Application Report

BRANCH : Foundry

TEST TASK : Sound velocity measurement on safety parts made of cast iron

SOLUTION : Ultrasonic testing technique

The nodular graphite content in spheroidical graphite cast iron – and thereby the information on the elasticity modulus can be derived by means of determining the longitudinal sound velocity. Many numbers of sound velocity determing instruments have been sold to various foundries for this application.

The exact thickness of the cast part and its sound velocity can be measured with required accuracy at one glance, by means of our ultrasonic instrument ECHOMETER 1075 from our principal company **M/s KARL DEUTSCH GmbH, Germany**.

Nodularity Inspections

We can also offer you advanced, automated solutions based on the following test methods :

(a) Automated ultrasonic immersion testing

We can offer you a fully automated solution to check the nodularity in your iron castings based on through transmission technique employing an ultrasonic immersion testing method. The measurement runs in two steps. Firstly, the water path between the two probes is measured without any component inserted in the tank. Then, the remaining water path and time of flight through the casting are measured with a component inserted. In such case, the material thickness need not be determined separately.

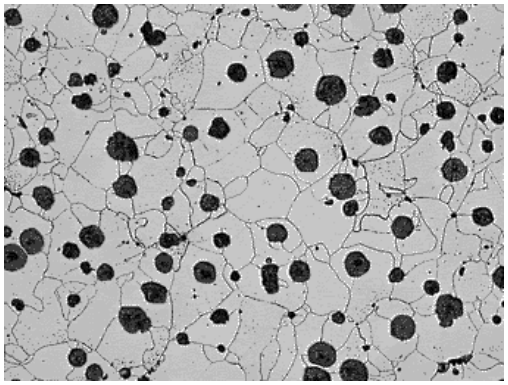
(b) Acoustic Resonance technique

Acoustic Resonance Testing (ART) is a very upcoming, non-destructive testing method that allows rapid and inexpensive 100% testing of a wide range of work-pieces. It relies on the well-known physical effect that a body, after suitable excitation, oscillates at certain characteristic modes and frequencies (its natural or resonant frequencies).

In the non-destructive testing technology Acoustic Resonance Analysis, the natural frequencies of the specimen are stimulated by an impact. The sound is the "language" of the specimen, its "finger print".

The sound velocity within the part depends on the micro structure and defects (cracks, inclusions, casting faults). A change-over to another type can be done within few minutes by controlled self-learning (reference run).

We offer ART solutions from our principal company **M/s RTE Akustik + Pruftechnik GmbH, Germany**.



Suitable Equipment :

- Acoustic Resonance Analysis Test System, SR 20 AT
- ECHOMETER 1075
- Automated Ultrasonic Immersion Scanning
