oak Ridge National Laboratory

Rm 125D, Bldg 4500N, MS: 6196

1 Bethel Valley Road

Oak Ridge, TN 37831

Office Phone: (865) 574-0534

E-mail: francone@ornl.gov

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