

Radar Sensors for Straddle Carrier Navigation

Case Study - Port Botany, Australia



- ✓ Uninterrupted operation in all weather, lighting and environmental conditions
- ✓ Zero maintenance or cleaning with a five-year service interval
- ✓ Reliable detection, high-resolution imaging, 360° scanning capability
- ✓ Proven to withstand extreme temperatures, vibrations, impact, dust, debris and water

The Challenge

Improving the Efficiency of Port Operations

Port Botany

Port Botany is the second busiest container port in Australia. As a gateway to the country's trade, it was vital that port managers, owners and local government worked together to make the operation as efficient as possible to keep the nation's competitive edge.

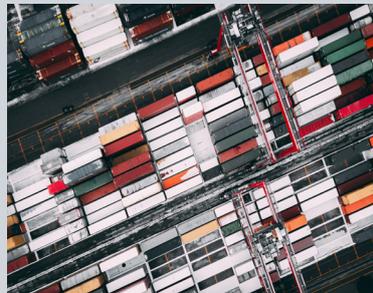
In 2012 it was decided that a solution to improve the efficiency of the port was required. It was agreed that an automated solution would offer the best economic benefits as well as reducing the number of work-time injuries.

In order to implement this strategy, Cargotec recognised that industrial automation was necessary to fully optimise the port. This port automation needed not only precision and accuracy but needed to be relied upon 24 hours a day, 7 days a week. Any pause in operations due to environmental conditions affecting sensors could not be tolerated due to the huge losses associated with unplanned downtime.

As such, radar was selected as the most reliable technology, capable of sensing even through thick fog, smoke, dust, precipitation, and in all light conditions - from direct sunlight to total darkness.



The objective of Navtech Radar's sensors was to improve the efficiency of port operations. Traditional manned shipping operations consist of a team of 20-30 people which is costly and inefficient. The operations are subject to frequent disruptions as a result of human error.



The sensors' ability to work automatically 24/7, 365 days a year improves the shipping process. By automating the straddle carriers, the port is able to operate all year round with no downtime.



The sensors are used to provide accurate location information that is not reliant on any third party infrastructure or service, such as GPS.

The Solution

Industrial Automation Sensing

Sensors that enable automatic port operations

Navtech Radar's state of the art sensor technology now enables the full and reliable automation of the port's straddle carriers, allowing for unmanned navigation 24 hours a day in all weather conditions. Each straddle carrier is equipped with a 360° scanning sensor able to map the entire area by using targets positioned around the port, triangulating the straddle carrier position to within just a few millimetres.

Due to the straightforward installation of the system, it took only four days for Port Botany to transfer from a manual port to a fully automated one, meaning operation disruption was kept to a minimum. There are many benefits in having a fully automated operation. These include reduced diesel consumption; reduced wear and tear on vehicles; reduced wear and tear on the port surface and tires; reduced costs as no lighting is necessary; reduced work-time injuries, as well as manpower costs. The sensors perform uninterruptedly in all weather conditions, with no cleaning required, increasing Port Botany's efficiency.



Fully Automated

Cost-effective

Unlike traditional port operations, radar sensors reduce the need for manned operators.



Multiple Sensors

Integrated solution

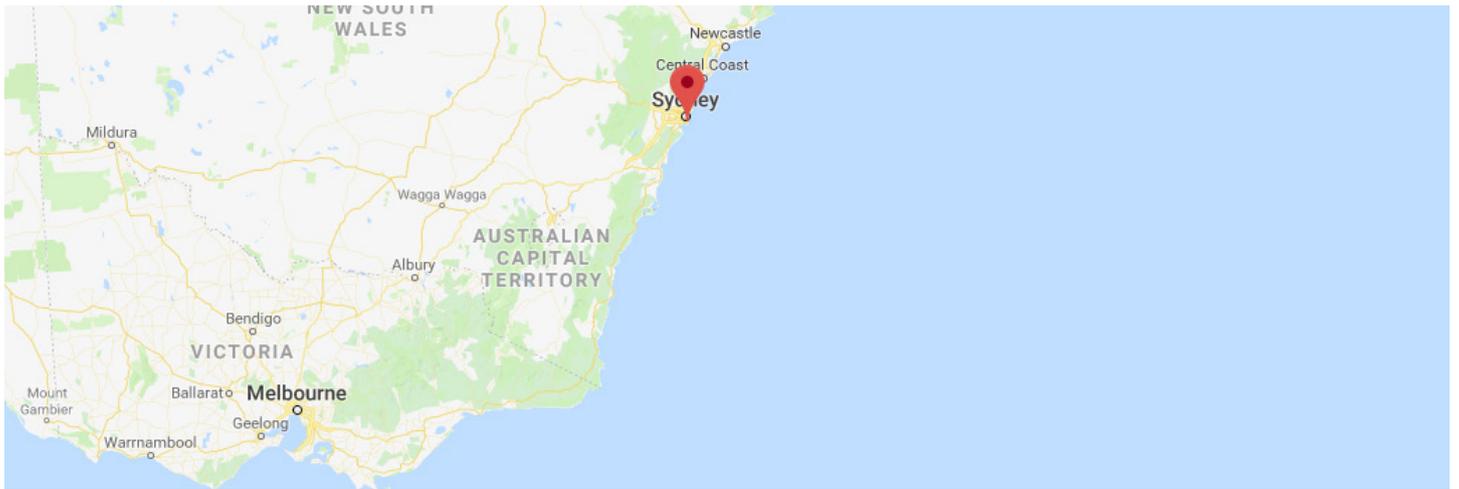
Multiple sensors can be seamlessly integrated to work in unison and map the entire area.



All Weather

Performance

The sensors are unaffected by extreme weather and light conditions and work flawlessly all year round.



About our Sensors

"This industrial revolution has made Port Botany 30% more efficient than their competitors DP World and Hutchison. The port automation takes the waterfront from an old-fashioned manual combat environment to one of the most sophisticated robotic operations in the world. To our knowledge, this is the most sophisticated robotic port operation in the world now. The crane gangs in the United States are still between 20 to 30 people per crane, a manual operation in Australia would use 9 to 10, whilst Port Botany is able to run with only 4 people per crane.

Port Botany represented a gateway to trade and competitiveness for the country. It was Australia's access to the global market. As a result, there was huge earnest on us as well as governments and owners to make the most efficient operations as possible.

The automation of port activity enables our stronger competition on the global stage. We have increased our productivity levels and by simultaneously minimising operational costs, we can manage more business in the port, ultimately increasing our profits."

John Mullan, *Chief Executive Office, Asciano*

Benefits

- ✓ **All weather operation**
Uninterrupted operation in all weather, lighting and environmental conditions.
- ✓ **Fully automated operation**
Reliable detection, high-resolution imaging, 360° scanning capability.
- ✓ **Robust Design**
Proven to withstand extreme temperatures, vibrations, impact, dust, debris and water.
- ✓ **Low maintenance**
Zero maintenance or cleaning with a five-year service interval.
- ✓ **Easy Installation**
Sensor mounts directly to a mounting plate for simple installation and servicing.

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