

Field test of the C-BORD (effective Container inspection at BORDer control points) project at the land border crossing place in Rösztke, Hungary.

The main purpose of the H-2020 C-BORD („effective Container inspection at BORDer control points”) EU project (2015-2018) was to develop, combine and test new comprehensive and cost-effective detection methods for higher efficiency non-intrusive inspection of freight containers to reduce false negative and positive alarms and to reduce safety risks for customs agents. These technologies are planned to be applied both at sea ports and at land border crossing points to control the illegal trade of e.g. cigarette, drugs, explosives, arms, radioactive and nuclear materials and stowaways. Five different detection methods developed to protect EU borders were trialled at three field tests at sea ports (Rotterdam and Gdansk) and at a land border crossing place at the Hungarian-Serbian non-EU border in Rösztke. These detection methods involved (1) an advanced X-ray scanning system, (2) a set of relocatable and mobile radiation portal monitors, (3) a new design of evaporation based detectors, (4) a rapidly relocatable RRTNIS system and (5) the first EU photofission system to detect special nuclear materials. The first three techniques were tested in Hungary at a medium throughput land border crossing point in Rösztke.

The next generation cargo X-ray system has been designed to improve both the accuracy and the material classification capabilities of the X-ray images. The new HCVM-T X-ray scanner (of Smiths Detection), capable of operating both in portal and in mobile modes is used to inspect entire trucks, containers and even smaller vehicles for threats such as explosives, narcotics, weapons of mass destruction (WMDs), contraband, as well as for manifest verification, reducing the need for manual inspection. When equipped with the automatic radioactive material detection, the unit simultaneously carries out both the X-ray inspection and an analysis to detect the presence of radioactive gamma and/or neutron materials within the container or vehicle.

The current version of RPMs (of Symetrica and CEA) is a new generation of passive neutron and gamma detection systems used both in mobile and relocatable arrangements, designed to detect radioactive and nuclear materials. The main aim of the passive technology development is to achieve better sensitivity and improved isotope identification. The new design is capable of determining the category of the radioactive material and its position in the cargo. During the field validation exercises two types of RPM systems, integrated with a HCVM-T X-ray system were tested by using various radioactive and NORM materials. Besides this RPM system, similar gamma and neutron detectors were located in a personal car and were used during the field exercise to test both mock-up containers and commercial trucks.

The evaporation based detector system (of Manchester University and Bonn-Rhein-Sieg University) detects volatile chemicals that may be present in a container, giving warning of hazard or contraband. Information given by the EBD is intended to complement X-ray imaging, and/ or NII results from other technologies and intelligence by enabling molecular specific detection (i.e. chemical information instead of physical properties). C-BORD implements a new biomimetic approach to detect and identify volatile chemicals within the atmosphere of a container. Thus, the capability to identify a specific target is subject to the volatility of the respective substance and is directly influenced by the packing/sealing of the substance.

In the frame of the field exercise pre-prepared (mock-up) containers/freight trucks were filled with cargo (e.g. paper, clothes, wood) and threat materials (e.g. tobacco, arms, radioactive materials) for the tests. Besides the prepared containers, real containers loaded with commercially traded products were also selected for control by the C-BORD technologies, as part of the regular daily inspection.

As a conclusion it was found, that the next generation cargo X-ray system of SmithsD with improved accuracy and material classification capabilities has fulfilled the expectations. Similar conclusions were drawn with respect to the high level performance of the Symmetrica designed mobile, portable, built-in and fixed relocatable monitors. The CEA designed fixed radiation portal monitor has shown also good performance. The gas phase detection technology was evaluated as a promising method, which requires further development and testing. The idea of combining detection technologies to maximize effectiveness and efficiency was achieved by developing the common user interface, which allows better allocation of human resources and also facilitate to shorten the time of the customs inspections. This is with no doubt one of the biggest benefits of the C-BORD project. Summarizing the test experiences gained at the Rösztke land border crossing location from the customs point of view it was found that the present system is simple, easy to operate and the operation does not require serious expertise. It was also concluded, that customs organizations need more technology support

for the control of non-commercial traffic and private vehicles.

Gender

Male

State

Hungary

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