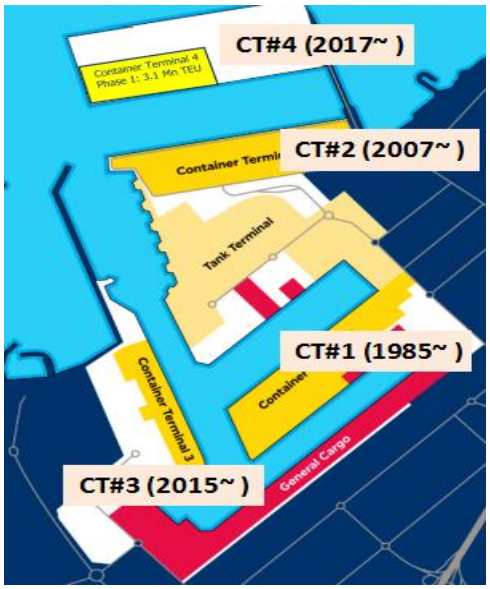
Case Sturdy : Jabel Ali CT#3

World's most productive port

About Jable Ali 3 Terminal



World's most productive port

An average of 131 moves per vessel hour

Jabel Ali port operated by DPW, UAE region, is the largest marine terminal in the Middle East and the world's 9th largest container port. A total of 26 (+3) berths 87 (+10) STS cranes together with CT#3 new terminal, Jable Ali Port reach 19 M TEUs capacity and handle 10 of the giant new generation vessels at the same time.

CT#3 has automated and remotely controlled STS crane that with a quay length of 1,860 meters, a draft of 17 meters and equippmend with 19 STS cranes and 50 CRMG.

Cyberlogitec has successfully launched OPUS Terminal at Feburary,2014 for CT#3.

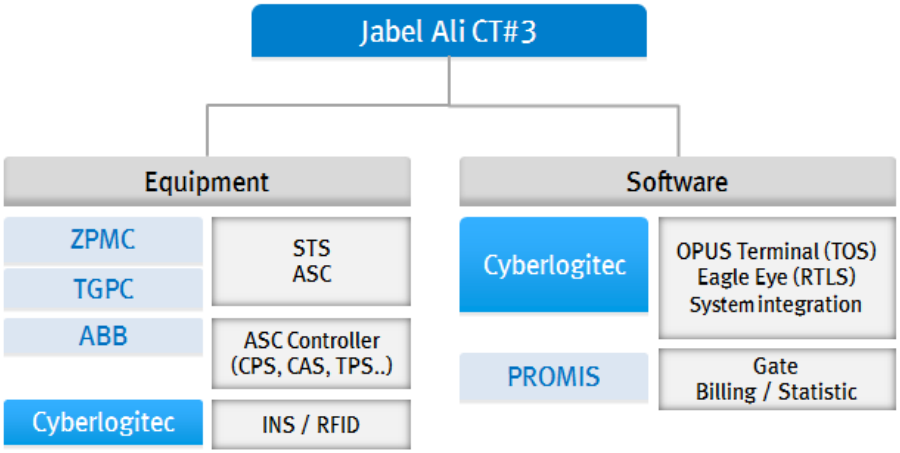
Continuously it is under implementing for CT#2 and CT#4.

Project Process

As a September 2012, OPUS Terminal implemented successfully. CT#3 start terminal operation at January, 2013. The equipment, infrastructure and TOS system implemented concurrently for CT#3 as green field terminal. The one of key success factors for the green field terminal is the harmonious integration between equipment and 3rd party systems. Cyberlogitec has performed 4 steps OPUS Terminal release include actual equipment est and actual vessel test based on agile methodology.

	Task	Sep,2012	Mar, 2013	Sep, 2014	Feb, 2015	Apr,2015
Milestone		▲ Kick off		▲ FAC	▲ Go-live	
Gap & Implementation	Gap Analysis 1st ~2nd Release 3rd~4th Release					
Test & Deployment	Actual Equipment Test System Integration Test User Acceptance Test Actual Vessel Test					
Go live & Stabilization	On site support Maintenance					

Project Schedule for CT#3 : *4 steps of OPUS Terminal release*



Cyberlogitec provides TOS, RTLS system and System integration service

Solutions are provided by Cyberlogitec

OPUS Terminal (Terminal Operation system)
1) Vessel/Yard/Berth Planning
2) TLS (Terminal Logistics System)
3) Documentation (Data management)
4) VMT, PDA

Eagle Eye (Asset Tracking & Auto hand off system)
1) Tracking terminal equipment using DGPS + INS technology
2) Process automation between equipment

System Integration
1) Legacy system (PROMIS) integration
2) Equipment controller (ABB) integration
3) 3rd party system integration

Challenges & Solutions

- **Remote Tally station (Recognize Container number on the quay side)**

Record container's damage and seal on it at the **remote tally station**

In General, A tally clerk checks container's damage and seal on it at quayside. There kind of jobs in CT#3 are processed from the remote tally station using HD cameras.
Remote tally operation reduces the check-time and enhanced the safety for tally clerks. Cyberlogitec provides job information including estimated time of discharging and loading containers.

- **RMG Twin operation (Scheduling and Stacking Logic)**

RTG Twin spreader improve equipment performance. Cyberlogitec provide YA (yard allocation) and TLS (Terminal logistic system) for solving twin container stacking and yard crane

- **STS Automation**

Jabel Ali CT#3 operating the first remote control center for both quay and yard cranes. STS automation has several advantages that are the improved productivity through increase speed and shorter ramp time. Also safety is improved because of working environment for driver. It required the interface between TOS (OPUS Terminal) and controller(ABB) for STS automation. The system has been stabilized shortly based on the standard interface architecture of OPUS Terminal.

- **Eagle Eye monitoring & Process control**

CT#3 is the quay and yard automated terminal, but not automated yard truck for moving the container from quayside to yard block. The management of yard truck drives still effects terminal performance. CT#3 needs to reduce these interference and communication between managers and drivers. Also terminal needs to know actual location of yard trucks in real-time. Cyberlogitec has provides RTLS System as Eagle Eye supporting the location tracking of terminal equipment includes yard truck and automated job process control.

Visualization using Eagle eye for enhance real-time monitoring

Visualization

1) Signal integration and visualization with graphical information
2) Real-time asset position status monitoring
3) alarm on irregular job progress, violation
4) rewinding / replaying previous work history for cause-finding

Process Control

1) process control with minimum human action
2) automated job completion and job swapping
3) Job optimization base on real-time position and work status.

Case Sturdy : PNC

CRMG Horizontal operation for a Pusan New Container Terminal

About PNC Terminal

PNC is largest and most efficient terminal

Pusan Newport company(PNC) is Korea's leading port and gateway to the Pacific Ocean. PNC is largest terminal at the Pusan port, has a capacity of 5.25 M TEUs per year. The port of Pusan is world's 6 largest port with a total container throughput of 19.5 M TEUs at 2016.

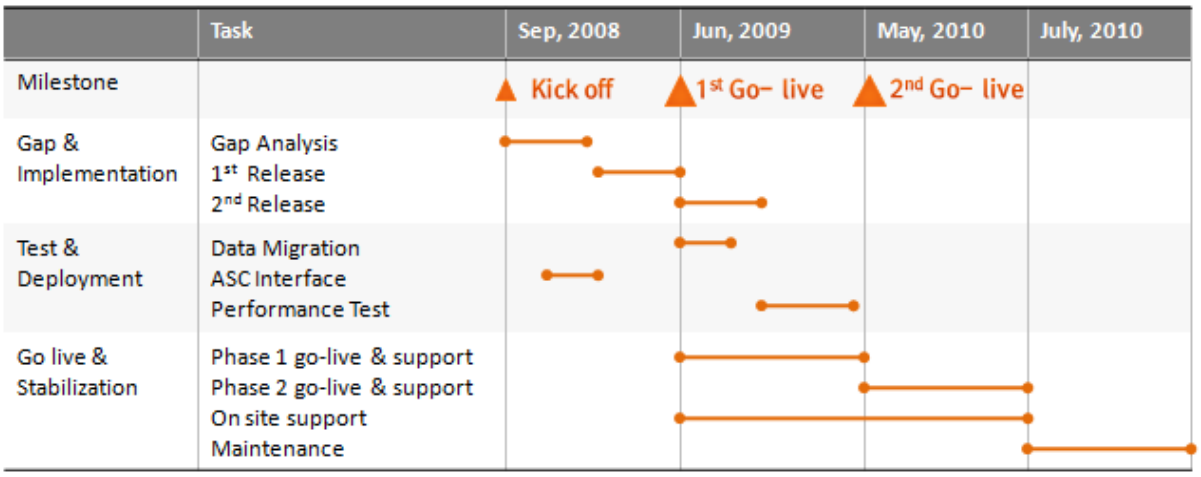
PNC began operation in 2006, with 19 STS cranes, X RTG and more than 130 terminal truck in the horizontal yard block layout.

PNC is most efficient container terminal in Pusan Port. PNC run a hybrid yard operation. Half of conventional yard operations using RTG cranes, half of yard automation with ASC and YT.

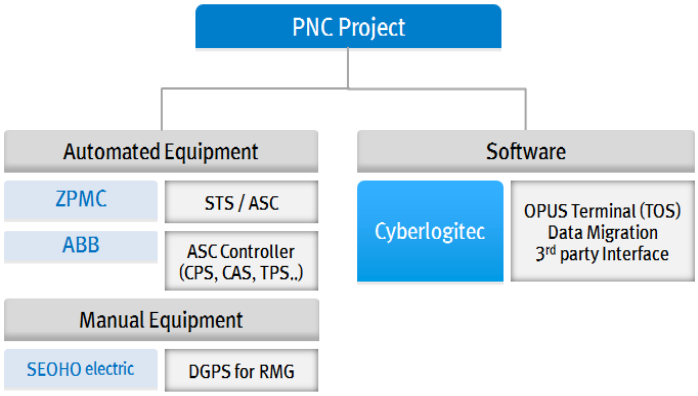
Project Process

PNC has serious low performance issue due to the previous TOS (Navis) system. To solove this problem, **PNC and Cyberlogitec have been launching new TOS system OPUS Terminal from May,2010 with short migration time for seamless operation.**

Cyberlogitec have performed 2 steps Go-live phase. The first step was for the conventional yard, the second step was for the automated yard. This strategy increased user's familiarities of new system and minimized the impact on the seamless terminal operation. In addition, OPUS Terminal system stability has been proved with the performance test using TBA tool.



2 steps go-live step include migration and performance test



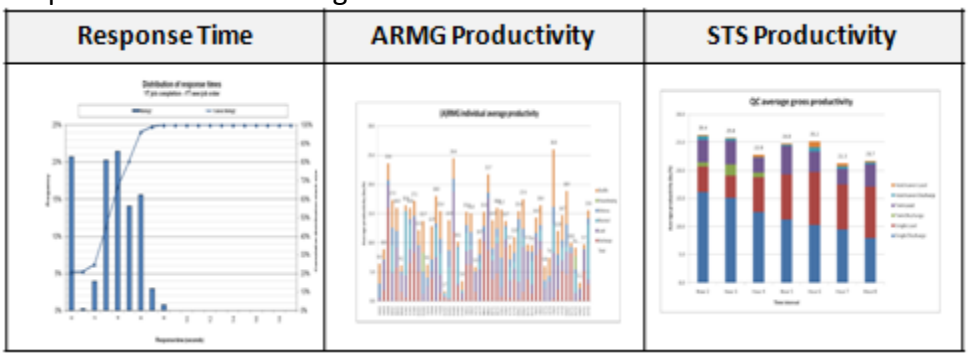
Solutions are provided by Cyberlogitec

1) OPUS Terminal
   ; Planning, Equipment PLC, Management, VMT, PDA
2) Hardware (Server)
3) DR (Disaster Recovery) Center

Challenges & Solutions

- **Win-back from Navis System**

PNC decided change TOS from Navis(Sparcs) to OPUS Terminal because of low system Performance issue is occoured when to integrate the operation of automated yard blocks and that of existing manual yard blocks. System occurs performance issue with 100,000 TPS (Transaction per second), and had serious performance issue with over 500,000 TPS.
For this project, Cyberlogitec proposed to go live manual block first, then integrated automated block independently. Also OPUS Terminal system stability has been proved with the performance test using TBA tool.



Truck turn time recorded 22 minutes and 33 seconds. When simulating this figure, CLT set gate volume as 80% against actual target and actual turn time will be shorter.

- **High Mismatch with COPINO and CLL**

PNC has a problem of high discrepancy between the actual container and EDI information. Especially the discrepancy of container's weight can cause the serious vessel's stability issue. Cyberlogitec has solved this problem to provide **Container Swap** features to swap their locations of containers having same grouping factors.

- **Pre-inspection & trouble shooting in the Gate**
- **Migration Strategy**