CLAIMS

1. A vehicle contents inspection system for inspecting contents within a moving vehicle, the system comprising:

a vehicle entry gate;

an exit;

a pair of radiation shielding walls extending from the vehicle entry gate and exit, and having a space therebetween that defines a shield wall radiation zone which includes a main beam zone;

a radiator for triggering radiation emission of which a radiation main beam is emitted at the main beam zone across the radiation shielding walls towards one or more radiation detection arrays to conduct a scanning process to inspect the contents within the vehicle that passes through the main beam zone, the radiator is switched on to emit radiation when the vehicle reaches the main beam zone and is switched off when the vehicle completely passed through the main beam zone; and

a sensing device that triggers the switching on or off of the radiator at the main beam zone and ensures clearance at the exit;

wherein the vehicle entry gate is configured to allow a subsequent vehicle to enter the shield wall radiation zone after a prior vehicle completely passed through the main beam zone but still remaining within the shield wall radiation zone, and upon detection of clearance of the exit by the sensing

device after the prior vehicle exits the shield wall radiation zone through the exit, the subsequent vehicle is allowed to enter the main beam zone to begin the scanning process.

2. The system as claimed in claim 1, wherein the radiation shielding wall is installed with a vehicle and container optical recognition system for scanning a license plate, a container number, or both, of the vehicle; and a control system for facilitating operations of the radiator, the sensing device and the vehicle entry gate.

3. The system as claimed in Claim 2, further comprising a control system for facilitating operations of the radiator, sensing device and the vehicle entry gate.

4. The system as claimed in any one of the preceding claims, further comprising one or more radiation monitoring devices, an incoming traffic monitoring device, an exit vehicle movement monitoring device, a barrier, and a traffic light, or a combination thereof.

5. The system as claimed in any one of the preceding claims, wherein the radiation is electromagnetic radiation being X-rays or gamma rays.

6. The system as claimed in any one of the preceding claims, wherein the sensing device is a radar or optical vision camera.

7. The system as claimed in any one of the preceding claims, wherein the sensing device is an optical vision camera.

8. The system as claimed in any one of the preceding claims, wherein the system is configured to provide a cycle time deduction process control for continuous inspection of the subsequent vehicle.

9. The system as claimed in the preceding claims, further comprising a database server.

10. A method for inspecting contents within a moving vehicle according to the vehicle contents inspection system of Claim 1, comprising the steps of:

allowing entry of the vehicle through a vehicle entry gate;

passing the vehicle through a pair of radiation shield walls extending from the vehicle entry gate to an exit having a space therebetween that defines a shield wall radiation zone which includes a main beam zone;

reaching the main beam zone, by the vehicle;

triggering, by a sensing device, a radiator to switch on for emission of a radiation main beam at the main beam zone across the radiation shield walls

towards one or more radiation detection arrays;

scanning and inspecting contents within the vehicle as it passes through the main beam zone;

passing through the main beam zone completely, by the vehicle;

triggering, by the sensing device, the radiator to switch off to stop emission of the radiation main beam;

ensuring clearance at the exit using the sensing device; and

exiting the system, by the vehicle;

wherein the method further comprises the step of allowing a subsequent vehicle to enter the shield wall radiation zone after a prior vehicle completely passed through the main beam zone but still remaining within the shield wall radiation zone, and the step of allowing the subsequent vehicle to enter the main beam zone to begin the scanning process upon detection of clearance of the exit by the sensing device after the prior vehicle exits the shield wall radiation zone through the exit.

11. The method as claimed in Claim 10, further comprising the step of providing a cycle time deduction process control for continuous inspection of the subsequent vehicle.

12. The method as claimed in Claim 11, wherein the step of providing a cycle time deduction process control further comprises the steps of

opening a barrier of the vehicle entry gate;

turning a traffic light of the vehicle entry gate to green;

allowing entry of the vehicle; and

closing the barrier after entry of the vehicle for preventing tailgating of the subsequent vehicle entering the system.

13. The method as claimed in claim 11 or 12, wherein the step of providing a cycle time deduction process control further comprises the step of

switching on a vehicle and container optical recognition system; and

capturing a license plate, a container number, or both, of the vehicle using the vehicle and container optical recognition system.

14. The method as claimed in any one of claims 11 to 13, wherein the step of providing a cycle time deduction process control for continuous inspection of the subsequent vehicle further comprises the steps of

checking if the vehicle is not moving, under a specified speed, or both;

considering the vehicle to be under an emergency condition; and

stopping the radiation main beam from being fired towards the radiation detector array instantaneously.

15. The method as claimed in any one of claims 11 to 14, wherein the step of providing a cycle time deduction process control further comprises the step

of

checking an exit traffic condition.

16. The method as claimed in Claim 15, wherein the step of checking an exit traffic condition further comprises the steps of

checking if the traffic at the exit is jammed; and

checking if the traffic at the exit is not jammed.

17. The method as claimed in Claim 16, wherein the step of checking if the traffic at the exit is not jammed further comprises the steps of

allowing the subsequent vehicle to enter the main beam zone; and

restarting a new cycle.

18. The method as claimed in any one of claims 13 to 17, wherein the vehicle and container optical recognition system is installed along the radiation shielding wall for performing the step of capturing a license plate, a container number, or both, of the vehicle.