Ken Change visiting ABB Ports HQ in Västerås, Sweden

MIT’s introduction of ASCs alongside RTGs is among the industry’s first such cases. ABB Ports global head of sales Fredrik Johanson breaks down the chemistry:

“The side-by-side operation of ASC and RTG cranes shows that it is possible to introduce automation in part of an existing terminal and achieve significant improvements, in productivity, the working environment, health and safety, and staff motivation through working in a multi-skilled team.

“This case can provide inspiration to those considering introducing automation in an existing manual terminal, but are concerned about how that can be done without disturbing the daily operation too much.

“The MIT case also demonstrates that automatic stacking cranes with remote supervision can successfully be installed and taken into operation in an existing mixed yard operation. This means that an existing RTG terminal for instance can consider adding ASCs to provide the additional yard capacity and productivity needed. Lastly, this case proves that automation and remote operation can be introduced step-by-step within one node, or node-by-node, throughout the process.”

The story starts in Korea back in 1998, with Ken Chang, a Hyundai employee who saw an opportunity with US-based Stevedoring Services of America. SSA Marine had just acquired an 85 per cent stake in MIT and was looking for someone to oversee the work of modernising the terminal.

“The first thing for me was to try to understand Panamanian culture,” Ken recalls, “and learn the language.” Add to that the strong American influence in MIT’s history, and Ken’s challenge became even more complex.

MIT was established on the site of what had been the largest US naval base outside American soil, so most of the staff were American engineers and technicians. “They were not especially eager to share their knowledge, so it was difficult to get them to train local labour,” Ken says. MIT found themselves at a crossroads: retain American experience, or train the local workforce.

“I thought it would be a stronger long-term solution to invest in developing local talent,” Ken relates. “Many had engineering degrees from Panamanian universities, but they did not have the mindset for adopting other ways of working, and they did not have the experience.” He managed to convince SSA Marine management that going local would be the best bet in the long run, and began the daunting process of adapting local talent to the demands of a global industry.

“MIT was the first in SSA Marine to train the local workforce. We started hiring straight from the university, so we did not have people coming in with too much baggage from other cultures. In the beginning I trained them myself using an interpreter. Looking back, it took almost ten years to build up a pool of local talent,” says Ken.

Already early on Ken knew that people thrive on challenge, so he put in a request for funding of projects that would serve to motivate trainees. “Learning by doing, and observing operations first-hand, was very motivational. I could see that they responded when I would use one of their suggestions.” As their knowledge grew, so did interest in growing the business. “They became very keen to use and try out new technologies,” Ken recalls.

The S eC r eT T o S uC C eS S AT MIT P a n a M a

Motivate and modernise

Even in the truly global ports industry, the story of MIT Panama, the Manzanillo International Terminal-Panama, S.A., located at the northern entrance of the Panama Canal, stands out as an example of how diversity, dedication and technology can combine across continents to achieve real progress.

The story starts in Korea back in 1998, with Ken Chang, a Hyundai employee who saw an opportunity with US-based Stevedoring Services of America. SSA Marine had just acquired an 85 per cent stake in MIT and was looking for someone to oversee the work of modernising the terminal.

“I thought it would be a stronger long-term solution to invest in developing local talent,” Ken relates. “Many had engineering degrees from Panamanian universities, but they did not have the mindset for adopting other ways of working, and they did not have the experience.” He managed to convince SSA Marine management that going local would be the best bet in the long run, and began the daunting process of adapting local talent to the demands of a global industry.

“MIT was the first in SSA Marine to train the local workforce. We started hiring straight from the university, so we did not have people coming in with too much baggage from other cultures. In the beginning I trained them myself using an interpreter. Looking back, it took almost ten years to build up a pool of local talent,” says Ken.

Already early on Ken knew that people thrive on challenge, so he put in a request for funding of projects that would serve to motivate trainees. “Learning by doing, and observing operations first-hand, was very motivational. I could see that they responded when I would use one of their suggestions.” As their knowledge grew, so did interest in growing the business. “They became very keen to use and try out new technologies,” Ken recalls.
High and wide, side-by-side Once the local workforce was established and stable, efforts turned to modernising terminal operations. In 2015 the solution was identified in more efficient Automatic Stacking Cranes (ASC). “Container handling using Rubber Tired Gantry cranes, (RTG), uses a lot of land space and requires a wider path for operations, and space is at a premium at MIT Panama,” Ken says. “Stacking uses less land space, so we knew we had to find a solution that would allow us to Introduce ASC, without having to replace the existing RTG cranes.

MIT allocated fifteen per cent of yard space to ASC operations, alongside the RTG cranes. The results of the ASC operations have met all expectations and MIT reports that stacking cranes represent only 8 per cent of their container handling equipment fleet, but perform 25 per cent of all the moves in the entire operation. The two different handling philosophies are now working together in harmony at MIT, but the combination is still somewhat unusual in the container terminal world. “We have made it work, and we will continue with a gradual conversion to ASCs as we go along, without having to make a wholesale conversion,” Ken says.

Adding Europe to the Asian and American elements of the story, cooperation with ABB Ports has been instrumental in the modernisation of MIT Panama, according to Ken: “ABB responded to our needs, and they listened to our ideas. We have used ABB as our sole supplier of drive systems for decades. This includes also refurbishment of older drive systems and equipment.” Therefore it was natural for MIT to turn to ABB Ports for the automation and remote supervision solution for their new stacking cranes.

---

**ABB responded to our needs, and they listened to our ideas.**

As with any good relationship, both parties benefit: “MIT provides feedback to ABB that allows us not just to meet their needs, but to improve our products and services to the market,” says global head of sales, Fredrik Johanson of ABB Ports. “We are very happy with all aspects of cooperation between ABB and MIT.”

**Moving on**

As regards plans for the future, Ken Chang is reflective, and decisive: “We will implement the Internet of Things (IoT) to a larger degree, and we are prepared with sensors on the modern stacking equipment. Eventually that will replace the manual signals that we use today.

Another driver in MIT’s development is the recent expansion of the Panama Canal. MIT shares the northern entrance to the canal: “As you head in to the Panama Canal, we’re the first one on the left,” Ken smiles.

70 to 80 per cent of their volume is transhipment, moving cargo on from the big ships to feeder ships serving the Caribbean region. Though that is not likely to change, the increased capacity of ships passing through the canal should add to MIT’s traffic: “The Plus Panamax ships are bigger, but the economic downturn has reduced traffic. When the economy picks up again, though, we are ready with new cranes and an expanded yard.

**Solid choices**

As with any professional choice he makes, Ken Chang has his reasons for choosing ABB as a preferred, if not exclusive, supplier: “We are confident in our relationship with ABB. In MIT we steer by three main Key Performance Indicators, or KPIs,” he says, and ABB helps us meet these goals.

The first KPI is crane stability and availability, or downtime: “Downtime is when a crane is not available due to a fault occurring during operation.” The industry norm for downtime is 1.5 per cent. MIT Panama established a target of .5 per cent, and we have achieved this target every year for the last 15 years.” This despite a near-impossible parameter of maximum five minutes from notification to response before an incident counts as down time.

One factor in achieving this goal is the good training provided by ABB, Ken points out. Another is the reliability of ABB products and systems. “These things have helped us achieve our down-time goal, even in this tough operating climate, with heat, humidity and salt from the ocean.”

---

**We will implement the Internet of Things to a larger degree, and we are prepared with sensors on the modern stacking equipment.**

Another KPI is cost related to MR, or Maintenance, Repair, and Operations: “We rely on preventive and corrective maintenance. We may move on to predictive maintenance at some point, but right now the cost would outweigh the benefit.” Ken’s typically pragmatic solution? “We have a guy walking around the yard who keeps his eyes open and his ear to the ground. He sees things that need taking care of.”