

- **Nominativo/i Inventore/i:** Shant Kenderian, Boro B. Djordjevic, Donatella Cerniglia
 - **Titolo brevetto:** Laser-air hybrid ultrasonic testing of railroad wheels
 - **Abstract:** A remote, non-contact system for detecting a defect in a railroad wheel as the wheel is stationary or moving along a railroad track includes; (1) a pulsed, laser light source for generating an ultrasonic wave in the wheel, the ultrasonic wave having a direct portion and reflected and transmitted portions if the direct portion encounters a defect in the wheel, (2) an optical component in the path of the light from the light source for forming the light into a specified illumination pattern so that the generated ultrasonic wave has a specified wavefront, (3) an air-coupled transducer or a group of transducers for sensing the acoustic signal emanating from the wheel that results from the ultrasonic wave traveling through the wheel, and (4) a signal processor, responsive to the sensed acoustic signal, capable of distinguishing whether the sensed signal has a component that indicates the existence of a reflected portion in the ultrasonic wave, wherein the presence of such a component in the acoustic signal indicates the existence of a defect in the railroad wheel.
 - **Data deposito:** 25/3/ 2004
 - **N. brevetto:** US2004/0056496 A1
 - **Ambito territoriale di tutela (italia, europa, internazionale, etc...):** Int, U.S.
 - **Opzioni/Disponibilità:** /
 - **Area del brevetto (es. Chimica e biotecnologie):** Controlli non distruttivi
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- **Nominativo/i Inventore/i :** Shant Kenderian, Boro B. Djordjevic, Robert E. Green Jr., Donatella Cerniglia
 - **Titolo brevetto:** Laser-air hybrid ultrasonic testing of railroad tracks
 - **Abstract:** Formed Laser Sources (FLS) using pulsed laser light for generation of ultrasonic stress waves are combined with air-coupled detection of ultrasound to provide for the hybrid non-contact, dynamic and remote ultrasonic testing of structural materials, especially railroad tracks. Using this hybrid technique, multimode and controlled frequency and wavefront surface acoustic waves, plate waves, guided waves, and bulk waves are generated to propagate on and within the rail tracks. The non-contact, remote nature of this methodology enables high-speed, full access inspections of rail tracks. The flexibility and remote nature of this methodology makes possible the detection of critical cracks that are not easy, or impossible to detect, with current inspection techniques available to the railroad industry. For purpose of field testing, the equipment of the present invention can be located above the top surface of the rail. Cracks of unfavorable positions and orientations at hard to reach geometrical locations can be detected with this Laser-Air Hybrid Ultrasonic approach. By analog amplification, gating, digital signal capture, signal processing and digital data analysis and processing, such rail testing can be performed totally automated.
 - **Data deposito:** 8/1/ 2004
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 - **Ambito territoriale di tutela (italia, europa, internazionale, etc...);** Int, U.S.
 - **Opzioni/Disponibilità:** /
 - **Area del brevetto (es. Chimica e biotecnologie):** Controlli non distruttivi
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- Nominativo/i Inventore/i; Ettore Casagrande, Donatella Cerniglia
 - Titolo brevetto: Metodo per effettuare l'ispezione in corsa senza contatto di binari ferrotramviari ed apparecchiatura per attuare il metodo
 - Abstract;/
 - Data deposito; 3/9/2003
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 - Ambito territoriale di tutela (italia, europa, internazionale, etc...); italia
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- Area del brevetto (es. Chimica e biotecnologie):): Controlli non distruttivi
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- Nominativo/i Inventore/i: Donatella Cerniglia, Claudio Cosenza, Giuseppe Bomben, Alberto Ruffo, Damiano Varagnolo, Luciano Marton
 - Titolo brevetto: Metodo ed apparecchiatura per l'ispezione dinamica non a contatto delle rotaie ferroviarie
 - Abstract;
 - Data deposito: 6/7/2007
 - N. brevetto: VE2007A44
 - Ambito territoriale di tutela (italia, europa, internazionale, etc...): Italia
 - Opzioni/Disponibilità: /
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