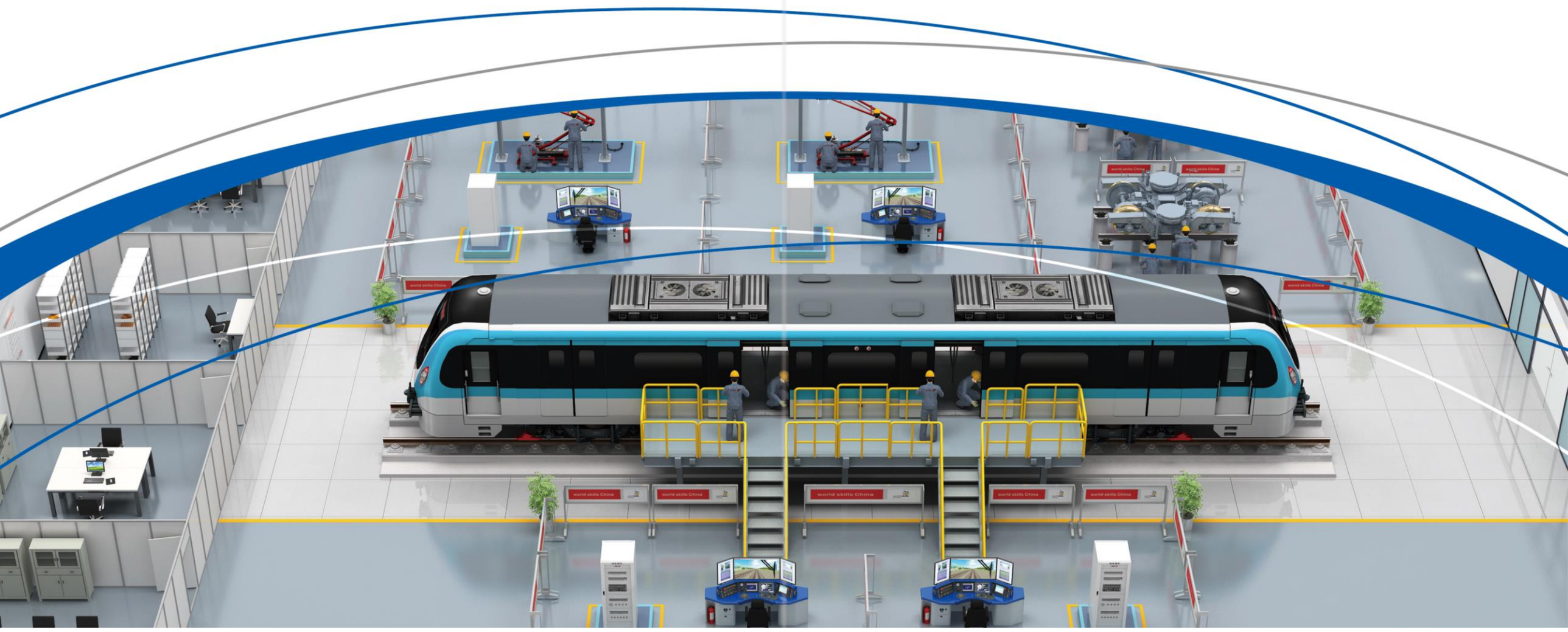
world skills China

Rail Vehicle Technology
Project Introduction



The rail transit industry is thriving in vitality and infinite in potential

Rail transit is the locomotive for sustainable development of the world economy. As the arteries of cities, it is the best way to solve urban congestions. Compared with other modes of transport, rail transit has the advantage of large volume of transportation and higher transportation efficiency. It is a mature and efficient transportation means leading to the future.

In 2018-2019, 493 cities in 72 countries and regions around the world have urban rail transit systems with an operating mileage of 26,100km. About 160 countries have d main rail transportation system with an operating mileage of 1,200,000km. In Europe and Asia, the total operating mileage of high speed rail reaches 50,000km.

The number of employees in the industry is close to 10 million, majority are in the member countries of the Worldskills International. The employment prospects of the industry are promising and bright. African countries are also regions where rail transit is developing rapidly, and the demand for skilled personnel engaged in rail transit will be even stronger.

Therefore, attracting high-skilled talents is the biggest challenge and opportunity facing the rail transit industry. Through regional and international competitions, young people will be inspired and determined to excel their careers in the rail transit industry.

Rail vehicles are the core part of rail transit. The construction and maintenance of all rail transit infrastructures ensure safe and stable operation of vehicles that is the most important objective in rail transit industry. Therefore, rail vehicle technician plays the most important role in the rail transportation industry.

Their skills are diversed. They are required to propose appropriate solutions to vehicle operation failures to ensure continuous operation. They need to perform vehicle maintenance strictly following technical standards and procedures to ensure the safe operation of vehicles and to deliver goods and personnel on time.

They are also required to adopt new technologies and methods in their work, solving complex diagnostic tasks, and repair the advanced vehicles with latest technologies. As they are advancing to higher skill levels, the industry provides them with opportunities for promotion, and these young people will have a broad prospect in future.

The rail vehicle skill competition follows the international standard regulations and the on-site operations are carried out by standard, it meets the requirement and is a team skill competition which formed by two contestants. It mainly evaluates the young practitioner of the core skill in standard inspection, fault diagnosis, disassembly, change, commissioning and maintenance for the rail vehicle and its key parts.

The test items involve the maintenance and control of pantograph, the maintenance of vehicle bogie, the installation and commissioning of passenger compartment door, and the fault finding and repair of vehicle.

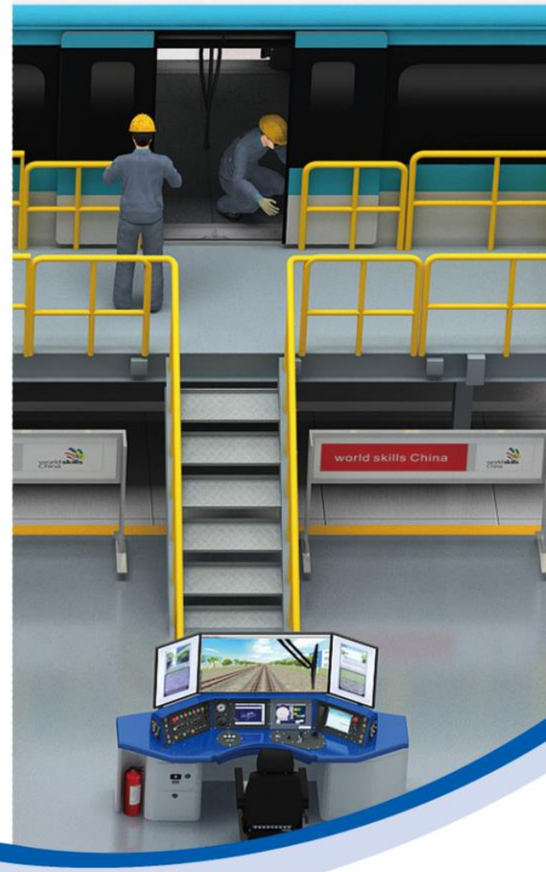
The competition evaluates the core skill of vehicle technology and meets the international standards and regulations

Module A : The maintenance and control of pantograph

> Follow the standard regulations and use the dedicated repair tools to carry out the inspection, maintenance and repair for pantograph mechanism parts;
> Recognize and read electrical diagram, analyze the control principle and use the electrical tools to install the control circuit and control pneumatic gas circuit for pantograph;
> Take advantage of commissioning platform to carry out the function test of pantograph and make the record;
> According to the setting requirements to adjust the pantograph motion parameter for making sure that the pantograph is in accordance with the use standard.

Module B : The installation and commissioning of passenger compartment door

> Recognize and read mechanism structure diagram and assembly diagram, according to the technological standard, use the dedicated tools to assembly the parts of passenger compartment door control mechanism;
> According to the technological standard, use the dedicated tools to install the door control mechanism and door leaf to certain position;
> According to setting requirements, carry out the adjustment for passenger compartment door’ s mechanism parameters and motion parameter to make sure that the vehicle door is in accordance with the safe use standard;
> Recognize and read electrical diagram, analyze the control principle, take advantage of ground commissioning platform to carry out the passenger compartment door logic function test and make the record;



The competition evaluates the core skill of vehicle technology and meets the international standards and regulations

Module C : The maintenance of vehicle bogie

> According to standard regulations, use the dedicated repair tools to carry out the inspection, measurement, maintenance and adjustment for bogie mechanism parts;

> Recognize and read mechanism structure diagram and assembly diagram, according to the technological standard, use the dedicated tools to carry out the assembly and disassembly for bogie mechanism parts;

Module D : The fault finding and repair of vehicle

> According to standard regulations, by visual observation, measurement, tentative test and other measures, carry out the inspection of the finished vehicle mechanism parts to find out the faulty part and make the record;

> Recognize and read the finished vehicle electrical principle diagram to carry out the control circuit test of mastering the vehicle control principle, activating the train, occupying the cab, assisting the vehicle, lifting and dropping the pantograph, open and close, parking brake, etc., and make the troubleshooting;

> Master the vehicle network control principle, by measures of checking the network status of train display screen, analyzing the network topological structure, downloading and analyzing network data and so on to accomplish the network related fault diagnosis and make the record.

Highlights of this competition

> The use of real rail vehicles and maintenance platforms to present a realistic operating environment. It will enhance the interests of visitors when they visit and witness the competition.

> The test project has strict requirements for safe operation, and the safety principles guided through the whole process.

> The overall project is focused on teamwork and effective communication, based on the occupation and real-life working situation.