



Container Wharf in Shanghai Deploys MOTOTRBO™ Digital Radio

Solving the problem of limited frequency with improved audio and data communication capacity



One of the biggest ports in China, the container wharf of Shanghai Port is located on the west bank of the Yangtze River, north of Waigaoqiao in Shanghai Pudong new area. Specializing in container loading and unloading, it is a national infrastructure project and the foundation for building Shanghai as an International Shipping Center. Since its operation in 2000, the container wharf has maintained a strong growth momentum, and was awarded the “2008 China Top Ten Container Ports In Throughput” by the China Ports Association Container Branch. Shanghai Haida Communications Corporation, formerly the Communication Project Department of Shanghai Port, is a system integration company specializing in the design and building of communications, information, automatic control, public security technologies and disaster prevention systems.

Challenges

Professional radio communications is at the centre of the command and coordination system for the container wharf of Shanghai Port. The wharf has been leveraging the 400MHz Motorola SmartNet analog trunking communications system which was established in the 1990s. With its robust features, this system once played a pivotal role in ensuring reliable communications for the wharf operations. Over the years, the equipment has begun to age, and with increasing business and volume of communications, it was straining to meet the constant demands.

The management of the container wharf decided to switch to two-way radio communications for their daily operations. Within a year of the two-way radio deployment, new problems started to surface. The wharf was supporting 500 radio users which they divided into 30 talk groups for their radio communications. However, the four channel frequencies could not cater to the needs of the talk groups. Radio users experienced severe interferences and bad audio, affecting the communications and safety at the wharf.

It became imperative and urgent for the wharf to implement a more robust two-way radio communications. After carefully considering the limited channel frequencies, cost of use and user needs, the container wharf needed a new communication system which could provide these features: Better frequency utilization; stable, robust, high-quality audio with rejection of interference; data applications like group call, single call, remote deactivation, remote monitoring and GPS location. The new system must be future-proofed to meet the communications needs of constantly increasing business yet affordable in its cost of deployment, operation and maintenance.

Products:

- MOTOTRBO XiR P8268 portable radio
- MOTOTRBO Control Station
- MOTOTRBO XiR M8268 Mobile Radio
 - Desktop microphone
 - Speaker
 - Power supply with battery backup
- MOTOTRBO XiR R8200 Repeater

Benefits:

- TDMA with Better frequency utilization:
- Digital receiver capable of filtering and restricting noise in communications
- Stronger data processing features like text messaging, database inquiry, vehicle location data transmission locating, data collection and transmission.

"We actively consulted our customer in the whole development of their new digital radio solution, ensuring the communication system completely meet their needs without exceeding their investment budget. We have been working closely with the Motorola engineers during the installation and testing of the equipment, and promptly addressed issues which surfaced during actual operations. Our customer is indeed very satisfied with their new communications system and the services that we provided."

MOTOTRBO™ digital system provides better frequency utilization, enabling the container wharf to set up 12 channels to meet the needs of constantly increasing communications for its wharf operations. The digital radio solution also ensures reliable communications for the command and coordination of disaster prevention and relief efforts at the wharf.



Solution

In light of increasing business and communications challenges facing the container wharf, Motorola's partner - China Rail Telecommunication Equipment Co., Ltd and the Shanghai Haida Communications Corporation proposed the MOTOTRBO™ digital radio solution.

The container wharf deployed six units of XiR R8200 repeaters, 328 units of XiR M8268 mobile radios as well as 137 units of XiR P8268 and XiR P8200 portable radios. The team also developed a radio dispatching software and utilized the GPS location system for real-time management of end users. Shanghai Haida Communications Corporation and China Rail Telecommunication Equipment Co., Ltd signed a purchase agreement late in April 2010. The equipment was delivered to the Shanghai Port in late May, one month ahead of the planned schedule. The new digital radio system was installed and tested under controlled conditions that did not affect the normal operations of the wharf. Full operations started in late June, providing radio coverage of a kilometer around the wharf.

"One base station of the MOTOTRBO system sufficiently covers the container wharf. Our customer chose this digital radio solution since it was affordable. Because the wharf did not have enough channels yet support a large base of users, we implemented the MOTOTRBO Capacity Plus application. With Capacity Plus, we were able to expand the communications system by using 12 audio channels and 24 data channels to provide excellent support for 1,200 users on demand," said Pan Wei, representative of China Rail Telecommunication Equipment Co., Ltd's Shanghai Office.

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Extraordinary Efficiency

Workers at the wharf said that the MOTOTRBO digital radio provides clearer audio, without the calling interference during peak hour. They experience clear and loud communications despite the heavy traffic at the container loading and unloading areas, enabling them to work more efficiently.

The MOTOTRBO digital system has also given the wharf a big boost for their directing and dispatching efforts. Features like GPS location tracking, group calls and single call optimize site directing, thus ensuring timely dispatch of mechanical equipment at the wharf, improving the efficiency of loading and unloading and ensuring personnel safety at the wharf while generating economic benefits. The remote monitoring and deactivation features effectively prevent radios from being misused, enhancing greater efficiency in utilizing the radio channels.

"Using a new communications system is always unsettling and we had our reservations. Since Motorola is a well-known market leader in the professional radio sector, their successful track records eased our worries. Actual practice also shows that our deployment of MOTOTRBO digital solution has been successful since our new system is making full use of our limited channel frequencies to support data applications like GPS location tracking as well as provide reliable and high quality audio, with digital rejection of interference. MOTOTRBO has future-proofed our communications system to meet the needs of our constantly increasing business. Yet the costs for its installation, operation and maintenance are reasonable," said Gu Xueming, GM Of the Radio Unit of Shanghai Haida Corporation.

"The MOTOTRBO digital solution that has been successfully adopted by the container wharf at Shanghai Port fully epitomizes the differentiating advantages of digital radio communications.

MOTOTRBO with TDMA technology and dynamic channel allocation features are vital to the operations of the container wharf, which has limited channel frequencies to support intensive usage of the radios. By eliminating background noise, MOTOTRBO users could communicate clearly in the highly noisy environment. With its versatile analog and digital dual-mode system, MOTOTRBO supports the easy migration of users to the digital platform who are still using their own analog radios in a convenient and affordable way," said Meng Chao, the Manager of radio channel business sales technology support at Motorola.

Features and Benefits

MOTOTRBO digital solution for the container wharf at Shanghai Port boasts these benefits:

- 1. TDMA technology, better frequency utilization:** MOTOTRBO adopts the TDMA technology with two time slots, dividing into two channels in the 12.5KHz spectrum. Two talk groups only use one repeater when communicating by one frequency, not only saving investment on equipment but also in channel frequencies. Efficient frequency utilization supports more radio users, providing louder audio and increased data volume while effectively solving the wharf's problem of limited channel frequencies.
- 2. Better audio:** MOTOTRBO digital receiver can filter and restrict the static noise in radio communications, which is vital for the busy environment and complex operations at the container wharf.
- 3. Stronger data processing capacity:** MOTOTRBO provides more data processing features like text messaging, database inquiry, vehicle location tracking and data collection and transmission. They come in very useful for locating cranes at the wharf premises, making it highly suited for the needs of the wharf's growing business with these future-proofed solutions.



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