

Title (en)

AUTOMATED SYSTEM FOR COMMERCIAL INSPECTION OF TRAINS AND CARS WITH MODULAR ARCHITECTURE

Title (de)

AUTOMATISIERTES SYSTEM ZUR KOMMERZIELLEN INSPEKTION VON ZÜGEN UND WAGEN MIT MODULARER ARCHITEKTUR

Title (fr)

SYSTÈME AUTOMATISÉ D'INSPECTION COMMERCIALE DE TRAINS ET DE VOITURES À ARCHITECTURE MODULAIRE

Publication

**EP 3663163 A1 20200610 (EN)**

Application

**EP 19000532 A 20191125**

Priority

RU 2018143177 A 20181205

Abstract (en)

Automated system for commercial inspection of trains and cars with modular architecture (ASCITC 3.0), containing a mounted above the rail U-shaped structure with eight television cameras (TC) mounted on it. The first and the second TC are mounted on the supports of the U-shaped structure and designed for obtaining images of the left and right sides of a car and forming images of inventory numbers of cars. The third and the forth TC are mounted on the crossbar of the U-shaped structure and designed for obtaining images of car roofs and monitoring the seals on the tank doors. Counter directed the fifth and the sixth TC are mounted on the lower parts of the opposite supports of the U-shaped structure and designed for monitoring wheeled charts and reading the inventory numbers of car frames. The seventh and the eighth TC oriented counter-currently towards the direction of the rolling stock are mounted horizontally on the upper parts of the opposite supports of the U-shaped structure and designed for forming images of the hard-melting inset of the locomotive current collector. The outputs of all TC are connected to the PC video inputs connected to a monitor. The outputs of the first, the second, the fifth and the sixth TC are connected to the controller of automated car inventory numbers recognition connected to the PC. There are the pressure sensors mounted on the rails in the section of the U-shaped structure, the outputs of which are connected through the controller to the PC. The first thermal imaging camera (TIVC) is made high-resolution, fixed on the separate support taken beyond the dimensions of the U-shaped structure and designed for forming full in height thermographic images of tanks and cars with the purpose of monitoring of the permitted filling level of the tanks and brakes performance and is connected to the PC. The second TIVC mounted at the level of the wheeled charts axles is designed for monitoring performance of the car brake system and connected to the overheating detection controller and the PC. The third TIVC oriented counter-currently towards the direction of the rolling stock and mounted on the crossbar of the U-shaped structure monitors the overheating of the current collector hard-melting inset and connected to the relevant controller. Three scanning laser range finders (SLRF) build 3-D model of cargo and cars, thus controlling the compliance of their dimensions with the shipping documents and monitoring the car walls damage. Three single-beam laser range finders (SBLRF) duplicate the SLRF work in terms of detection of the maximum oversize of the cargo and rolling stock. The strain pressure sensors mounted on the rails monitor the overload of the wheel pair, non-uniformity of the loading on the wheel pair, caused by dangerous cargo shift by the car width, and wheel pair defects. The technical result is the automated monitoring of the cargo commercial safety and operability of the rolling stock performed during the train movement which ensures improvement of the transportation safety.

IPC 8 full level

**B61L 27/00** (2006.01); **B61K 9/00** (2006.01); **B61L 23/04** (2006.01)

CPC (source: EP RU)

**B61K 9/08** (2013.01 - RU); **B61L 23/041** (2013.01 - EP); **B61L 27/57** (2022.01 - EP)

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