

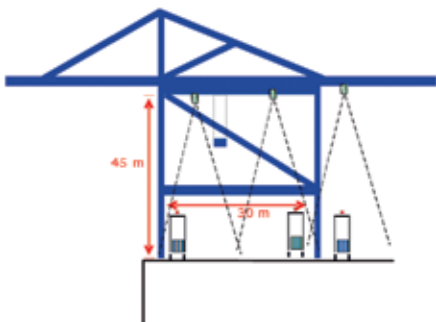


ACCURATE
ROBUST

CRANE AUTOMATION AT CONTAINER PORTS



STRADDLE CARRIER POSITIONING IN MULTIPLE LANES



A driver assistance system

Arck Sensor engineered efficient Positioning System (TPS) for a Straddle Carrier (SC) arriving under a quay crane STS or RTG.

The TPS will secure the right positioning of the container under the quay crane. The spreader will then pick-up and land the container without delay or human presence on the quay.

The Arck Sensor TPS solution is insensitive to the rain, fog or sun, and gives all measurements X and Y.

It positions SC on a large area: 14m x 14m, on 3 lanes and 3 SC can work simultaneously. It also measures 3 different positions to land the containers and allows the SC turning 180°.

Benefits and gain: decisive advantages

Arck Sensor products will:

- Increase productivity.
- Reduce containers transfer cycle times and operations.
- Increase safety for people, materials and equipment.

Accurate and Robust:

The patented sensor technology, its specific design and ruggedness are approved for severe environments; ambient light immunity.

ARCK SENSOR

ACCURATE ROBUST

Arck Sensor is a French company specialized in optical measurement in harsh industrial environments. Our mission is to provide the most robust and accurate sensors for container ports and heavy industries in the frame of automation and safety concerns. Since 1998, Arck Sensor has been constantly improving its technology to deliver long term solutions for major container terminals and metal industry companies, world-wide.

OUR EXPERTISE IN PORTS AND CONTAINER TERMINALS

■ Load Movement Measurement

■ Anti-Collision for Cranes and Vehicles

■ Truck or Straddle Carrier Positioning

■ Container Detection Handling or Stacking

■ Quay Crane Boom to Vessel Anti-collision

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STRADDLE CARRIER POSITIONING IN MULTIPLE LANES



SIRRAH®

System presentation

The system positions Straddle Carrier under a quay crane in the appropriate location and can make the positioning on 6 lanes between the crane legs and on 3 lanes on the back-reach.

It can be used to position the carrier who will leave the container in a perfect position for an easier and fast pick-up by the spreader.

The TPS solution is composed by: SIRRAH® sensors and smart emitted infrared LED sources (Beacons BMU) designed by Arck Sensor. The working range is 45 meters or more.

Always the right position:

No matter the type of container transported, it is always centered under the SC.

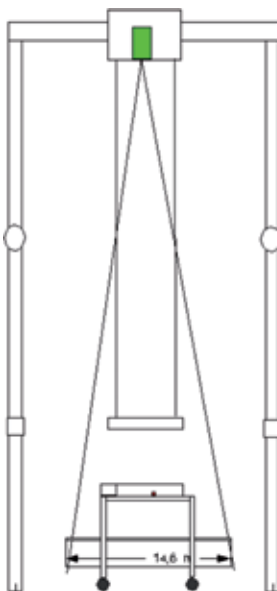
In addition, the final position of the landed container remains always the same as the SC position.

Depending on the type of container and the loading protocol, there are 3 different positions for the SC:

- Centered under the trolley for a single 20", a 40" or a 45";
- Left position for a 20" when picked up with a twin lift spreader,
- Right position for a 20" when picked up with a twin lift spreader.

How does it work?

SIRRAH® sensors are installed on a beam of the STS Crane looking down. One beacon is installed at the top of each SC. The lit beacon is seen by the SIRRAH® sensors.



This sensor measures the position of this beacon and calculates the lane number, the X position on the long side of the lane and Y position on the transversal side of the lane (position used for checking).

It detects the code sent by the smart beacon to compensate the container offset on the chassis.

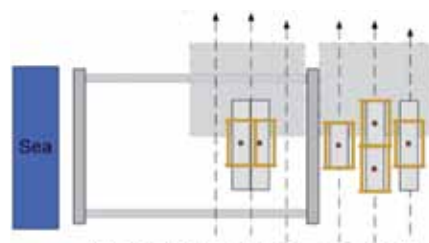
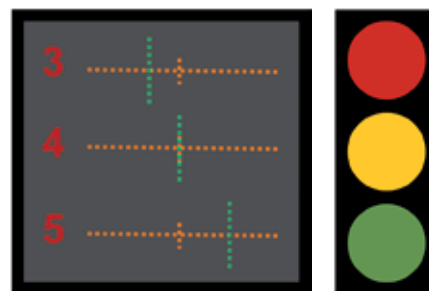


Each SIRRAH® sensor views three lanes. 1 or 2 or 3 sensors can be installed with the same PLC and therefore can check 3, 6 or 9 lanes.

On each SC, the smart BMU beacon sends coded light. These codes send SC Numbers, information concerning the type of containers or any information that could be requested in the future.

System resolution is better than +/-5cm.

Human-Machine Interface: Arck Sensor provides graphical panel to show SC current position or three color light for a simple driver warning.



Positions for single spreader as shown on the back reach and for the tandem spreader as shown under the crane.