Novel in-motion train weighing system

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Weighing loads exceeding 20 tons - such as trucks or trains - while in motion is no mean feat. French engineers from the Centre d'Etudes Nucléaires de Bordeaux-Gradignan have developed a novel weighing technology using steel beams with in-built instrumentation serving as a weighbridge. Easy to operate, accurate and efficient, this weighing system was patented on 6 April 2011. A first patent license has just been signed in the railways sector.

In industry, trucks, trains and other heavy loads are frequently weighed. The scales currently used for this purpose are equipped with a multitude of interconnected measurement sensors, which require software compensation and are thus complex to use.

The “instrumentation & detectors” department of the Centre d'Etudes Nucléaires de Bordeaux-Gradignan has developed a highly innovative industrial weighing system in which steel beams of different shapes and/or lengths serve as accurate, robust, oversize scales. This novel device is based on a fundamental principle of mechanics: the steel structure itself, resting on two supports, serves directly as sensor. It supplies a unique electrical signal that is directly proportional to the weight of the load, whatever its position on the beam. Placed at the level of a rail, the system gives the weight of a train to an accuracy of within 0.5 %. Another significant advantage is that it works while the train is in motion. It is no longer necessary to weigh each carriage individually, which saves time and causes less wear and tear for the rails.

This technology is covered by a patent published on 6 April 2011.

Following an industrial assessment phase, an exclusive patent license for the railways sector has recently been acquired. Other applications are envisaged, whether for static and dynamic weighing or for all types of loads: trucks, objects on overhead travelling cranes (a widely-used handling equipment in industry), etc. An option contract has just been signed by a company hoping to try out this technology in the haulage and lifting sectors.

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