

# Efficiency: The future of the container terminals?



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# Contradictions??

- How will container terminals look like five, 10 or 20 years from now?
- How can existing terminals become more efficient and handle the volume with fewer resources?
- What goals are realistic and what operational principles and technologies will give a competitive advantage to terminals in years to come?
- What should be avoided?

The presentation will outline a method of thinking and present a few examples of contradictions that will play the role of an engine for the development and possible turning points that can be predicted.



## Example 1: Business goals and motivation of various stakeholders

A typical scenario for the common import/export terminal – not dedicated to one particular shipping line operation – is as follows: the terminal provides services for the shipping lines, but operationally the terminal is totally dependent on co-operation from other stakeholders in the supply chain, such as railways and trucking companies.

The possible reconciliation for this contradiction is the service level agreement between terminal operators and railways and even joint venture business between terminal operators and railways.

## Example 2. Need for new container handling facilities vs. protection of the environment.

On one hand container terminals support modern lifestyles and the everyday consumption of food and commodities

On the other hand, terminals negatively affect the environment:

- Dredging and land reclamation areas change the natural coast line, while inland terminals reduce peoples' living areas near the major cities. Terminals often reduce habitat for birds and marine animals.
- Exhaust from the container handling equipment, vessels and road trucks is a major contributor to air pollution.
- Being large energy consumers in the form of fuel and electrical energy terminals also contributes indirectly to the negative impact from oil and electrical energy production and distribution.

## Land Efficiency: High Density Stacking

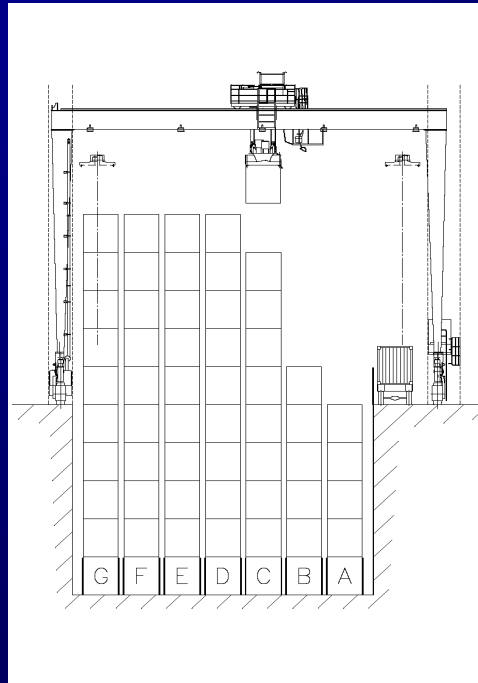
Use of high density stacking is limited, due to the following reasons:

If the operation requires high container selectivity, high density stacking leads to extensive unproductive reshuffling moves. In addition, high density stacking of loaded containers increases the static load on the surface and often requires additional investment into the surface structure. Furthermore, loaded and empty stacks may be in danger in high wind conditions.



## Land Efficiency: High Density Stacking

“Underground container storage system”™ (UCS) alleviate most of the weaknesses of the high density stacking. The concept of UCS is very simple: to create high density stack by making additional storage below the surface in the blocks, serviced by ASC, RTG or RMG yard cranes.

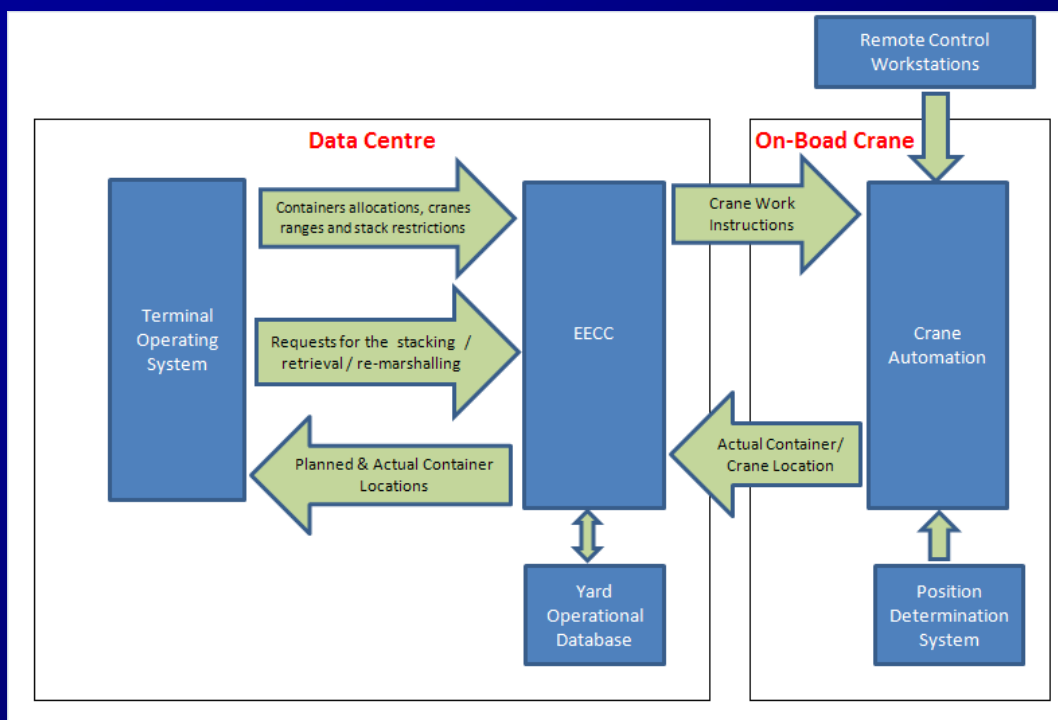


## Energy Efficient Equipment

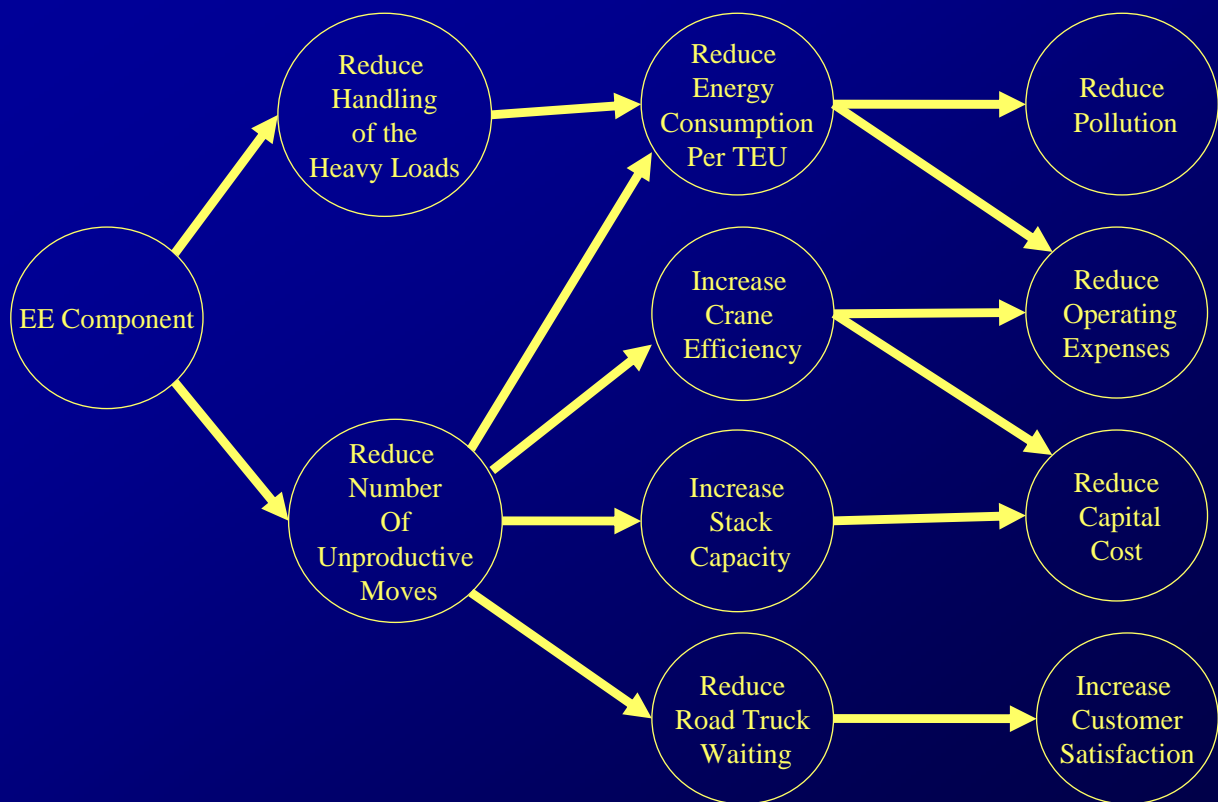
Gaussin's ATT is self-propelled terminal trailer, equipped with a power pack, mounted under the trailer frame. The machine doesn't have a high-speed motor and a gearbox, instead it has a hydraulic engine which draws power from the diesel engine.



# Energy efficient control of container yard cranes component (EECC)



# EECC Impact



## Alternative Energy Sources

To reduce indirect negative impact on the environment and decrease dependencies from the energy cost, terminals will look at alternative energy sources available in the area. Among the alternatives are natural gas – which can be used to produce electricity, tidal and wind power. Some European terminals have begun using wind turbines to generate electricity for the container terminals.



## Example 3: Job Security vs Terminal Automation

Historically manpower requirements have declined while volumes increased. Now, new automation technology provides options for automatic, remote or semi-automatic operation at the gate, ship-to-shore transportation and container stack. Does it present a challenge to the job security?

What we see in reality is that while automated technologies reduce requirements for machine operators, the introduction of automation requires more support from technical personnel. The balance remains the same and in the long term, we expect the terminals will be able to handle increased volumes with the same level of manpower.

# Thank you for your attention!

Hope to see you all at the Linked-In Discussion Group:

Container Terminal: Theories, Practices, Problems

<http://www.linkedin.com/groups/Container-Terminal-Theories-Practices-Problems-1947860?mostPopular=&gid=1947860>