

GAUSSIN MANUGISTIQUE®

Creator of global handling solutions

Manufacturer of handling and self-propelled systems

Semi Automated Horizontal Transport System

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There are two different type of Automated Terminals:

Semi Automated Terminals

Automated Stacking Cranes / Manual Horizontal Transportation



Virginia International Gateway
Source: Journal of Commerce

Fully Automated Terminals:

Automated Stacking Cranes / Automated Horizontal Transportation



TraPac Terminal
Los Angeles
Source: Kalmar

Taipei Port
Container Terminal
Source: Taiwan Today



ECT Terminal
Rotterdam
Source: World Maritime News



Where are the Automated Terminals?



Source: Drewry's report "Container Terminal Capacity and Performance Benchmark" from 2014

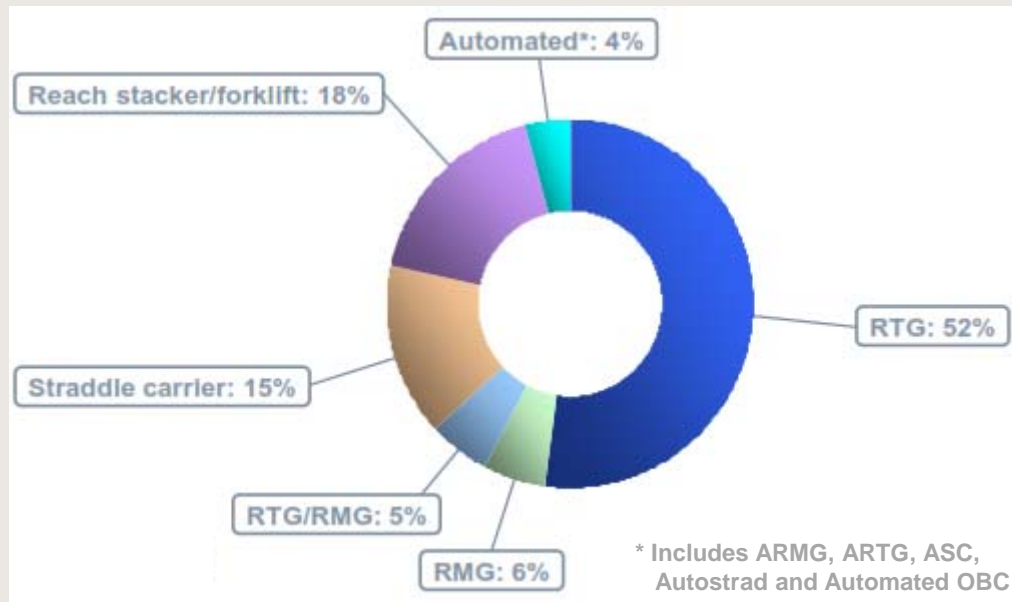
Since the report was published, Qingdao has been confirmed and the terminals in Rotterdam, LA area and Australia has been put in operation.





There are approx. 41 terminals in the World that are automated and at least 12 of them are fully automated!

Yard equipment type by number of terminals, 2013



Source: Drewry's report "Container Terminal Capacity and Performance Benchmark" from 2014

There are more than 310 terminals (52%) that are using RTGs!

***We know that they can be Semi Automated,
but can they be Fully Automated?***



Most of the RTG terminals are using a tractor / trailer solution.



Source: www.transportgooru.com



Source: www.container-mag.com



Source: www.saifpowertecLtd.com

The tractors enters a lane under the RTG to deliver/pick-up containers



Source: www.portstrategy.com



Source: www.jezblog.com





Each Quay Crane is reached by a dedicated lane under the QC



Source: www.nzz.ch

***Queues are therefore relatively common,
the waiting time for the drivers can be quite long
and the sequencing when loading is rather complex.***



***APMT in Tangier are using an alternative solution
and today the Gaussin ATT is available on 2 different platforms;***



ATT Electric



ATT Hydraulic

Gaussin also offers 5 different exchangeable Power Packs!



Diesel

Hybrid

Battery

Hydrogen

Gas





The Gaussin ATT with steering back-wheels can perform a crab



and, with an alternative approach under the QC, the no. of Transfer Points can be easily increased!

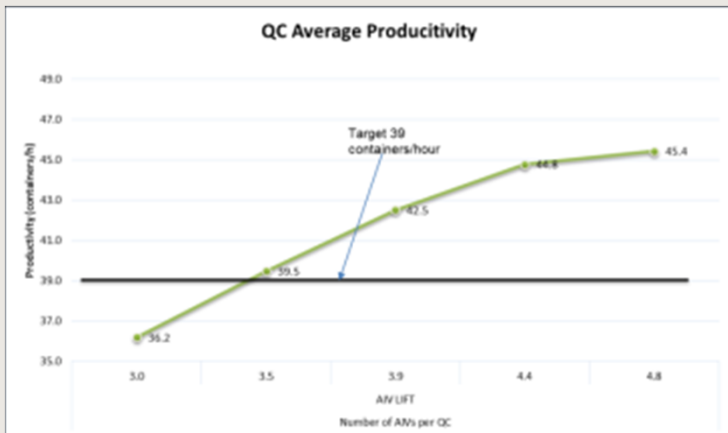
These vehicles will always be placed correctly under the QC, due to the semi automation!





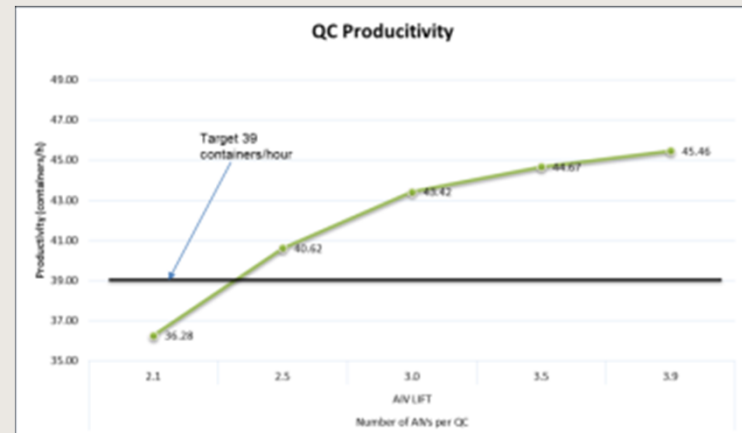
The no. of Transfer Points under the QC impacts the productivity,

One Lane, one Quay Crane



The simulation results show that 3,5 vehicles per QC will be needed to achieve 39 container moves per hour per QC.

Increased no. of Transfer Points



The simulation results show that 2,4 vehicles per QC will be needed to achieve 39 container moves per hour per QC.

and it also simplifies the sequencing when loading!



Automated vehicles shouldn't be mixed with external trucks, due to the risk of accidents.



Sucre: www.porttechnology.org

This is why we strongly suggest that no external trucks are allowed in the QC working area!

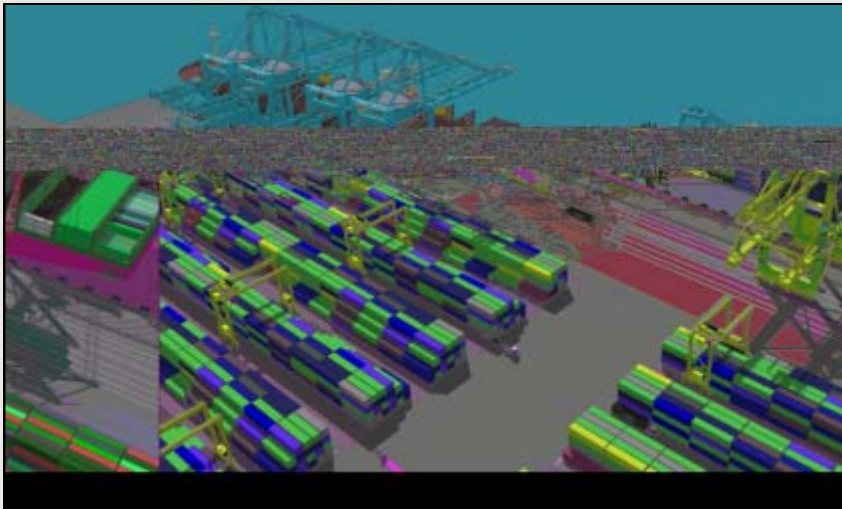


A Gateway terminal has large amount of external trucks working in the terminals' stacking area.

Due to safety, it's more difficult to Fully Automate these type of terminals.



Source: www.modernterminals.com



However, the more transshipment is performed, the more we can Fully Automate the terminal due to a decreased no. of external trucks.



To clearly divide the Automated area and the Manual area, we suggest to use Docking Stations.

No “hand-shake” between vehicles or cranes are needed, due to the ATT’s Lift function.

Containers in “Rush” condition can easily be handled by straddle carrier.

We can now remove all drivers working around the QC and within the transshipment area.



Today it is possible to operate both Quay Cranes and Automated Stacking Cranes with a remote controller.

Will we be able to control the transport vehicles in the same way?

If so, “remote drivers” would only be needed while the vehicles are moving within the Manual Area!



Source: www.wired.com





- ***Increased productivity***
- ***Stabilized productivity***
- ***Reduced no. of vehicles***
- ***Reduced labour cost***
- ***Lower fuel cost***
- ***Lower maintenance cost***
- ***Increased Safety***





Can we Fully Automate a RTG Terminal?

