What is claimed is:

1. An inspection system for an aviation pallet cargo, comprising:

a ray source configured to emit X-rays and arranged to be rotatable between a plurality of scanning positions around a rotation axis, wherein the ray source comprises a separate housing to define a vacuum space and comprises a plurality of target spots enclosed within the housing, and a rotation angle of the ray source between two adjacent scanning positions is greater than an angle of adjacent target spots of the ray source relative to the rotation axis;

a detector assembly configured to receive X-rays emitted from the ray source and passing through an inspection region of the inspection system; and

a conveying device configured to carry an aviation pallet cargo to be inspected,

wherein the ray source and the detector assembly are movable in a traveling direction relative to the conveying device so that the aviation pallet cargo to be inspected enters the inspection region, and the traveling direction is parallel to the rotation axis, and

wherein the inspection system is configured such that: the ray source and the detector assembly move in the traveling direction relative to the conveying device and the ray source emits X-rays, when the ray source is located at one of the plurality of scanning positions; and the ray source rotates around the rotation axis to another one of the plurality of scanning positions when the ray source and the detector assembly move a predetermined distance in the traveling direction relative to the conveying device.

2. The inspection system according to claim 1, wherein the conveying device is configured to transport the aviation pallet cargo to be inspected in the traveling direction, and

wherein the ray source is always located above the conveying device during a rotation process.

3. The inspection system according to claim 1 or 2, wherein the ray source is configured to rotate between different scanning positions so that a combined scanning angle of the ray source is greater than 180 degrees.

4. The inspection system according to claim 1 or 2, wherein the inspection system is configured such that the ray source and the detector assembly do not move in the traveling

direction relative to the conveying device when the ray source rotates between different scanning positions.

5. The inspection system according to claim 1 or 2, wherein the rotation angle of the ray source between two adjacent scanning positions is less than a scanning angle of the ray source relative to the rotation axis.

6. The inspection system according to claim 1 or 2, wherein the ray source is further arranged to be movable between at least two target spot positions, and a rotation angle of the ray source between two adjacent target spot positions is less than an angle of two adjacent target spots of the ray source relative to the rotation axis or a movement distance of the ray source between two adjacent target spot positions is less than a spacing between two adjacent target spots of the ray source.

7. The inspection system according to claim 6, wherein a rotation angle of the ray source between two farthest target spot positions is less than the angle of two adjacent target spots of the ray source relative to the rotation axis, or a movement distance of the ray source between two farthest target spot positions is less than the spacing between two adjacent target spots of the ray source.

8. The inspection system according to claim 1 or 2, wherein the inspection system comprises a plurality of ray sources, and vacuum spaces of different ray sources are not connected.

9. The inspection system according to claim 8, wherein the plurality of ray sources are configured to rotate between different scanning positions so that a combined scanning angle of the plurality of ray sources is greater than 180 degrees.

10. The inspection system according to claim 9, wherein the plurality of ray sources are configured to rotate between different scanning positions synchronously.

11. The inspection system according to claim 10, wherein the plurality of ray sources are spaced around the inspection region.

12. The inspection system according to claim 10 or 11, wherein the detector assembly is arranged to be rotatable around the rotation axis.

13. The inspection system according to claim 12, wherein the plurality of ray sources and the detector assembly are arranged to be rotatable around the rotation axis synchronously.

14. The inspection system according to claim 12 or 13, wherein the detector assembly is arranged radially closer to the rotation axis relative to the plurality of ray sources,

wherein target spots of the plurality of ray sources are located in a first plane, and

wherein detector crystals of the detector assembly are located in a second plane.

15. The inspection system according to claim 14, wherein the first plane is parallel to the second plane, and the target spot of each ray source is arranged to deflect a predetermined tilt angle toward the detector assembly along the rotation axis so that the X-rays emitted by each ray source are not blocked by the detector assembly before passing through the inspection region.

16. The inspection system according to claim 15, wherein the detector assembly comprises a plurality of detector arms, each detector arm is provided with a plurality of detector units, and each detector arm is configured to receive X-rays emitted by at least two of the ray sources.

17. The inspection system according to claim 16, wherein each detector unit comprises a detector crystal, and each detector crystal is arranged at an end of a corresponding detector unit facing the ray source along the rotation axis,

wherein the plurality of detector arms extend completely around the rotation axis to form a detector ring,

wherein the inspection system further comprises a rotary bracket rotatable around the rotation axis, and the plurality of ray sources and the detector assembly are installed on the rotary bracket, and

wherein the detector assembly further comprises a detector turntable, the plurality of detector arms are fixed to the detector turntable, and the detector turntable is

detachably fixed to the rotary bracket.

18. The inspection system according to claim 1 or 2, wherein the rotation axis is parallel to a horizontal direction; or

wherein a ray emission direction of the ray source is not perpendicular to the rotation axis; or

wherein the inspection system is configured such that the ray source does not emit X-rays when the ray source rotates between different scanning positions; or

wherein the ray source and the detector assembly are configured to move a predetermined distance in the traveling direction relative to the conveying device so that the aviation pallet cargo to be inspected completely passes through the inspection region or the aviation pallet cargo to be inspected does not completely pass through the inspection region; or

wherein the rotation angle of the ray source between two adjacent scanning positions is greater than an angle of any two target spots of the ray source relative to the rotation axis.

19. An inspection method for an aviation pallet cargo, comprising:

(a) loading an aviation pallet cargo to be inspected onto a conveying device;

(b) positioning a ray source at one of a plurality of scanning positions surrounding an inspection region, wherein the ray source comprises a separate housing to define a vacuum space and comprises a plurality of target spots enclosed within the housing;

(c) moving the ray source and a detector assembly in a traveling direction relative to the conveying device so that the aviation pallet cargo to be inspected enters the inspection region, while emitting X-rays from the ray source so that the X-rays pass through the aviation pallet cargo to be inspected located in the inspection region and are received by the detector assembly until the ray source and the detector assembly move a predetermined distance in the traveling direction relative to the conveying device, so as to complete a scanning process; and

(d) rotating the ray source around a rotation axis to another one of the plurality of scanning positions, and repeatedly performing step (c) to complete the scanning process at each of the plurality of scanning positions, wherein a rotation angle of the ray source between two adjacent scanning positions is greater than an angle of adjacent target spots of the ray source relative to the rotation axis, and the traveling direction is parallel to the rotation axis.

20. The inspection method according to claim 19, wherein the ray source and the detector assembly are configured to stop moving relative to the conveying device after each time the aviation pallet cargo to be inspected completely passes through the inspection region, and in two adjacent repetitions of step (c), the ray source and the detector assembly are configured to move in opposite directions relative to the conveying device; or

the inspection method further comprising: after completing a scanning process at a scanning position in step (c), moving the ray source to one of a plurality of target spot positions and repeatedly performing step (c), wherein the plurality of target spot positions comprise a current scanning position,

wherein a rotation angle of the ray source between two adjacent target spot positions is less than the angle of two adjacent target spots of the ray source relative to the rotation axis, or a movement distance of the ray source between two adjacent target spot positions is less than a spacing between two adjacent target spots of the ray source.