Claims

[Claim 1]

A container crane comprising:

a gantry device;

a girder that is supported by the gantry device and extends in a horizontal direction;

a trolley that is capable of traveling along the girder;

a spreader that is hung from the trolley and is capable of engaging and disengaging a container;

a hoist mechanism that moves the spreader up and down;

a laser scanner that is provided at the spreader, and emits laser light to obtain the coordinates of a measuring point of an article of interest; and

a crane control apparatus that controls the driving of the trolley and the spreader based on the coordinates of the measuring point obtained using the laser scanner,

wherein the laser scanner is provided at a side portion of the spreader in a width direction, and

wherein the crane control apparatus includes a deviation calculating unit that makes the laser scanner perform scanning in a range in a horizontal direction from below the spreader, obtains an envelope of a held container engaged with the spreader and a target container having the held container placed on an upper surface thereof, based on the coordinates of the measuring point obtained using the laser scanner, and obtains a positional deviation between the held container and the target container based on the envelope.

[Claim 2]

The container crane according to Claim 1,

wherein the crane control apparatus includes:

an obstacle distance determining unit that determines the

distance between a surrounding obstacle and the laser scanner based on the coordinates of the measuring point obtained using the laser scanner; and

a lowering limiting control unit that limits the lowering operation of the spreader based on the distance between the surrounding obstacle and the laser scanner.

[Claim 3]

The container crane according to Claim 1 or 2, further comprising:

an accumulating unit that accumulates the coordinates of the measuring point.

[Claim 1]

A container crane comprising:
a gantry device;
a girder that is supported by the gantry device and extends in a horizontal direction;
a trolley that is capable of traveling along the girder;
a spreader that is hung from the trolley and is capable of engaging and disengaging a container;
a hoist mechanism that moves the spreader up and down;
a laser scanner that is provided at the spreader, and emits laser light to obtain the coordinates of a measuring point of an article of interest; and
a crane control apparatus that controls the driving of the trolley and the spreader based on the coordinates of the measuring point obtained using the laser scanner,
wherein the laser scanner is provided at a side portion of the spreader in a width direction, and
wherein the crane control apparatus includes a deviation calculating unit that makes the laser scanner perform scanning in a range in a horizontal direction from below the spreader, obtains an envelope of a held container engaged with the spreader and an envelope of a target container having the held container placed on an upper surface thereof, based on the coordinates of the measuring point obtained using the laser scanner, and obtains a positional deviation in the horizontal direction between the held container and the target container based on a horizontal distance between the envelope of the held container and the envelope of the target container.

[Claim 2]

The container crane according to Claim 1,
wherein the crane control apparatus includes:
an obstacle distance determining unit that determines the distance between a surrounding obstacle and the laser scanner based on the coordinates of the measuring point obtained using the laser scanner; and
a lowering limiting control unit that limits the lowering operation of the spreader based on the distance between the surrounding obstacle and the laser scanner.

[Claim 3]

The container crane according to Claim 1 or 2, further comprising:

an accumulating unit that accumulates the coordinates of the measuring point.