

Study on the introduction of remote container cargo handling system to improve working environments

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1. Introduction

In recent years, there has been concern about the future shortage of port workers due to the decline in the labor force and an aging society. This is due to the severe working conditions (crane work, etc., in the field or in high places) at container terminals.

In order to improve the working environment and maintain and improve the functions of container terminals, the Ministry of Land, Infrastructure, Transport and Tourism is supporting the development of remote-controlled RTGs and facilities necessary for their introduction. This division is studying trends on the remote control of RTGs and the benefits they provide following introduction.

2. Significance and expected benefits of introducing remote control RTGs

RTG is an abbreviation for "Rubber Tired Gantry Crane" and refers to cranes used for the loading and unloading of containers onto trailers in the container storage area. RTG travels on a paved road surface with rubber tires and an open span that enables them to straddle piles of containers. At present, it is common for an operator to sit in the driver's seat at the top of the crane and operate the crane while facing downward, which tends to cause fatigue. Using a remote control RTG system, remote

control can be performed from a container terminal management building, and by assisting some of the crane operations, a single operator can operate multiple cranes at the same time. The indoor operation room also provides a more comfortable and safer work environment for the operator.

3. Verification of method of introduction and benefits of a remote cargo handling system

There are several considerations when introducing a remote control RTG system. While RTGs will be remotely operated, the trucks used to take the containers will still be driven by humans, therefore it is important to implement the necessary safety measures when delivering the containers. In addition, due to remote operation, visibility during cargo handling is reduced, and the cargo handling time per container may be slightly longer. As a result, it may be necessary to revise some of the operation methods and layout of the terminal.

This division is collecting and analyzing examples of remote RTG systems and studying methods to verify the benefits of remote control RTGs by numerical simulation.

4. Future outlook

While some ports are already introducing remote controlled RTGs, the aim of this study is to help improve working environments and resolve the labor shortage problem by conducting fact-finding analysis so that other ports can smoothly introduce RTGs as needed.

Photo: Cargo handling using remote control RTGs

