

Passenger-like Container Train

Subjects: Transportation

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The passenger-like container train is a fixed marshalling and fixed bottom. It does not dismantle and the marshalling station operates during the operation process. It has a definite departure and final station. Different trains will choose different stopping methods according to the different terminal stations of the transported containers. At the stopping stations, the fast loading and unloading mode of the arrival and departure line is adopted, and the containers can wait for the train at the platform like passengers and carry out loading, unloading, and reloading operations.

Keywords: container transportation ; passenger-like container train ; train running plan

1. Introduction

Transportation is an important foundation for the development of the national economy. At present, China's freight transportation market is overly dependent on roads, and the proportion of railways is still low, accounting for only 9.6% in 2020. It is necessary to adjust the structure of freight transportation. Gradually changing from road-based freight transportation to railway-based freight transportation relying on container transportation will effectively reduce carbon emissions and further improve the sustainable development of transportation.

At the present stage, the organization mode of existing railway container transportation in China mainly consists of the point-to-point direct type and sub-node aggregation type. The point-to-point direct train is a direct train between two container stations without stopping in the middle, which can reduce the transportation time of container flow and improve customer satisfaction. The sub-node assembly type is to divide the container stations into different levels. The goods are first transported to the node station, and the short-circuit train transports the goods from the node station to the hub station. Containers marshalled at the hub are transported to other hubs by long-distance container trains. However, the reorganization operation is carried out in the middle, which prolongs the time of cargo transportation. Neither of these two container transportation modes has obvious advantages in cargo transportation. The existing container transportation mode cannot meet the requirements of sustainable development.

Railway container transportation has the characteristics of a single organization object, convenient organization method, centralized operation site, and stable system structure, and has certain similarities with passenger transportation. Therefore, we can learn from the organizational principle of passenger transportation to form a new container transportation train. The passenger-like container trains are grouped in a fixed manner and do not undergo disassembly operations. The operation mode of fast loading and unloading of goods on the arrival and departure lines is adopted. The container stations passing by on the way can be stopped and loaded and unloaded. Containers are like passengers waiting on the platform, getting on and off, and the container can also get off the train like a passenger and wait for another train at the platform and transfer.

In the passenger-like container transportation system, the delivery speed of goods has been improved, which can attract a large number of suitable cargo sources to be transferred to railway container transportation and enhance its market competitiveness. At the same time, the state and railway departments vigorously promote the "roads to railways" and "bulk to containerized". The research on railway container transportation systems can effectively promote the sustainable development of railway freight transportation, which can not only promote the adjustment of railway transportation structure, but also effectively reduce carbon emissions and protect the environment.

2.Existing Relevant Research

Wu put forward the development direction of passenger-like container transportation, and gave some suggestions to improve the passenger-like container transportation in terms of basic conditions. On this basis, Wu and Gao compared passenger-like transport and container transport in more detail, and conclude that taking passenger-like container transportation mode can improve the safety and timeliness of transport, can make transport services more comprehensive and diverse, and put forward the idea of improving the basic conditions and technical conditions. Wei and others analyze

the current situation of domestic and foreign transportation organization system, put forward the shortcomings of China's railroad freight transportation, and introduce various aspects of passenger-like container transportation system, including transportation system network, transportation equipment front, train grouping fixed, fast transportation time and container passenger ticketing. Xia, Wei and others have conducted more detailed and multifaceted research on the passenger-like container transportation system. Firstly, they defined the concept of passenger-like container transportation system, and on the basis of the comparative analysis of passenger and freight transportation organization and foreign transportation organization mode, they proposed the fast loading and unloading passenger-like container transportation mode, and focused on the related technology and fast container train operation scheme. Song and others constructed the passenger-like container train running plan on the basis of passenger-like container transportation mode. The optimization model taking into account the transportation needs of empty and heavy containers, taking the maximum total revenue of the transportation enterprise as the objective function, and the constraints included stopping, reloading, and delivery deadlines, etc. The train line, the number of trains, the stop plan, and the transportation situation of the container were determined.

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