

### **1.3.73. THE DESIGN OF MOBILE WHEEL SET ULTRASONIC INSPECTION SYSTEM BASED ON THE PHASED ARRAY ULTRASONIC TECHNOLOGY**

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A new automatic NDT system for the CRH (China Railway High-speed) wheel set is introduced in this paper, which can supply an efficient, high reliability and high quality service for the CRH wheel set. The mobile wheel set ultrasonic inspection system is based on the phased array ultrasonic technology which can realize the on-line automatic non-destructive testing of the wheel set.

Initially, the cause and typical defects as well as main defect area in the wheel are discussed. Then the design of phased array probe suites and distribution in the wheel tread surface and other part is given. The system can inspect all kinds of defects which cover the rim and disk area of wheel so that it can meet the demands of railway. Finally, the inspection ability of this system has been tested and verified by the reference wheel set with artificial and natural defects.

Through the phased array technology the key parameter of POD, the efficiency and accuracy for the wheel inspection can be improved and suitable for the areas difficult to access.