



ELEVATING SAFETY STANDARDS AT SUN KWANG NEWPORT CONTAINER TERMINAL WITH LTE-BASED WAVE PTX SERVICE AND DEVICE

Sun Kwang Co Ltd began its container terminal operations in Incheon Southern Port in 2005. By June 2015, it began expanding its services by constructing the Sun Kwang Newport Container Terminal – SNCT at Incheon New Port.

Today, SNCT is widely recognised as one of the largest container terminals in Incheon Port in Korea, playing an essential role in handling the surging container trade volumes with China and many other countries.



ABOUT SUN KWANG NEWPORT CONTAINER TERMINAL (SNCT)

SNCT is the largest container terminal in Incheon Port and is part of Sun Kwang Co Ltd; it provides logistics, warehousing, and transportation services for heavy cargo, metals, and container terminal services in Korea.

SNCT operates seven quay cranes (STS) that load and unload containers, 28-yard cranes (ARMG) to take containers in and out of the yard, and 40-yard tractors used for onboard operations and container transportation in the 480,000 m² terminals.

SNCT handles up to 1.2 million TEUs annually and provides world-class port logistics services to customers is its mission. An automated operating system manages all planning, fulfillment and work orders related to container movement.

Dock length | 800 m
Terminal area | 480,000 m²
Annual capacity | 1,200,000 TEU





A TOP PRIORITY TO ELIMINATE SAFETY RISKS

In February 2022, SNCT embarked on a bold move to completely replace its previous fleet of radio devices with Motorola Solutions' LTE-based Wave PTX radio service, becoming the first major container terminal in Korea to adopt LTE-based radio communication technology fully. As SNCT could not fully guarantee the safety of its employees and partners with its previous radio fleet, changing its communication infrastructure became a necessary investment to adequately prioritise workplace safety for all personnel working on its premises.

TLK 100



TLK 150

CASE STUDY | WAVE PTX TLK100 & TLK150

THE NEED TO ELIMINATE INTERFERENCES

SNCT's vast terminal is constantly packed with containers, cranes, and other steel structures. As a result, workers are frequently experiencing communication disruption because of the steel materials they are surrounded by. Shadow areas have become an unavoidable operational pain point at SNCT.

Disruptions in communications create risky situations for employees and partners at the workplace. For instance, the crane operators would become unreachable in the field via their radios because they were surrounded by piles of containers. Maintenance workers in the machine room or workers operating quay cranes often needed to step out to communicate with one another.

In other instances, for workers in the machine rooms or teams in the control rooms, the surrounding steel structures were causing interferences, impacting the effectiveness of team collaboration and safety. Controllers would send out messages to field workers but they were not received due to signals blocked by their surrounding steel materials.

By introducing WAVE PTX service and radio models TLK100 and TLK150 into SNCT's operations, personnel who need radio communications can enjoy a communication environment with zero shadow areas. The new environment has completely eliminated the possibility of accidents resulting from communication interferences.



SNCT recognised the need to eliminate safety failure risks. Tackling shadow areas is a serious safety issue for us and a top priority for the proposed new communication environment.

Many shadow areas elevated our safety risk levels and impacted our operational efficiency. Field workers could have communicated to the controller to stop the crane via their radios, but the controller did not receive their messages. And the crane would continue with its operations.

We clearly needed to consider other technical solutions for the safety of our employees and partners.

Jeong, Hoe-jae
SNCT IT Team Head





MAPPING A PATH TO ACHIEVE 100% SEAMLESS COMMUNICATIONS

Initially, the IT team considered switching to a digital system and installing repeaters to eliminate shadow areas. However, too many shadow areas required an enormous investment to acquire sufficient repeaters. There was also the challenge securing adequate radio channels to serve each team. Changing the radio frequency channels was also a laborious process, requiring all radios to be physically collected back from teams to reset the channels. For these reasons, SNCT looked to LTE radios as the alternative solution.

SNCT spent two months evaluating available options, and tests confirmed that LTE radios could effectively remove shadow areas. SNCT was also pleasantly surprised that replacing their previous radio fleet with LTE radios, even with monthly communication bills, would cost 20- 30% less than installing repeaters on their vast premises. Changing channels on LTE radios was also easily done over-the-air from a centralised management portal.

SNCT finally decided on introducing 90 units of Motorola Solutions' portable LTE radio TLK100 and 87 units of the vehicle-mounted LTE radio TLK150. Almost every workers at the terminal also use the Remote Speaker Microphones(PMMN4125) with their TLK 100s.

ROBUST COVERAGE, VOICE QUALITY, AND DURABILITY - KEY REASONS BEHIND SNCT'S DECISION

SNCT selected Motorola Solutions' LTE radios after being most satisfied with their test results; Motorola Solutions' TLK100 and TLK150 scored the highest in all test scores. SNCT tested the radios throughout the terminal, from siloed locations to areas where users are surrounded by piles of containers or users are located up to 50 metres high from tall quay cranes. No shadow areas were discovered, and voice quality was excellent.

"We were thinking of installing Wi-Fi access points if shadow areas were found within the LTE environment, but everything went so well that we did not need to do that," said an SNCT official. The Motorola Solutions' radios also offered clear voice and loud alert sounds, better than any other radios. That was a significant factor that improved workers' safety.

At the container terminals, the radio's durability was also important. Workers carry their radios at all times, and it is common to often drop them onto hard, steel structures from great heights when yard tractors are strongly jolted while at work. The Motorola Solutions TLK100 and TLK150 again achieved the highest scores in these durability tests.

Finally, Motorola Solutions also offered vehicle-mounted radios TLK150s, which were not available from the competition. TLK 150s provided convenience to users operating yard tractors, those inside crane machine rooms, and control room operators.

BENEFITS OF WAVE PTX SERVICE & DEVICES

- 1 Zero shadow areas for seamless, uninterrupted communications
- 2 Clear and loud voice communications, with the option to use vehicle-mounted radios
- 3 Eliminate limitations with frequency availability and channel allocation
- 4 Centralised administrator application portal for convenient fleet management - Over-The-Air (OTA) updates, radio management and workgroup management including:
 - Ability to view radio indicators easily and to make name changes
 - Access to information about connected radios
 - Ability to make changes to channel and contacts
 - Ability to make changes to channel and contacts
 - Wi-Fi, Bluetooth, and GPS connectivity



“**We do not recommend using smartphones at container terminal work sites. This may result in negligence as a severe accident in a brief moment could occur of inattention. Worksites are places that highlight the role of radio use. After changing to the Motorola Solutions LTE radios(TLK 100 & TLK 150), we are assured of seamless communications with workers wherever they are. Now we can look forward to a future of zero risks and accidents.**”

Jeong Hoe-jae
SNCT IT Team Head
 **SNCT**



SAFETY PRIORITISED, FIELD WORKERS' USER SATISFACTION GAINED

What do the field workers who are the end users of Motorola Solutions' LTE radios think about them? They cannot be happier with their new radios. An operator in the container yard said, "Seamless communications mean peace of mind. I can use it the same way as my previous radio, and it's more compact, lighter, and easier to carry."

"I used to face endless complaints from field workers at meetings. They often asked me when I would be able to resolve the shadow area issues. This project was initially scheduled to commence in 2023, but we decided to bring this forward a year. After we replaced our fleet with Motorola Solutions' LTE radios, we have received zero complaints. In addition, the Motorola Solutions WAVE PTX PTT smartphone app allows administrators to connect with workers across the field even when they are out of the terminal's premises." said Jeong. Being true to the company's managerial philosophy of "safety and communications are our organisation's culture," SNCT valued workers' safety more than anything else and introduced the advanced technology to add value to society and further upgrade its business competitiveness.

PARTNER -OHKYUNG COMPUTER TECHNOLOGY

Ohkyung Computer Technology, an authorized partner of Motorola Solutions, is working diligently to meet field workers' needs and provide SNCT with immaculate user support for their LTE radios.

As an IoT specialist, Ohkyung Computer Technology is known for its technological competitiveness in building fixed and wireless networks including radio networks for advanced port operations, CCTV security operations, gate automation, and other advanced navigation system solutions.

For more information about Motorola Solutions' WAVE PTX (LTE radio communications) and devices(TLK 100, TLK 150), please visit motorolasolutions.com/wave-ptx.



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