Safety management in Chinese container terminals


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A common feature of the backyard land area of Chinese container terminals is adequate width, depth and area that the front of terminals need for proper operation. Container docking and terminal operations require roads for a variety of vehicles. All of these are of significance to safe terminal operations..

Container terminal mechinisation

The loading, unloading and handling within modern container terminals has become mechanised in general. Machinery such as shore cranes, rubber-tyred gantry cranes, container trailers and front-handling container mobile cranes have made the terminal operation speedy, efficient and non-stoppable. Furthermore, these machines, as they have advanced, have become equipped with auxiliaries which enable safe and efficient container terminal operations.

Container terminal specialisation

Equipment used in container terminals includes shore cranes, elevated electric rubber-tyred gantry cranes, general rubber-tyred gantry cranes, front-handling container mobile cranes, trailers and stacking trucks. These high-tech and modern loading and unloading machines require professional management personnel and high quality operators.

Container management

The operation and management of modern container terminals has become highly information oriented and digitalised. China's container terminals have developed, or purchased, TOS systems which utilise smart devices in the enhancement of effective organisation, planning, scheduling and the effective control of terminal operations to achieve cost reduction.

Larger berths

According to the principle of economies of scale, unit cost lowers in proportion to the size of ships. In order to reduce the transportation cost of each containership, the newly-run containerships tend to be larger than before. In recent years, to appeal to mega-ships, most of the port operators have restructured, expanded and built new berths to accommodate containerships of over 10,000 TEU.

Efficient handling capability

Generally, Chinese container terminals observe a three shift a day working schedule which enables them to complete 3-4,000 TEU moves within 24 hours. This is much higher than that of the traditional bulk cargo ships.

The safety management objective

Murphy's law states that if there is a chance for things to go wrong, no matter how slim the chance is, eventually, it is bound to happen. When it comes to the safety area, the potential hazard will eventually lead to accidents. According to the accident statistical rule put forward by the famous American safety engineer Heinrich, 1 in 330 accidents will result in a serious casualty or death, 29 of 330 cause minor injuries, and 300 of 330 accidents end up being a thrilling story. Heinrich's rule gives rise to the importance of eliminating potential hazards in order to prevent accidents.

On the basis of Murphy's law and the Heinrich rule, the objectives of safety management as indicated by scientific analysis and research point to implementation activities such as education and training, routine inspection and supervision, and reward and punishment, all of which fall into the aspect of the 'human element'. With regard to equipment, necessary regular maintenance and elimination of hidden safety hazards should be taken into account. Environmentally, measures of wind-prevention, lightning protection, anti-freezing and anti-heat should be carried out to the letter. Safety awareness needs to be rooted in the minds of employees so as to avoid accidents while staying committed to minimising management failures by inspection.

Safety problems

- Container handling equipment and facility defects
- Ship berthing operations
- Ships may cause impact via friction on a wharf during berthing and departure
- Road and vehicle risk
- Injury to workers

Safety precautions

To further improve the relevant laws and regulations, the Safe Production Law of the People's Republic of China, which serves

as the core safety law and regulations body, put forward some requirements for safe production. Port construction is high risk and production safety has always been the priority. The Ministry of Communications and the State Supervision and Management Bureau on safe production issued the "Evaluation Measures for Port Safety" which came into force in 2004. This law is a guiding regulation for the evaluation work of port safety.

Port systems include the responsibility for production safety, the investigation system for potential safety hazards, equipment double-check systems, reward and punishment systems and emergency measures for accidents. The construction of incentive mechanisms that relate safety to performance assessment and thereby strengthen safety consciousness responsibility is of vital importance.

Conclusion

Container terminal safety is a critical issue to the completion of production tasks. This article, in view of equipment safety and management safety in Chinese container terminals argues that preventive measures should be based on relevant theories with the aim to call to attention the study of the port safety management.

About the author

Professor Jin Yongxing, Eng. is the vice president of Shanghai Maritime University and assumes the role of Chairman of the International Maritime Lecturers Association (IMLA) and Director of the China Ocean Engineering Consulting Association. His specialisation is research and lecturing on transportation, vessel and ocean engineering.

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About the organisation

Shanghai Maritime University (SMU) is a multi-disciplinary university that encompasses areas such as engineering, management, economics, law, liberal arts, and science, with a special emphasis on shipping technology, economics and management. Chinese maritime education originated at Shanghai and grew out of the Shipping Section of Shanghai Industrial College founded in 1909 (towards the end of the Qing Dynasty). SMU was established by the Ministry of Communications in 1959.

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