

Method For Focusing A High-Energy Beam on A Reference Point on The Surface of
A Flying Object in Flight

Abstract

A method for focusing a beam (30) of a high energy radiation source (3), particularly a laser beam, on a reference point (HP) on the surface of a flying object in flight (1),
5 comprises the following steps:

- a) Recording a number of consecutive two-dimensional images of the flying object (1) in flight with an imaging method using an image acquisition device (2);
- b) Determining the trajectory (T) of the flight path of the flying object (1) as a
10 sequence of three-dimensional waypoints;
- c) Simultaneously determining the line of sight angle between the image acquisition device (2) and the position of the flying object (1) in synchronisation with the image;
- d) Calculating a three-dimensional model of the flying object (1) from the two-
15 dimensional images recorded in step a) on the basis of the relative geometry to be calculated from the line of sight angles calculated in step c) and the trajectory (T) obtained in step b), and on the basis of predefined model assumptions about the flying object (1);
- e) Displaying the currently acquired two-dimensional image (1') of the flying
20 object (1) in flight via an image reproduction device (4);
- f) Marking the reference point (HP') on the displayed two-dimensional image (1') of the flying object (1);
- g) Calculating the three-dimensional reference point (HP) on the surface of the flying object (1) starting from the two-dimensional reference point (HP')
25 marked in step f) using the three-dimensional model of the flying object (1) calculated in step d), and
- h) Focusing the beam (30) of the high energy radiation source (3) on the three-dimensional reference point (HP) and causing the focus point of the beam (30) directed at the reference point (HP) to track said reference point (HP).

(Fig. 1)