

PREMISES AND HISTORY OF THE METHOD

Ultrasonic inspection of train axles and wheelsets from the axles heads is being used since decades.

The inspection task is fatigue crack detection due to rotating bending and shock due to railway irregularities or ballast impact. Viareggio accident has been caused by a wheelset failure.

FIRST IMG VERSION

With Phased Array solution being very popular and affordable, IMG developed a rotary scanner with a dedicated Phased Array probe which enables the generation of electronically programmable beam angles in order to address the specific areas of the axle more prone to fatigue cracks generation; the scanner has been designed to perform the inspection in one single turn and with the wheelset mounted on the carriage.

BLIND AREAS OF “HEAD INSPECTION”

All full railway axles have 3 or 4 threaded holes at the ends (normally M18) which serve for the tightening of the pressed bearings. When the probe meets the threaded holes, there is no ultrasound transmission and a possible defect on the axis in that angular position (or 180° opposite) cannot be detected correctly, especially if the defect is very short.

KEY POINTS

- Unprecedented system for the inspection of wheelsets axles, even in operation.
- Patented Phased Array ultrasonic control method, designed for maximum POD of fatigue cracks. (patent pending number 102024000000771 dated 2024/01/17)
- No more blind areas caused by the presence of pressed bearing threaded holes.
- Ease of interpretation of the results.
- No need for axles additional machining like other solutions require.

