

# Automated cRMGs Busan

This timelapse was taken at PSA's HPNT terminal in Busan New Port, South Korea, which began operations in early 2012. When this timelapse was taken, in the autumn of 2018, the terminal had a total yard capacity of 51,500 TEUs and the main yard was serviced by 38 automated cantilever rail mounted gantry cranes or cRMGs. This type of equipment is used at many of the terminals in Busan New Port.



These cRMGs are able to move one container over a 6 high stack of containers and span 10 containers rows. They service terminal tractors on the waterside lane and external trucks on the landside lane and are therefore known as being one over six and 10 + 2 wide.

The CRMGs are also used to work the hazardous stack in which containers carrying dangerous cargo are segregated before or after loading. It can be identified by its low stacking density and the presence of tank containers which often contain dangerous cargo. They also work the reefer stacks. These are also easy to identify as they comprise blocks of white containers with each bay separated by the walkway and stair structures used to access the reefer controls.

As well as the cRMGs working the main stacks you can also see a reach stacker methodically loading containers on to a line of waiting terminal tractors. These are empty containers which are being taken to the quay to be loaded on to the ship, you can see in the distance to the left, being worked by 5 ship-to-shore gantry cranes.

The terminal also has a dedicated area for empty container storage serviced by reach stackers which receive and deliver empty containers to external trucks and internal tractor trailer units. Within this area we can see containers being inspected and cleaned and others being stuffed and unstuffed outside the CFS buildings. This is a very busy area with several reach stackers operating within a small confined space with both port workers and external workers such as truck drivers and cargo inspectors also present, making it a high-risk area for people to be struck by container handling equipment.

## Key Terms

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- 1 over x
- Cantilever rail mounted gantry crane (cRMG)
- Container freight station (CFS)
- Dangerous (hazardous) cargo
- External truck (road truck)
- Hazardous stack
- Reach stacker
- Terminal tractor trailer (terminal truck)
- Twenty foot equivalent unit (TEU)
- Terminal tractor (shunter/tug)

## Glossary

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### 1 over x

The number of containers a crane can pass over when moving a container – for example a 1 over 2 straddle carrier can lift one container over stack of two containers

### Cantilever rail mounted gantry crane (cRMG)

Type of rail mounted gantry crane (RMG) that has a cantilever arm on one or both sides that services vehicles outside its legs

**Container freight station (CFS)**

Area within a terminal, where break bulk cargo is stuffed / unstuffed from containers and additional activities such as cargo surveys may be carried out

**CFS (container freight station)**

Area within a terminal, where break bulk cargo is stuffed / unstuffed from containers and additional activities such as cargo surveys may be carried out

**cRMG (cantilever rail mounted gantry crane)**

Type of rail mounted gantry crane (RMG) that has a cantilever arm on one or both sides that services vehicles outside its legs

**Dangerous (hazardous) cargo**

Cargo that has the potential to harm people, property or the environment directly or indirectly

**External truck (road truck)**

Vehicle that is designed and licenced for use on the national road network to carry cargo

**Hazardous (dangerous) cargo**

Cargo that has the potential to harm people, property or the environment directly or indirectly

**Hazardous stack**

Area within a container yard where containers containing hazardous cargo are stored

**Reach stacker**

Rubber tyred crane with a telescopic boom which is used for stacking and moving containers

**Road truck (external truck)**

Vehicle that is designed and licenced for use on the national road network to carry cargo

**Shunter (terminal tractor / tug)**

Wheeled vehicle with a fifth wheel designed to pull trailers and other non-powered wheeled cargo but is not licenced for used on the national road network

**Terminal tractor (shunter / tug)**

Wheeled vehicle with a fifth wheel designed to pull trailers and other non-powered wheeled cargo but is not licenced for used on the national road network

**Terminal tractor trailer (terminal truck)**

A terminal tractor connected to a trailer

**Terminal truck (terminal tractor trailer)**

A terminal tractor connected to a trailer

**TEU (twenty foot equivalent unit)**

Measurement unit for containers based on a standard 20ft nominal length known as a TEU e.g. a 20ft container = 1 TEU and a 40ft container = 2 TEU

**Tug (shunter / terminal tractor)**

Wheeled vehicle with a fifth wheel designed to pull trailers and other non-powered wheeled cargo but is not licenced for used on the national road network

**Twenty foot equivalent unit (TEU)**

Measurement unit for containers based on a standard 20ft nominal length known as a TEU e.g. a 20ft container = 1 TEU and a 40ft container = 2 TEU