



CRSC'S TECHNOLOGY SAFETY AND EFFICIENT

**CHINA RAILWAY  
SINAL & COMMUNICATION CO., LTD.**

SOCIAL RESPONSIBILITY REPORT **2017**





SOCIAL RESPONSIBILITY REPORT **2017**





# About This Report

This report is the fifth publicly disclosed Social Responsibility Report of China Railway Signal & Communication Co.,Ltd (CRSC). This report aims at responding to stakeholders' expectation and demonstrates CRSC's concept, management, actions and performance of environmental, social and corporate governance and sustainability.

## Reporting Reference

This report is prepared with reference to the Guideline on Corporate Social Responsibility of State-owned Key Companies by SASAC, "Appendix 27 Environmental, social and Governance Reporting Guide" the Rules Governing the Listing of Securities on HKEX(Listing Rules). This report also meets the requirements set out in the Sustainability Reporting Guidelines(G4.0) issued by the Global Reporting Initiative (GRI), the Chinese Corporate Social Responsibility (CSR) Report Preparation Guide (CASS-CSR 3.0) issued by the Chinese Academy of Social Sciences and other national and international CSR reporting guidance.

## Scope of the Report

Unless otherwise stated, this report includes China Railway Signal & Communication Co.,Ltd's headquarter, all its branches and subsidiaries, which the same scope of 2017 Annual Report.

## Report Data Specification

All key financial data disclosed in this report are collected from China Railway Signal & Communication Co.,Ltd's 2017 Annual Report, other data are mainly sourced from internal management systems of the Group.

## Reporting Period

1 January 2017 - 31 December 2017. Some content is sourced from historical data.

## Reporting Specification

For the convenience of expression and reading, "China Railway Signal & Communication Co.,Ltd", may be expressed as "CRSC", the "Company" and "we".

## Reporting Cycle

This is an annual report.

## Access to the Report

This Report can be browsed or downloaded both in Chinese and English version at the official website of China Railway Signal & Communication Co.,Ltd or at the website of Hong Kong Exchanges.



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# Memorabilia of 2017

Put the principles of the 19th CPC National Congress into action: CRSC studies, disseminates and implements the principles of the 19<sup>th</sup> CPC National Congress

- In 2017 the Party Committee of CRSC regards studying, disseminating and implementing the principles of the 19th CPC National Congress as a primary political task for the present and the coming period and the enthusiasms of the campaign are across the Company and its subsidiaries.

Xiao Yaqing, director of the State-owned Assets Supervision and Administration Commission of the State Council, went to CRSC to investigate

- In July 2017, Xiao Yaqing, director of the State-owned Assets Supervision and Administration Commission of the State Council, went to CRSC to investigate and host a symposium to fully affirm the achievements and contributions made by CRSC.

To help boost the country's high-speed rail construction, CRSC participates in building a number of high-speed railways that were opened during the year

- CRSC is an important force in national rail transit construction. In 2017, with our "one-stop service" integrating design and R&D, equipment manufacturing and engineering services we navigated the way of the country towards the construction of high-speed rail and urban rail transit.





## 2016年度中央企业负责人 经营业绩考核A级企业名单

30. 中国国电集团公司
31. 中国核工业集团公司
32. 中国航空油料集团公司
33. 中国铁路通信信号集团公司
34. 中国大唐集团公司
35. 中国电力建设集团有限公司



### 号“先锋号”100%低地板



#### To build China into a power of transportation, CRSC pushes China's rail transit into an era of autonomy

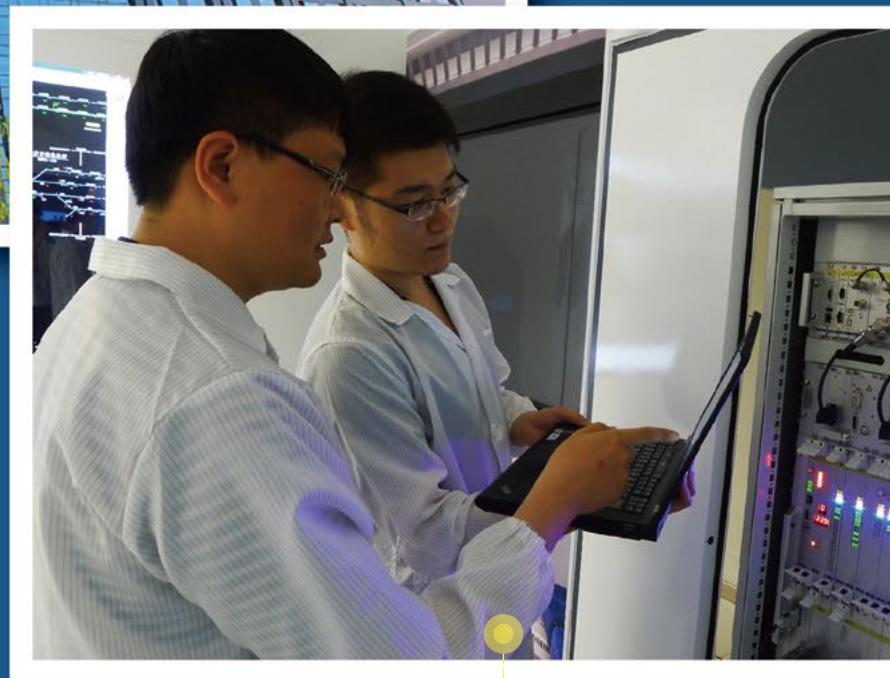
- In 2017, the fully autonomous intercity railway, Dongguan-Huizhou Intercity Rail, which CRSC participated in the construction of, was opened to traffic; China's first medium and low-speed maglev line for autonomous trains, the Beijing S1 line, which CRSC participated in the construction of, was opened to traffic; the newly-built Beijing-Zhangjiakou High-speed Railway, which CRSC also participated in the construction of, would adopt the autonomous driving technology to become the world's first high-speed railway for autonomous trains at a speed of 350 km/h.

#### CRSC was again rated as A level in business performance assessment of the heads of the central government-led enterprises

- CRSC once again saw its name on the A-level list of 2016 Business Performance Assessment of the Heads of Government-Led Enterprises. It was ranked the 33rd in the list of 51 A-level enterprises. CRSC won the honor successively prior to winning two A levels in 2015 Business Performance Assessment and 2013-2015 Tenure Assessment, respectively.

#### Global launch of CRSC 100% low-floor modern tram vehicles

- On October 25<sup>th</sup>, 2017, a 100% low-floor modern tram with five-module smart power made its debut in Changsha, Hunan, which was independently developed by CRSC with complete IPR. Thus CRSC became the domestic company covering the entire industry chain from investment and finance, general contracting and vehicles manufacture to operations and maintenance. Its one-stop service leading the development of domestic tram industry.



# Memorabilia of 2017

## CRSC fully completed its corporate restructuring

- On December 7<sup>th</sup>, China Railway Communication and Signalling Group Corporation completed the change of company registration procedures at the Beijing Administration for Industry and Commerce and obtained a new business license. The name of the Company was changed to China Railway Signal & Communication Group Corporation Limited, and the type of corporation ownership was changed from ownership by the whole people to limited ownership (wholly state-owned) marking that CRSC entered a new stage in deepening the reform.

## CRSC's self-developed products won a pass to overseas sales, promoting China's high-speed rail technology and standards to go abroad

- In 2017, CRSC's independently developed RBC (Radio Block Center) equipment and on-board ATP (Automatic Train Protection) product were respectively awarded the European Union's TSI certification. This marks an important step for CRSC to enter the European Union and break technical barriers of the global market and for those represented by CRSC at the helm of China's high-speed rail core technology to open up overseas markets.





To contribute to the "Belt and Road Initiative" CRSC participated in the construction of the Mombasa-Nairobi Railway in Kenya and signed the contract for Jakarta-Bandung high-speed railway

- On April 4<sup>th</sup>, CRSC signed the contract for Jakarta-Bandung high-speed railway, marking that the early important fruit of the "Belt and Road initiative" (hereinafter referred to as the "BRI") Jakarta-Bandung high-speed railway entered the phase of comprehensive implementation.
- On May 31<sup>st</sup>, Mombasa-Nairobi Railway which CRSC participated in the construction of was officially opened to traffic, and CRSC was praised by all parties.
- On June 1<sup>st</sup>, Chinese President Xi Jinping's special envoy and State Councilor Wang Yong fully affirmed and praised CRSC's efforts and achievements in the construction of the Mombasa-Nairobi Railway at the Chinese-funded enterprise forum held in Nairobi, Kenya.

CRSC's independently developed CTBC system to lead urban rail transit into the era of interoperability

- On December 28<sup>th</sup>, Chongqing Metro Line 5, to which CRSC supplied a full set of signal system integration services, was officially opened for trial operation. In 2017, the fully automatic city rail transit train control system (CBTC) with IPR fully held by CRSC won the bid for the Changsha Metro Line 5 and the Changchun Metro Beihu Line, marking that the CRSC-led era of urban rail transit interoperability officially came.

# Chairman's Statement



2017 is the year that the 19th National Congress of the Communist Party of China was held , as well as a significant year for the country's development. Facing many arduous task such as reform, development and stability, the country actively puts the strategy of "Made in China 2025" into action. It accelerated technological innovation to move "Made in China" toward the medium-to-high level of development. At the same time, the "13th Five-Year Plan" explicitly pointed out to strengthen the leading position of rail transit equipment and to build an internationally competitive industry chain of rail transit equipment. As a key player in national rail transit construction, CRSC took the lead in constructing a technological innovation system. With solid technologies and first-class product service guarantee, it ranks first line in the bidding mileage coverage on the construction of China's high-speed railways of 200-250km/h and 300-350km/h. CRSC has also established 3 complex laboratories and 48 special laboratories at the world-class level. With significant contribution to accelerating the advancement of national communication and signals technology, CRSC is leading the development of global rail transit technologies up to new heights.

To align itself with the principles of the 19th National Congress of the CPC and the Socialist ideology with Chinese characteristics in President Xi's era, CRSC in 2017 continued independent innovation to deepen reform and stimulate innovation. It built the first interoperable subway line and self-driving intercity railway, achieving full autonomy over complete sets of high-speed rail and subway train control technologies and full localization of relevant products. At the same time, its core equipment RBC obtained the EU TSI certification for railway, breaking an important technical barrier to the international market, which also provided core technical support for the national "Belt and Road Initiative" and high-speed rail "Going-Global" strategy. In terms of quality and safety, CRSC moved ahead steadily and surely by establishing and improving more than 30,000 high-speed rail test cases. Its leading high-speed rail train control technology provides safety protection for more than 20,000 kilometers of China's high-speed railways.





While focusing on technological innovation and quality assurance, CRSC constantly strengthens its operational management. In terms of environmental protection, our environmental protection management system passed the ISO14001:2015 certification. We launched annual key target projects for energy-saving and emission reduction, which covered all aspects from design process, product development to engineering and manufacturing so as to reduce our impact on the environment. In terms of talent management, we organized talent development programs such as project manager training program “Beacon Guide” to provide professional support for key positions; we formulated Measures for the Management of Innovation Studios for Model and Advanced Workers and built grassroots innovation studios for model workers so that employees realize their self-worth. In terms of development overseas, CRSC won the contract for Indonesian Jakarta-Bandung high-speed rail, taking a definitive leap in the process of China's high-speed rail “going global”. In terms of community welfare, we focus on construction in poverty-stricken and disaster-stricken areas. We set up special funds for poverty alleviation, selected and sent cadres for poverty alleviation, while continuing to enhance support intellectually and financially, with a view to promoting the normal development of public welfare undertakings.

Looking into the future, we are confident and determined to continue our efforts to create the national name card of “Chinese High-speed Rail”. We will always keep in mind the mission of the Company and prioritize quality and safety, low-carbon development and social responsibility in all aspects of our work, while creating greater value for stakeholders. At the same time, we expect to influence more groups with our actions so that they also jump on the bandwagon of sustainable development. Together we will work hard against all odds to contribute to accelerating the building of a socialist, modern and strong China!

A stylized, handwritten signature in white ink, consisting of the Chinese characters '周强' (Zhou Qiang).

# About Us

## Introduction

China Railway Signal & Communication Corporation Limited (hereinafter referred to as CRSC) is the provider of railway signal and communication technology, products and services, the precursor and leader in the China rail transit control industry, one of the biggest rail transit system solution provider. We provide specialized one-stop solution of design and integration, equipment manufacturing and system implementation services for rail transportation control systems to our customers and are the only authorized reviewer of rail transportation control system equipment modes, technology standards and product standards in the PRC. In 7th August, 2015, CRSC was successful listed in Stock Exchange of Hong Kong (stock code: 03989.HK).



## Performance and Achievements



**3.31**

billion RMB

**8.5% ↑ 15.1% ↑**

Net income attributable to shareholders: 3.31 billion RMB, with a year-on-year growth of 8.5% and a three-year compound annual growth rate of 15.1%

**34.43**

billion RMB

**17.1% ↑ 19.9% ↑**

Revenue: 34.43 billion RMB, with a year-on-year growth of 17.1% and a three-year compound annual growth rate of 19.9%

**61.2**

billion RMB

**21.8% ↑ 20.7% ↑**

Total assets: 61.2 billion RMB, with a year-on-year growth of 21.8% and a three-year compound annual growth rate of 20.7%



**60.73**  
billion RMB

**22.7% ↑**

Overall new contract amount in the year: 60.73 billion RMB with a year-on-year growth of 22.7%

**60%**

In the market of high-speed railway in 200 km-250 km per hour, CRSC occupies a market share of more than 60%.

**70%**

In the market of high-speed railway in 300 km-350 km per hour, CRSC occupies a market share of more than 70%.

**50%**

Our core control system products and services cover 20 provinces or municipalities in China and close to 50% of domestic urban rail transit market.

**48**

World's first-class 3 complex laboratories and 48 special laboratories.

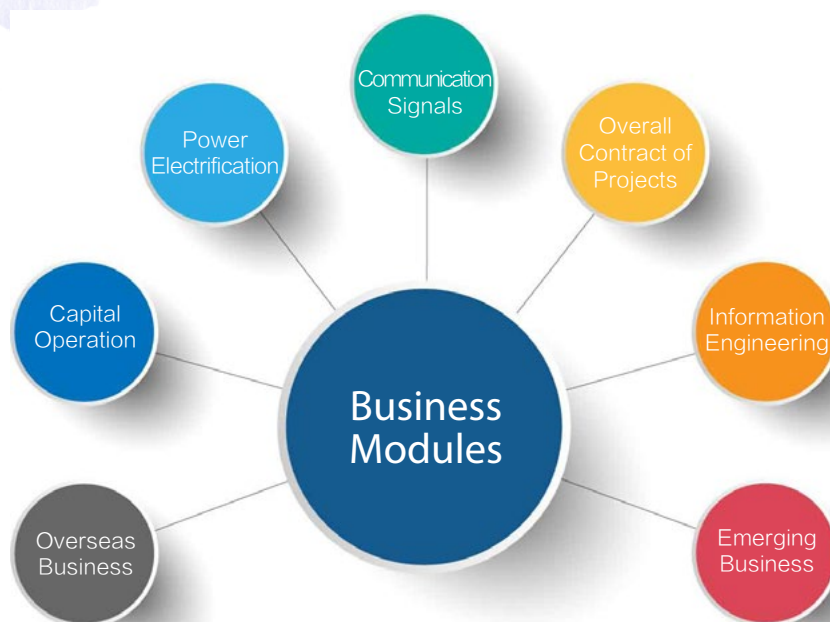
**100%**

100% technologies of the rain control systems for national high-speed railway and subways are developed by the company itself, and all products are purchased from domestic markets.

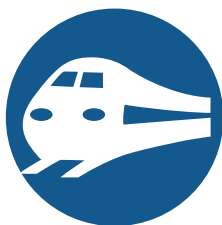


## Business Modules

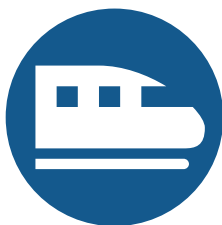
CRSC sticks to the idea of "Giving priority to one major industry while developing other relevant ones", constantly improves industrial products structure, creates a business module system of "Extension between upstream and downstream, Development within related areas, Collaboration among industries", accelerates the transformation and upgrade of industries and pushes forward a sustainable development of CRSC.



## 8 Key Technology



High-speed  
railway C3  
train control  
system



Intercity  
C2+ATO  
train control  
system



Subway  
CBTC train  
control  
system



Freight railway  
CIPS integrated  
automation  
system





## Development Strategies

CRSC insists on holding quality and safety as our lifeline and shouldering the responsibility of introducing China's railway communication signal industry to the world. CRSC will speed up the pace of scientific and technological innovation and accelerate the process transformation and upgrading, give full play to the advantages of integrated industrial chain. CRSC are looking for strategic breakthrough of key industrial product structure adjustment, historical breakthrough in core technologies, and international breakthrough in China's high-speed rail standards and industrial output. CRSC will constantly enhance the level of modern enterprise management, and actively integrate into the global competitive landscape, developed into a rail transit control technology for the characteristics of the world-class multinational industrial groups.



**Railway  
agile  
operations  
system**



**Railway  
transportation  
and management  
information system**



**Streetcar  
complete vehicle  
and train control  
system**

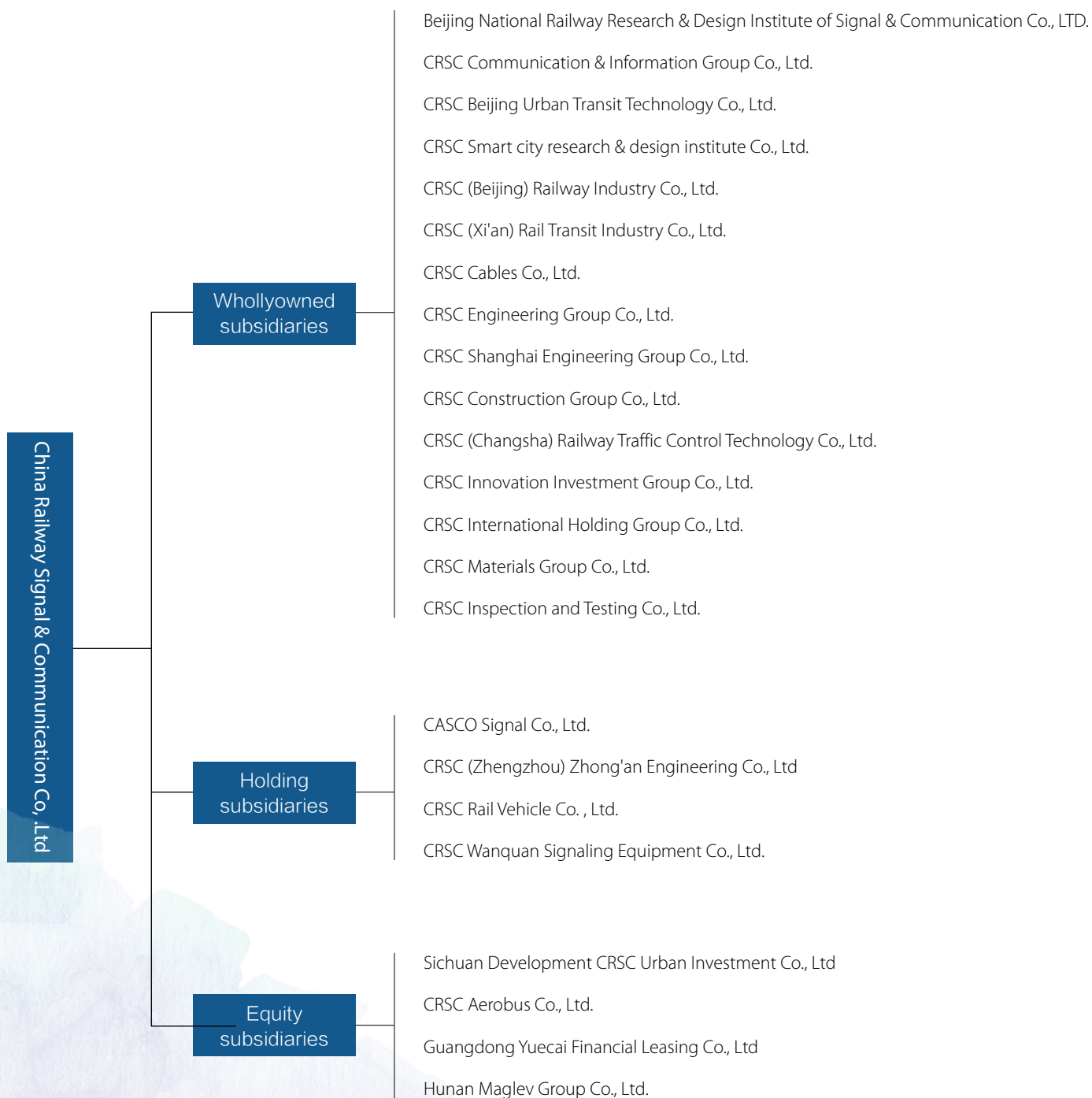


**Smart city  
comprehensive  
solution system**



## Structure

### Structure Figure of CRSC



## Management

### Board of Directors



**Zhou Zhiliang**

Chairman, Secretary Of The Party Committee



**Yin Gang**

President, Deputy Secretary of CPC, Executive Director



**Wang Jiajie**

Independent Non-Executive Director



**Xin Dinghua**

Independent Non-Executive Director



**Chen Jinen**

Independent Non-Executive Director



**Gao Shutang**

Independent Non-Executive Director

### Board Of Supervisors



**Tian Liyan**

President of The Board of Supervisors



**Wu Zuwei**

External Supervisor



**Zhao Xiumei**

Employee Supervisor

### Top Management Team



**Yang Yongsheng**

Deputy Secretary of CPC



**Kong Ning**

Vice President



**Zhang Jiqiang**

Secretary of Discipline



**Hu Shaofeng**

Chief Accountant, Secretary Of The Board Of Directors



**Huang Weizhong**

Vice President





## Mission

### Mission



- ◎ Develop indigenous rail transportation industry.
- ◎ Provide safe and suitable control systems and services for rail transportation to customers at home and abroad.
- ◎ Continuous value creation.

### Vision



- ◎ Remain a world leader in control technologies for rail transportation.
- ◎ Become a world-class multi-national industry group characterized by control technologies for rail transportation.
- ◎ A worldfamous company.

### Spirit



### Faithfulness | Innovation | Endeavor | Devotion

Rigorous attitude and scientific spirit  
 Compliance with regulation, and pursuit of results  
 Openness and cooperation, courage and efforts  
 Strive for perfection, and aspire for excellence  
 Poised but not arrogant, fail but not discouraged  
 Selfless and fearless  
 Devoted and responsible  
 Ambitious and serve the country





## Core Values

### Advocate people-first approach

Talent is the biggest capital for a company's development. Our company regards people's talents as its major resources, upholding a "people-oriented" principle and seeking common development. The company treats employees well by protecting their fundamental interests. We are also customer-centered by making every effort to fulfill their needs and to grant them satisfaction. Moreover, we respect our cooperative partners, adhering to win-win cooperation and mutual benefits.

### Innovation and progress

Innovation is the momentum for a company's development. We stick to technological innovation and endeavor to promote technological progress of national industries. We also continually encourage our management innovation to strive to be stronger and better. The innovation in technologies and management are the two wheels for the growth of the company. Continuous innovation serves as the inexhaustible impetus for the company's sustainable development.

### Safety-first approach

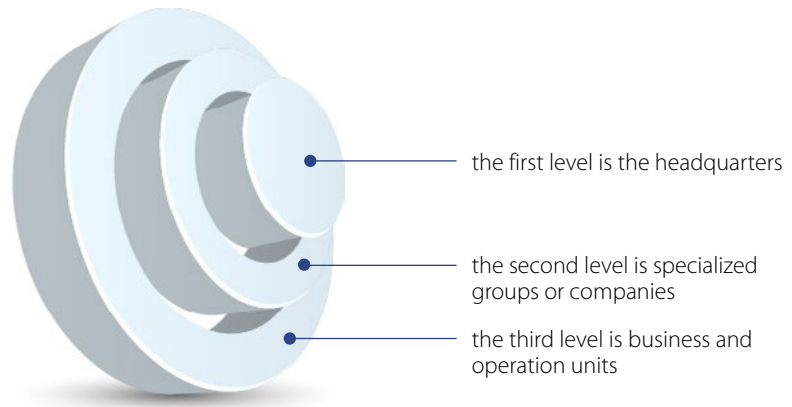
Quality is the cornerstone for our company's development. The most important political, economic, and social responsibility for us is to provide safe, stable and reliable technologies and products for our customers, which in turn can ensure the safety of rail transportation and the security of people's lives and properties.

### Joint value creation

Creating values shall be the eternal pursuit of a company. Our company shoulders great political, economic and social responsibility in the country's social and economic development. Creating values is not only represented by increasing economic benefits, reducing operation risks, and enhancing development potential, but also by fulfilling responsibilities. Creating values also means to make joint efforts with shareholders, customers and society, and share those values with them.

# Corporate Governance

CRSC endeavors to maintain a high-level of Corporate Governance to ensure the interests of its shareholders as well as to enhance the company's value. The company established a three-level management system; namely the first level is the headquarters, the second level is specialized groups or companies and the third level is business and operation units.



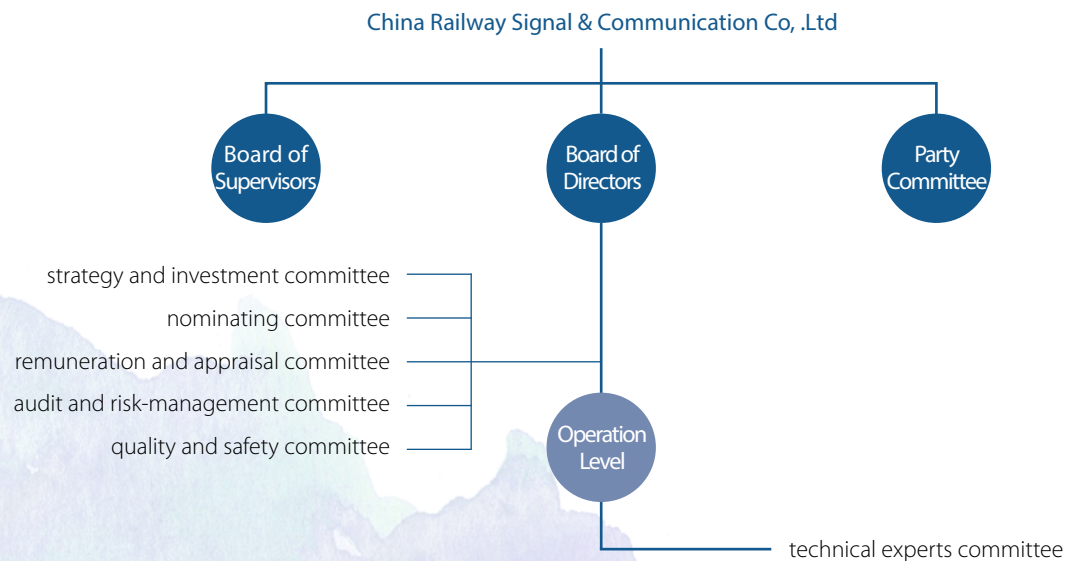
Three-level Management System



## Governance Framework

According to requirements of the Rules and Guidance on Listing Matters, the Company Law and other laws, regulations and other usual documents, CRSC formulated an effective regulatory framework and constantly reviews it to improve the internal supervision and management mechanism. We also do work for the company information disclosures, investor relation management, and investor services according to the law.

### CSRC Governance Framework





## Risk Control

CRSC accelerated the construction of the inner control system by formulating the Methods of Comprehensive Risk Management and Internal Control Management, Management of Risk Assessment and Management and other management systems. They formulated methods that specify the responsibilities of the company's Board of Directors, managers, as well as functional departments like the legal compliance department and the audit department, in internal control and risk management. This practice aims at effectively preventing and controlling operation and management risks and then promoting the company's sustainable development. For detailed information of the internal control department and department responsibilities, please refer to the section of "Company Management Report" of the CRSC Annual Report 2017 (HK 3969).



## Anti-corruption

CRSC always incorporates anti-corruption work into the Company's operations and management, and has formed an atmosphere of "no dare, no ability and no desire to commit acts of corruption". In 2017, there were no corruption-resulted lawsuits within the Company. Regarding to anti-corruption system building, the Company in 2017 established a leading group on anti-corruption and issued the Working Rules for the Leading Group on Anti-corruption, clarifying the rules of procedure for the leading group. This further promoted the implementation of the party's clean and honest work style and the Company's work on clean governance and anti-corruption. The building of an accountability system for clean governance and anti-corruption was enhanced to integrate all supervisory parties and form synergies for supervision.

To enhance the awareness of anti-corruption, the Company in 2017 selected 36 disciplinary inspection and supervision cadres to participate in various training courses organized by the Central Commission for Discipline Inspection and the State-owned Assets Supervision and Administration Commission (SASAC). The per capita training period was 50.89 hours. From April to August, the Company organized a series of education campaigns on party conduct and clean governance. The Company and its subsidiaries organized a total of 1,246 meetings for learning with 22,553 person-time attendances and 19 lectures with 997 person-time attendances. It ran 317 films or documentaries on anti-corruption with 6,871 person-time attendances. It organized 73 tours to anti-corruption education bases with 20,097 person-time attendances.

in 2017 selected 36 disciplinary inspection and supervision cadres to participate in various training courses, the per capita training period was

**50.89** hours

From April to August, the Company organized a series of education campaigns on party conduct and clean governance

**1,246** meetings

**22,553** person-time attendances



## Investor Communication

Strictly abiding by regulatory provisions of the authority and Hong Kong Exchanges and Clearing Limited (HKEX), CRSC adopted scientific policies and standard operations, and proactively communicate with the capital market and related institutions. Based on requirements from HKEX, we also regularly disclose accurate information in a timely manner, to respond to the concerns from the capital market and to ensure the compliance of the company.



# Sustainable Development Management

Based on their main business, CRSC identified the factors that have influence on the environment, society and the economy. We have built an effective control system and procedure, to realize the sustainable development of the company and its stakeholders.



## Sustainability Concept

### Running business with integrity and abides by law

CRSC is committed to the legal operation and highest standards of integrity, business ethics and industry regulation when working with all stakeholders, including investors and creditors. CRSC embraces the value of paying taxes in full amount, committing to the execution of contract, and keeping commercial credit. We are against unfair competition and business corruption.

### Improving profitability

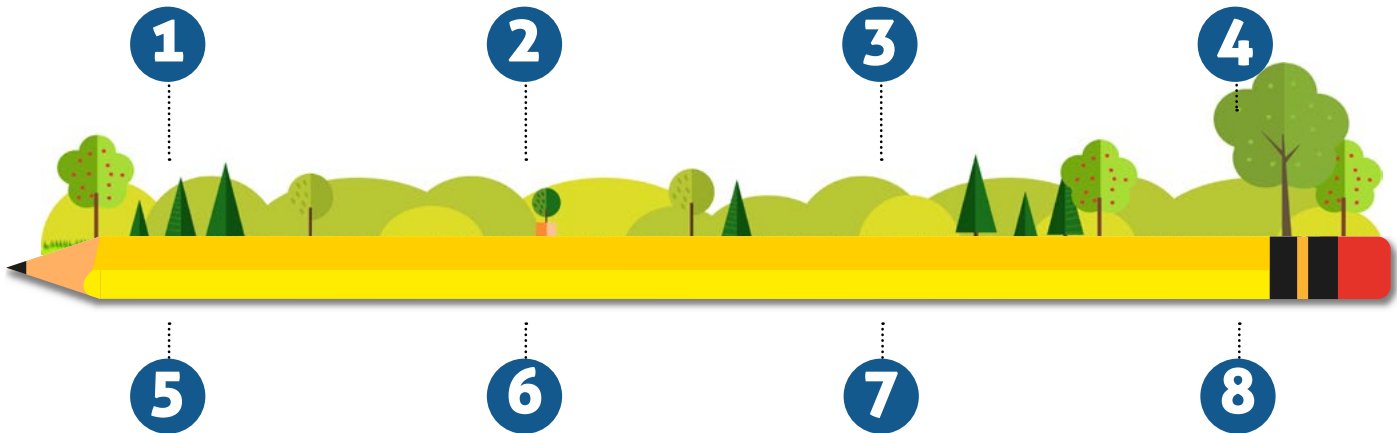
CRSC is dedicated to perfect the corporate governance and enhance management level. We consistently carry forward the implementation of CRSC Group's development strategy by highlighting the strength of main business and technological innovation. CRSC has always been devoted to the rational allocation of resources to reduce operating cost with the precaution of risk prevention. Consequently, CRSC's production has gradually been more cost-effective, and thus the sharpening of market competitive edge.

### CRSC's commitment to product quality and service level

CRSC is committed to the implementation of the management system which integrates quality, environment and vocational safety. CRSC values the quality awareness in every aspect of its business from product design, manufacturing, construction, installation to customer service. We seek to deliver these core values to every employee, and at the same time CRSC strives to enhance the performance, reliability and security of products to meet the requirement of railway and mass transportation to the largest extent.

### Reducing our environmental impact

CRSC Seriously implements the responsibility of energy conservation and emission reduction, takes the lead in completing the related task and develops a circular economy and improve the efficiency of comprehensive utilization of various resources. CRSC will increase environmental protection investment, improve process flow, reduce pollutant discharge, improve construction methods, reduce land occupation, protect vegetation, and implement clean production, adhering to the development path of low input, low consumption, low emissions and high efficiency.



### Promoting independent innovation and technology progress

CRSC is committed to establishing and optimizing its technological innovation mechanism by sharpening its capacity to be more originally innovative, integrated creative and re-innovative after introduction, digestion and absorption of other technologies. CRSC is focused on the system building of Chinese high-speed railway train control system and auxiliary products by speeding up the construction of technological innovation bases and basic equipment research and development platforms. We are making efforts to speed up the product upgrading and technical equipment modification. CRSC is devoted to protecting intellectual property rights and improving the protection of intellectual property rights system to form a core technology and product system equipped with proprietary intellectual property rights and relatively complete kit. Consequently, CRSC would play as a role model in the industry development and the Group's sustainability.

### Safety production

CRSC strictly sticks to the system of responsibility in safe production, increases input to ensure safety and prevents big or extraordinarily serious safety-related accidents. CRSC is also dedicated to building an emergency management system to increase its capability to face sudden events. CRSC is committed to providing a safe and healthy working environment. We equip employees with products and equipment that are safe for use. We also focus on implementing and improving processes and controls for preventing work-related accidents, injuries and illnesses.

### Focusing on employee's legal rights

CRSC signs labor contracts with employees according to the law. We ensures and reasonably adjust the salaries according to the corporate profitability and pay social insurance in full amount. CRSC respects employees and treats everyone fairly without discrimination against their gender, nationality, religion, and age. We embrace the value of vocational training and providing equal opportunities for them. CRSC strives to create more job opportunities for society and pays attention to the formation of employee representative congress mechanism. CRSC is open to democratic management, and we care about every employee's mentality and try to solve their problems together with them.

### Participating in public welfare undertakings

CRSC is actively taking part in public welfare undertakings such as poverty alleviation, donations and volunteering, and public welfare services in the areas of education, culture and sanitation. During natural disasters and sudden events, CRSC is a firm supporter of local government and railway authorities by proactively providing manpower, financial and material resources.

## Stakeholder Communication

As the closely groups related to CRSC's development, stakeholders play an important role through their interaction with CRSC. With establishing effective communication channels and maintaining frequent and effective communication, CRSC takes timely action and responds to stakeholders' needs.

### Stakeholders Communication in 2017

Stakeholder types	Expectations	Communication channels
<b>Government</b>	<ul style="list-style-type: none"> <li>-To implement macro policies</li> <li>-To operate honestly and legally</li> <li>-To pay taxes according to law</li> <li>-To promote employment</li> <li>-To drive local economic development</li> </ul>	<ul style="list-style-type: none"> <li>-Work report</li> <li>-Conferences</li> <li>-Supervision and inspection</li> <li>-Information reporting</li> </ul>
<b>Shareholders and investors</b>	<ul style="list-style-type: none"> <li>-Good operation performance</li> <li>-To preserve or add the asset value</li> <li>-To disclose information</li> <li>-to reduce operation risks</li> <li>-to protect the interests of shareholders and investors</li> </ul>	<ul style="list-style-type: none"> <li>-Corporate annual report, middle term report and announcements</li> <li>-performance conference</li> <li>-general meeting of shareholders</li> <li>-investors conference</li> <li>-reporting and communication</li> </ul>
<b>Clients</b>	<ul style="list-style-type: none"> <li>-to perform contracts</li> <li>-product quality and safety</li> <li>-to offer premium service</li> <li>-to protect clients' information</li> </ul>	<ul style="list-style-type: none"> <li>-clients visiting and communication</li> <li>-satisfaction survey</li> <li>-telephone, e-mail, letter, and on-line feedback</li> </ul>
<b>Employees</b>	<ul style="list-style-type: none"> <li>-to protect staff interests</li> <li>-to clear the career development route</li> <li>-staff caring</li> <li>-to offer rational salary and welfare</li> <li>-to enhance the management of overseas stall</li> </ul>	<ul style="list-style-type: none"> <li>-general meeting of staff representatives</li> <li>-training and education</li> <li>-daily communication</li> </ul>
<b>Suppliers</b>	<ul style="list-style-type: none"> <li>-to be honest and trustworthy</li> <li>-open, fair and legal procurement</li> <li>-to support suppliers' development</li> <li>-information confidential</li> </ul>	<ul style="list-style-type: none"> <li>-open tendering</li> <li>-carrying out cooperation</li> <li>-industrial communication and exchanges</li> </ul>
<b>Cooperation partners</b>	<ul style="list-style-type: none"> <li>-to be honest and obey the law</li> <li>-to abide by business ethics</li> <li>-win-win cooperation</li> </ul>	<ul style="list-style-type: none"> <li>-high-level visit exchanges</li> <li>-regular communication and exchanges</li> <li>-implementation of agreements or contracts</li> </ul>
<b>Industry</b>	<ul style="list-style-type: none"> <li>-fair competition</li> <li>-technology innovation research</li> <li>-to promote the industrial development</li> </ul>	<ul style="list-style-type: none"> <li>-enhancing communication with peers</li> <li>-industrial forums and conference</li> <li>-research tours and visits</li> </ul>
<b>Environment</b>	<ul style="list-style-type: none"> <li>-to abide by laws and regulations of environment</li> <li>-to save energy and reduce emissions</li> <li>-to save resources</li> <li>-to improve the awareness of environment mental protection</li> </ul>	<ul style="list-style-type: none"> <li>-application of energy saving technology</li> <li>-publicity of environmental protection conceptions</li> <li>-environmental information disclosure</li> </ul>
<b>Community</b>	<ul style="list-style-type: none"> <li>-to take part in community construction</li> <li>-public welfare activities</li> </ul>	<ul style="list-style-type: none"> <li>-community publicity</li> <li>-symposium</li> </ul>

# 01

## Innovation as a Foundation

CRSC persists in innovation-driven development. Based on an innovative R&D system and high-quality R&D talents, it actively promotes the industrialization-oriented R&D of key products, speeds up the transformation of scientific and technological achievements, enhances the level of independent scientific and technological innovation, and promotes the sustainable development of China's rail transit industry and relevant industries

- Improving innovation management system
- Building platforms for innovative talents
- Facilitating technological innovation
- Promoting industrial technological progress



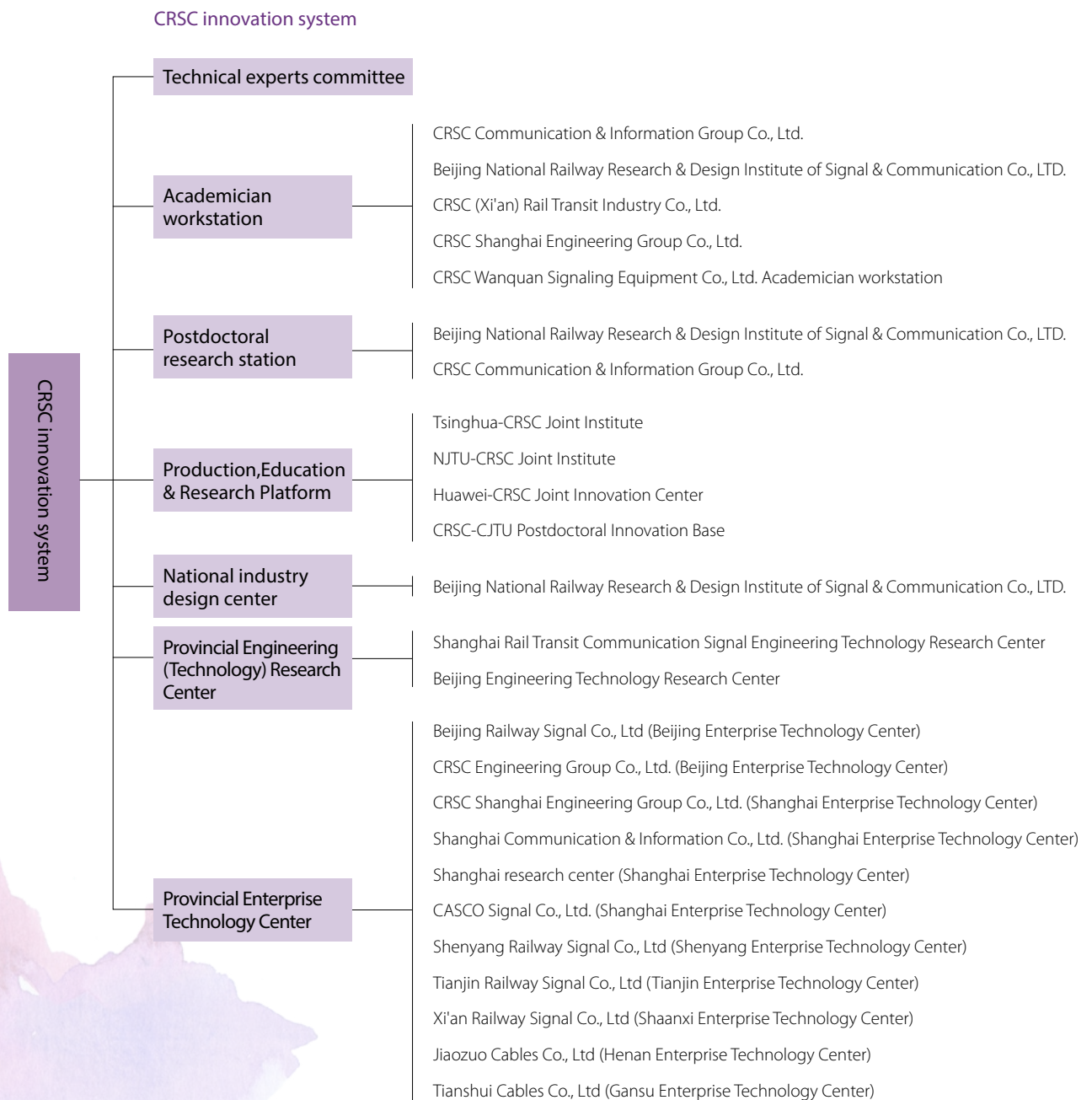




# Improving innovation management system

As a high-tech industry group featuring rail transit control technology, CRSC has built a technology innovation system characterized by “market orientation, R&D platform as the center, and integration of production, research and application”. It deepens the reform to stimulate the vitality of independent innovation, relies on independent innovation to develop the national industry of train control systems, and ensures the safety of the national rail transit.

Long term and sustained R&D funding is one of the key factors in promoting scientific and technological innovation. CRSC has formulated and implemented the Regulation on the R&D Project Fund Management to regulate the cost estimation and accounting of scientific



research and to determine the responsibility and limit of authority of relevant departments for management of project funds. The Regulation improves the efficiency of the use of scientific research funds, mobilizes the enthusiasm of scientific research personnel, and promotes the healthy development of scientific research work, thereby driving innovation in a sustainable manner.

Under the new circumstances of scientific and technological progress and rapid economic globalization, one of the focuses of international competition is competition for intellectual property rights (IPR) and core technologies. Strong legal protection of technological achievements and legal management mechanisms for IPR will help CRSC transform its technological superiority into a market edge and enhance its core competitiveness. The Company attaches great importance to IPR protection by improving the Company's intellectual property management, raising employees' IPR awareness, and mobilizing their enthusiasm for inventions and creations, thus to promote the Company to produce new products and technologies with high value-added independent IPR. The Company released the Regulation on Intellectual Property Management to improve the implementation of relevant systems in a targeted and thorough manner. The foundation of training and education was cemented by including IPR in staff training plans and integrating product knowledge in various business trainings so as to effectively strengthen the IPR protection.



## Case

### A Training program of intellectual property laws in CRSC

In September 2017 CRSC organized a centralized training session concerning laws on intellectual property across the Company and its subsidiaries. The training covered IPR-related legal management, rule of law, management of disputes, and corporate intellectual property strategies, etc. A total of more than 110 people from headquarters departments including legal personnel participated in the training. The training invited domestic leading experts in intellectual property to provide profound yet easy-to-understand training on changes in intellectual property strategies under the current new situation, competition and protection of IPR, and application of enterprise patent standardization strategies. It also interpreted IPR management and other contents according to the Company's characteristics. The training helped deepen the understanding of CRSC employees in intellectual property work and improve the quality of intellectual property management.



### CRSC CASCO won the Chinese Patent Excellence Award for the third consecutive year

In 2017, CRSC CASCO won the 19th China Patent Excellence Award for "A device for data acquisition, transmission and processing of railway CTC system", the third consecutive year to win this award. China Patent Award is the highest award in the field of patents in China and has an extremely important influence in the world. Of the more than 800 outstanding patents in the country, only 4 patents were selected for the rail transit signal field. CRSC Casco ranked the 83, the first place in the rail transit signal industry.

cumulative numbers of total patent licenses in 2015-2017 in CRSC

2015	728
2016	922
2017	1130

cumulative numbers of software copyright in 2015-2017 in CRSC

2015	424
2016	541
2017	636

R&D Input in 2015-2017 in CRSC  
million RMB

2015	1013.9
2016	1050.9
2017	1661



# Building platforms for innovative talents

By the end of 2017, in CRSC



**61**  
scientific research studios



**5**  
academician expert workstations



**4**  
laboratories with CRCC Certification



**3**  
laboratories with CNAS Certification



**5**  
laboratories with CMA Certification

Talent is the fundamental driving force for the development of an enterprise and the guarantee for the formation of the enterprise's core competitiveness. In the long-term practice with projects, CRSC always pays attention to the training of professional and technical personnel and has built a talent innovation platform. The Company implements incentive measures for scientific and technological achievements. It has set up bonus funds for major R&D projects and an appraisal, evaluation and incentive mechanism for technological innovation to mobilize the enthusiasm and creativity of researchers.

CRSC has established academician workstations, postdoctoral scientific research workstations, production and research platforms, provincial and ministerial-level engineering (technical) research centers, and provincial-level enterprise technology centers to attract, train and reserve high-level talents and promote key technological breakthroughs, which is a solid guarantee for the Company's technological innovation and integration of production, education and research. The Company has built a global rail transit R&D center with the most complete laboratory types, the most advanced experimental equipment, the largest laboratory volume, and high-end scientific research talents, including three complex laboratories and 48 special laboratories with world-class standards, two national innovation platforms and 7 provincial and ministerial-level innovation platforms, among which are also a national enterprise technology center and a national industrial design center.

## Case

### Beijing National Railway Research & Design Institute of CRSC awarded the "National Model Academician Expert Workstation"

In December 2017, the result of the 2017 selection for the National Model Academician Expert Workstation was published. The Academician Expert Workstation of the Beijing National Railway Research & Design Institute of CRSC (hereinafter referred to as "CRSCD") stood out in more than 200 academician expert workstations and won the title of "2017 National Model Academician Expert Workstation". The "National Model Academician Expert Workstation" selection was organized and carried out by the China Association for Science and Technology (CAST). After formality review, online review, meeting for review and online announcement, a total of 100 model academician expert workstations and a total of 15 model units in building academician expert workstations were selected in 2017. Accredited units will play an exemplary role in promoting enterprise innovation.

To further nurture reserve talents for R&D and enhance the level of industrial R&D, CRSC strengthens cooperation with universities and colleges and scientific research institutions to improve the translation efficiency of technologies from combination of production, education, and research. In 2017, the Company continued to carry out forward-looking and technical research on the basis of the Tsinghua-CRSC Joint Institute. It launched such projects as Research on the Deepening of Transmission Performance of Track Circuit, Research on Fault Diagnosis Technology of Switch Machines, and Research on Trackside Integrated Sensor Network of Train Control Systems. These projects have played a catalytic role in the Company's breakthroughs in information technology and key technologies for basic equipment. The Company signed a framework agreement with Nanjing University of Science and Technology for cooperation in the inspection robot project, of which the prototype has been put into trial use. The Company signed a cooperation agreement with Shijiazhuang Tiedao University to study trackside electromagnetic compatibility technology and standards and a cooperation agreement with Southwest Jiaotong University for cooperation in such projects as the Turnout Dynamics System.

## Facilitating technological innovation

CRSC adheres to a technological path of introduction, digestion and absorption and independent innovation. It makes optimal allocation of resources for design, R&D, testing, and integration, ensures the safety of national rail transportation with core autonomous technologies, in order to realize the complete autonomy of technologies and complete localization of train control systems for high-speed railways and subways in China, thereby providing the core technological support for the national strategies of BRI and high-speed rail "going global".

### 2017 CRSC Innovation Achievements:

# 01

#### Traditional core business:

- The world's first interconnected subway line built by CRSC, Chongqing Metro Line 5, was put in operation;
- China's first maglev line for autonomous trains, Beijing S1 line with CRSC maglev train control systems, was put in operation;
- China's first intercity railway for autonomous trains, Hong Kong South Island Line with CRSC automatic monitoring systems, was opened to traffic;
- C3 high-speed rail train operation control systems were provided for Renaissance EMU to guarantee the 350 km/h operation on the Beijing-Shanghai line;
- Our self-developed CBTC signal systems were put into use on the Shanghai Metro Line 17;
- The Kenyan Mombasa-Nairobi Railway Signalling Information Project was completed up to Chinese standards.

# 02

#### Emerging products:

- We completed the world premiere of five-module 100% low-floor modern trams for Xianfeng EMU.

# 03

#### Overseas markets:

- RBC, ATP, LEU, transponder and other core products successively obtained EU TSI certifications, breaking important technical barriers in the international market.

### Case

#### CRSC builds the world's first interconnected subway line

On December 28th, 2017, Chongqing Metro Line 5, to which CRSC provided a full set of signal system integration services, was officially opened for trial operation, marking the official arrival of the era of urban rail transit interoperability led by the CBTC system. CRSC holds fully the independent IPR of CBTC system. For a long time, due to the inability of "communication" between on-board signal equipment and ground signal equipment of different subway lines, train cross-line operation had always been a worldwide problem. Foreign countries had tried hard but never achieved interoperability between subway signal systems of different manufacturers. With the smooth opening of the Chongqing Metro Line 5, the worldwide technical difficulty of "exchange" between different manufacturers' train and ground signal equipment was solved and a unified technical standard for signal system interoperability was established. The signal system solution offered by CRSC took the lead in creating the world's first interconnected subway line, making Chinese urban rail transit interoperability technology a leader in the world and bringing a historic change to the construction, operation and maintenance of urban rail transit in China and even the world.



## Case

### A global debut of CRSC 100% low-floor modern tram vehicles

On October 25th, 2017, five-module and 100% low-floor modern tram independently developed by CRSC with complete IPR was officially launched. Extending to the upstream and downstream of the modern tram industry, CRSC became China's first company covering the industrial chain from investment and financing, general contracting of projects, vehicle manufacturing to operation and maintenance, leading the development of domestic tram industry.

CRSC modern tram vehicle integrates the first-class technical practice in rail transit industry at home and abroad, and its comprehensive technical level ranks in the forefront of the industry in the world.

- Traction power system: A mature integrated water-cooled converter and super capacitor was adopted, which with high braking energy recovery efficiency effectively reduces energy consumption; the traction motor is a mature three-phase asynchronous motor.

- Bogie technology: Unique bolster-in-a-bogie technology was used to effectively reduce vibration in vehicle operation and improve the dynamics of vehicles, providing passengers with more comfortable riding services.

- Network control system: The highly reliable two-level network architecture of train-bus and vehicle-bus was adopted.

- Train network and maintenance network: High-speed Ethernet was used with the transmission speed of up to 100 megabits per second.



## Case

### CRSC's self-developed RBC equipment is China's first mainstream signal product that has passed the EU TSI certification

On January 20th, 2017, RBC (Radio Block Center) equipment independently developed by CRSC was awarded the EU TSI certificate, marking China's first mainstream signal product to successfully obtain the "European visa", breaking another technical barrier for CRSC to enter the EU and even international markets. The RBC equipment is the ground core equipment of the high-speed rail CTCs-3 train control system. CRSC's self-developed RBC passed SIL4 safety certification in June 2015. It took the lead in completing the on-track test organized by China Railway Corporation at Datong-Xi'an high-speed railway's comprehensive test section in July 2016. On-site interoperability tests were successfully completed with different RBC manufacturers in January 2017. In the absence of any experience in the industry, CRSC project team successfully passed the TSI certification – a "visa" to going global – through meticulous arrangements and teamwork.

TSI (Technical Specification for Interoperability) is the European Union's regulations on railway products. TSI certification is a must for any railway product to enter EU countries. In the area of rail transit, European standards are the source of most international standards and being recognized by the European Union is to have obtained the pass for railway track products to enter the international market.





## Case

### CRSC supports Beijing's first maglev line in autonomous driving

In October 2017, the first low to medium-speed maglev line Beijing S1 line was put in trial operation, the first use of autonomous maglev trains in China. Beijing S1 line has a total length of 10.216 kilometers from Shimenying Station to Pingguoyuan Station. The design maximum speed is 100km/h, maximum operating speed 80km/h.

Trains for the maglev S1 line adopt a signal system completely independently developed by CRSC, the FZL200 MATC system based on cross induction loop. The system consists of automatic train supervision (ATS), automatic train protection (ATP), computer interlocking (CI), automatic train operation (ATO), maintenance monitoring and other subsystems and axle counting equipment, power screens, and DCS equipment. It is the key to punctuality and safe and efficient operation of maglev transport.

With the support of the system, trains can realize autonomous driving with a minimum departure interval of 3 minutes, which fully satisfies the maglev train operation and control requirements for intra-city traffic in large and medium-sized urban cities, short-distance inter-city traffic, and traffic within scenic spots.

## Case

### Award-winning CRSC CASOC driverless rail transit technology

On March 22nd, 2017, two scientific research achievements of CASCO Signal Co., Ltd., a subsidiary of CRSC (abbreviated as "CRSC CASCO"), were selected as winners of the "Shanghai Science and Technology Progress Award", of which the "Development and Application of Key Technologies for Unmanned Rail Transit" jointly completed by CRSC CASCO and Shanghai Shentong Metro Group won the first prize of "Shanghai Science and Technology Progress Award".

The "Development and Application of Key Technologies for Unmanned Rail Transit" was launched in 2006. CRSC CASCO as the signal system integrator and leader of the operation and maintenance rules of the Shanghai Rail Transit Line 10 took on the development of unmanned signal technology and achieved the successful application of the Urbanis 888 driverless signalling system in Shanghai Rail Transit Line 10. This achievement broke the monopoly of foreign manufacturers on China's rail transit high-end equipment and promoted the upgrading of key technology and key equipment in the industry. It will prompt more and more domestic new rail transit lines to consider using driverless systems.



## Promoting industrial technological progress

148

A total of 148 national railway standards and technical standards were under our administration in 2017.

93

In 2017 CRSC undertook or participated in 93 compilations such as standards for National Railway Administration, the Ministry of Housing and Urban-Rural Development, China Association of Metros, etc., enterprise standards for China Railway Corporation, local standards, as well as English translations of standards.

more than  
100

CRSC participated in compiling more than 100 standards for Chinese railway signal systems and products.

1

For the first time did CRSC submit an ISO application to ISO Technical Committee for Railway Applications (ISO/TC269) in 2016.

Responsible for administration of technical standards for the railway industry's communication signals for National Railway Administration, CRSC attaches great importance to exchange and cooperation with leading peers, and its close cooperation with partners has formed a virtuous cycle of cooperation. CRSC also actively cooperates with the government, research institutes, and industry associations, participates in the formulation of standards and specifications for China's railway communication signal industry, and leads the standardization of equipment manufacturing and engineering construction in China's high-speed railway communication signal field, thereby promoting industry progress and innovation.

As of the end of 2017, in various business areas CRSC



199

Led or participated in the formulation and revision of 199 system and product standards, including 12 national standards and 183 industry standards.



9 91

Compiled 9 out of the total 13 national standards and 91 out of the total 159 industry standards in the field of signal technology.



18

Participated in the formulation and revision of 18 engineering construction standards, including 4 national standards and 14 industry standards.

### Case

#### CRSC's complete industrial chain shines at the Hunan International Rail Transit Industrial Expo

On October 25th, 2017, the 2017 China (Hunan) International Rail Transit Industrial Expo and High-level Forum was grandly opened in Changsha. CRSC attended the Expo with its "one-stop service" across the industrial chain of rail transportation control integrating design, R&D, equipment manufacturing and engineering services, as well as trams investment and financing, general project contracting, vehicle manufacturing, operation and maintenance.



## Case

### A standard proposal by CRSC (Xi'an) Rail Transit Industry Co., Ltd. debuted at the ISO Annual Meeting

On May 30th, 2017, the "Railway Turnout Conversion Equipment" standard proposal submitted by CRSC (Xi'an) Rail Transit Industry Co., Ltd. was presented at the 6th plenary meeting of the ISO Technical Committee for Railway Applications (ISO/TC269) held in Suwon City, South Korea. More than 50 representatives from more than 10 countries such as Germany, France, China, Japan, South Korea, and Russia and from liaison organizations such as ERA, UIC and UNIFE participated in this meeting. CRSC (Xi'an) Rail Transit Industry Co., Ltd. international standard project "Railway Turnout Conversion Equipment" was proposed to ISO/TC269 as a new project of China. The successful debut of this project was a successful attempt by CRSC to actively participate in the ISO, take the initiative to undertake the international standard project, and conduct research on international standards, a solid step toward the realization of Chinese standards "going global".



## Case

### CRSC CIPS unveiled in the United States

In October 2017, CIPS (Computer Information Process System for Railway Yards) exhibited by CRSCD unveiled at the 2017 Railway Interchange in the United States. During the exhibition, CRSC CIPS attracted attention from railway industry professionals from all over the world. Numerous professionals had detailed consultations and simulations on the system. Its powerful functions and world-class level were recognized by domestic and foreign railway industry professionals.

In this exhibition, CRSCD won wide attention and praise, which presented an opportunity for market development in the United States and North America and laid a good foundation for the CIPS to go global.

## Case

### Industry standards CRSCD participated in the preparation of pass the review

In 2017, industry standards "External Locking Device for Railway Turnout Conversion Equipment" and "Requirement Specification for Integrated Automation Systems of Marshalling Station" CRSCD participated in the preparation of passed the review. After the release "External Locking Device for Railway Turnout Conversion Equipment" will fill the blank of China's railway industry standards on external turnout locking device and further standardize the design, production, manufacturing and inspection of external locking device, thereby playing an important role in improving product quality and ensuring railway transportation safety. After the release "Requirement Specification for Integrated Automation Systems of Marshalling Station" can serve as a standard document for system design, equipment R&D, engineering design, training, testing, inspection and maintenance of the integrated automation systems of marshalling station, thereby improving the efficiency of China's railway transportation.



# 02

## Service Creates Value

As an important force in national rail transit construction, CRSC relies on profound technical R&D heritage, intelligent equipment manufacturing capabilities, safe and reliable service quality assurance, and project support across the industry chain to provide a solid guarantee for the safe and efficient operation of urban rail transit.

- Put production safety into action
- Ensuring product and service quality
- Facilitating smart city construction





## Put production safety into action



In July 2017, the Company passed the annual audit of OHSAS 18000 certification of the China Classification Society (CCS) to maintain its certification. All of its 16 subsidiaries passed the OHSAS 18000 certification, ensuring the whole system to continue operating effectively.

In 2017, CRSC invested a total of 334.99 million yuan in safety

**334.99** million yuan

the per capita safety production training reached

**20** hours

CRSC take quality and safety as the starting point and end result of all work. We take a series of solid measures to consistently improve quality and safety control such as strengthening top-level design for quality and safety management, deepening the construction of quality and safety systems, strengthening product life cycle management, improving standardized project management, and strictly implementing the safety production responsibility system, and so on.

In accordance with the Production Safety Law of the People's Republic of China, National Emergency Plan for Production Safety Accidents, Fire Prevention Law of the People's Republic of China and other relevant laws and regulations, the Company formulated its own production safety rules and regulations such as the Production Safety Inspection System and Measures for the Management of Production Safety Incident Reporting and Investigation, which stipulate specifically safety management aspects such as production safety management contents, responsibility division, and definition of management functions at various levels. It issued comprehensive and special emergency plans such as Comprehensive Emergency Plan for Major Safety Incidents and Emergency Plan for Headquarters' Fire Disposal and Evacuation to realize a closed-loop management of accidents from all aspects such as the setup of emergency management agencies, management and control procedures, reporting procedures and follow-up handling measures. It formulated the Regulation on Safety Education and Training, putting forward specific requirements for training content, training frequency, and training targets, etc., while supervising the implementation of safety training in order to minimize casualties and property losses caused by accidents.

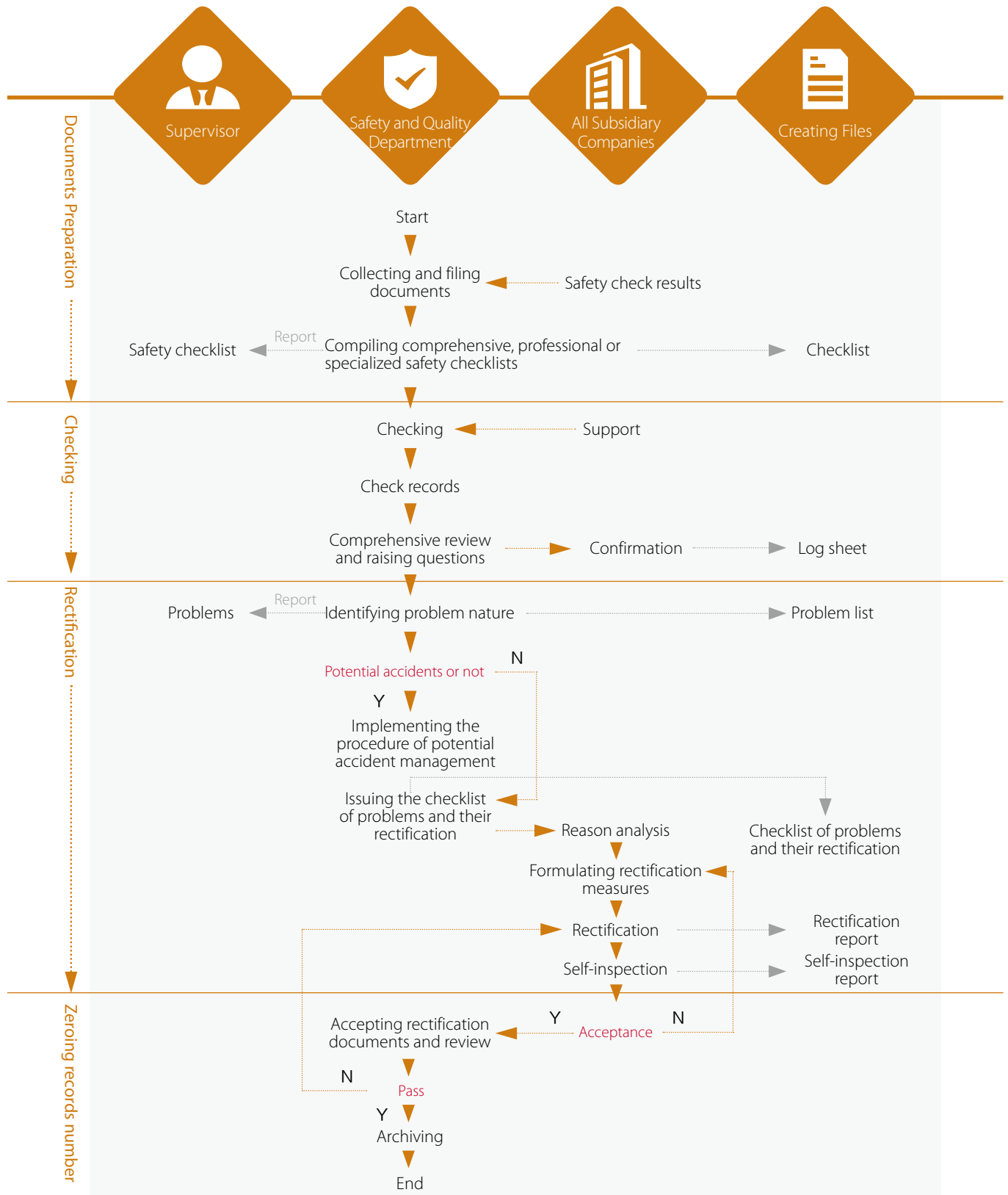
In terms of safety management structure, the Company established a safety production committee with the Chairman of the Board as the director and the principal management as its members. The Committee makes safety production decisions and is responsible for safety production. At the same time, the Leading Group for Emergency Rescue of Major Production Safety Accidents was established to serve as an emergency command center after the occurrence of a major safety production accident, while implementing emergency response procedures according to the controllability, severity and scope of influence of the accident. At the same time, the Company's 18 sub-subsidiaries set up safety production management committees that meet regularly according to their responsibilities to ensure the orderly implementation of safety production.

The Company vigorously carries out safety inspections to timely check out the problems. Through routine inspections, seasonal inspections, holiday inspections, special inspections, professional inspections, and comprehensive inspections, problems prone to resulting in accidents are instructed to be addressed immediately.

CRSC pays attention to employees' safety awareness and safety protection capabilities. Employees are required to receive safety training and education regularly. They are firstly trained and then employed. Full-time safety management personnel must not only be certified before being employed, but each year must also receive no less than 40 hours of safety technique training. New workers on the construction sites must receive three levels of safety training and education and pass the appraisal. Safety training and education registration system is implemented and safety training and education files for employees are also established, so that employees who have not received safety training and education are prohibited from working on the construction sites. In 2017, CRSC invested a total of 334.99 million yuan in safety, and the per capita safety production training reached 20 hours.



### Safety Check Flow Chart



## Ensuring product and service quality



In July 2017, the Company passed the annual audit of ISO 9000 certification of CCS. At the same time, its 17 subsidiaries also passed the ISO 9000 certification.

the Company established:

- 3 complex laboratories
- 48 special laboratories. It has established and improved
- More than 30,000 high-speed rail test cases
- Our advanced high-speed rail train control technology provides safety guarantee for over 20,000 kilometers of high-speed railways in China and the volume of our engineering practice and cases exceeds that of international leading peers.
- In 2017, the Company obtained a total of 56 product safety-related certifications.

CRSC, as the world's largest provider of rail transit control system solutions, undertakes full lifecycle services including product development, manufacturing, construction and installation, integrated commissioning, and operation and maintenance. It is committed to starting from every link to ensure service quality, while reducing operational risk and safety incidents. Through the establishment of a long-term multi-dimensional quality safety mechanism covering technology, equipment, talents, and management, etc., the Company has achieved a continuous decline in quality and safety accidents and that in general accidents of Category B or above have never occurred. In 2017 its failure rate of safety accidents decreased 6.2% from the previous year.

The Company has formulated management measures and emergency plans such as the Measures for the Management of Product Quality and Safety Accidents (Failures) and Emergency Plan for Rail Transit Operation Equipment to timely and accurately cognize, coordinate, investigate and deal with traffic accidents and equipment failures caused by product quality and safety issues. These measures and plans ensure the Company to strengthen product quality and safety management, effectively prevent, control and eliminate potential quality and safety hazards, and quickly respond to emergency, thereby reducing and preventing accidents from occurring and guaranteeing safe and smooth railway transportation.

In order to ensure the long-term operation of the quality management system, the Company adopted a number of measures safeguarding the stages of R&D, production, construction, commissioning and operation. In the product development stage, the key quality control points and control requirements were defined, and reliability and safety calculations and analysis was performed to ensure that safety standards of the corresponding grades were met. At the production stage, the Company issued the Measures for the Management of Product Quality Inspection and set up a product quality inspection department to complete the whole process from entry inspection, process inspection to ex-factory inspection; product quality inspection files were established to completely prohibit the outflow of unqualified products. In the construction and installation stage, the construction and installation standards were strictly followed to strengthen the safety analysis and quality and safety control during the process. In the integrated commissioning stage, product quality inspection and testing was carried out in a serious manner to identify management and technical safety issues and take effective measures during the process. In the operation and maintenance stage, all kinds of product manuals and training materials were detailed and safety control measures established.



### Case

#### CRSC awarded TUV certificate for interoperability of railway signal equipment

In February 2017, the Radio Block Center (RBC) independently developed by CRSC was awarded the TSI (Technical Specification for Interoperability) certificate issued by TUV SÜD. This is also the first domestic command and control system equipment with EU TSI certification.

RBC is the ground core equipment of the high-speed railway train operation control system, safeguarding the high-speed operation of the train. It collects and obtains the running status of all traveling vehicles and railway tracks on the line and issues warning in a timely manner to ensure the safety of the train at high speed.

## Facilitating smart city construction

Adhering to the development strategy of "related diversification based on core business" CRSC actively participates in the construction of national emerging industries such as smart city and smart transportation to meet the development needs of urban residents. Relying on the construction of smart cities such as Tongren and Tianshui, the Company is building smart cities nationwide to promote the long-term development of the cities in terms of smart transportation and smart buildings.

As an organic part of the effective operation of a smart city, urban transport bears the basic roles for effective urban resource operation and urban operational efficiency upgrade. CRSC has accumulated rich experience in technology and project operation in urban rail transit areas such as subways, light rail, and trams. It has signed strategic cooperation agreements with the governments of Xi'an City in Shaanxi Province, Siping City in Jilin Province and other places for co-investment in such infrastructure as rail transit, smart cities, and transportation hubs, as well as in high-end equipment and rail transit research.



### Case

#### CRSC contributes to Taizhou smart transportation construction

In November 2017 CRSC signed a strategic cooperation agreement with Taizhou Bus Group to jointly promote the construction of smart transportation in Taizhou.

The project entitled "Taizhou Smart Transportation Construction" combines CRSC's technical advantages in smart city with Taizhou Bus Group's operational experience and territorial advantages. Relying on the structural top-level design of "one center, three platforms, four services, and nine systems", a professional joint-venture company aiming to create a "smart traffic information platform" will be established. The company will promote the rapid development of new generation information technologies such as Taizhou IOT, cloud computing, big data, and mobile Internet, effectively solve the problem of traffic congestion in the city, and realize information resources sharing and system interoperability in Taizhou.





# 03

## Green Creates Bright Future

The sustainable development of the environment is the basis for the rapid development of society and economy. CRSC regards environmental protection and green travel as its responsibility. Adhering to the principle of ecological priority and green development, it fully utilizes its own technological advantages to actively promote low-carbon and clean way of operation and introduce green low-carbon transportation solutions to contribute to the sustainable development of society.

- Improving efficiency of resources use
- Emissions management and control
- Providing green solutions

## Improving efficiency of resources use

CRSC actively implements clean production and green operations. It comprehensively implements energy conservation and emission reductions in design processes, product development, and engineering manufacturing, strictly controls the use of energy resources, and conducts compliance treatment of emissions and wastes to fully meet the national and local standards and requirements.

The Company established an environmental protection management system which has passed the ISO14001:2015 certification. To clarify the environmental protection responsibilities at all levels, the Company has formulated and implemented environmental management measures to promote and guide its subsidiaries and projects to carry out environmental protection. In accordance with the Environmental Protection Law of the People's Republic of China and other related national laws and regulations, it has formulated the Interim Measures for the Management of Energy Saving and Emission Reduction and established annual targets for energy saving and emission reduction. It encourages the application of new technologies for energy saving and emission reduction and promotes the use of energy-efficient and energy-saving products to achieve effective conservation of resources and energy. It also issues notices to strengthen the management of energy conservation and emission reduction and enhance the Company's achievements in energy efficiency and emission reductions in manufacturing, engineering and administration.

### CRSC Energy Consumption in 2017

Energy types	Project construction	Production manufacturing	administration	total
electricity (MWH)	38,541.40	30,787.14	48,301.80	117,630.34
Kerosene (tons)	0	2.36	0	2.36
liquefied gas (m <sup>3</sup> )	0	0	20,335	20,335
gasoline (tons)	5,594.75	177.42	790.38	5,772.17
diesel (tons)	8,973.73	52.65	0	9,026.38
heating powermillion (KJ)	10,239.84	65,634	0	75,873.84
natural gas (m <sup>3</sup> )	82,400	1,704,800	1,898,378.89	3,685,578.89

Types	2017
Total water consumption (tons)	949,091.59
water consumption per 10,000 income (tons)	0.276
comprehensive energy consumption (tons TE)	43,681.89
comprehensive energy consumption per 10,000 income (tons TE)	0.013



For its manufacturing entities, the Company vigorously promotes and implements green manufacturing projects, optimizes production processes, improves processes and technologies, and eliminates outdated production capacity. When purchasing production equipment and raw materials it pays attention to recycling. CRSC subsidiary Beijing Railway Signal Co., Ltd. started to implement the natural gas pipeline reconstruction project in early July 2017. This project connected the gas pipelines to the municipal pipeline network, so that the original compressed natural gas was changed to the municipal gas supply, which greatly reduced gas use costs and energy consumption from gas transportation and storage.

For its engineering entities, the Company issued its Regulations on Occupational Health and Safety at the Project Site and Environmental Management, and included its Environmental Protection Management System and Environmental Protection and Soil and Water Conservation in the Standard Management Manual for Engineering Construction to strictly regulate the energy use in construction process. The subsidiary Shanghai Engineering Bureau actively promotes the replacement of high-energy consuming lamps and appliances, using energy-saving lamps and air-conditioners in lieu of incandescent lamps and high-energy consuming air conditioners. The old generators with leakage, low power, and high energy consumption are repaired and replaced in time to reduce daily power consumption and fuel consumption. The subsidiary CRSC Engineering Group Co., Ltd. vigorously carries out research on the application of energy-saving and environmentally-friendly materials in projects. Pervious concrete is used in the Sponge City construction projects which greatly increases the recycling rate of rainwater. Polyethylene plastic formwork is used in house building projects in lieu of wood formwork to effectively save the use of wood.

For its design and R&D entities, the focus is on promoting green office and raising employees' awareness of saving. The Company cultivates employees' saving habits by posting "Save Water and Save Electricity" propaganda slogans, encouraging paper to be used on both sides, and shutting off power immediately after work, etc.

#### CRSC packing material consumption in 2017 (tons)

packing material types		2017
Production manufacturing packing material	carton	532.14
	timber	2,580.71
	plastic	118.41

## Emissions management and control

The Company strictly complies with the *Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution*, the *Law of the People's Republic of China on the Prevention and Control of Water Pollution*, and the *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution Caused by Solid Waste* and other related laws and regulations to strengthen the management of emissions and standardize waste treatment measures.

The Company adopts strict compliance treatment of exhaust gas such as sulfur dioxide and nitrogen oxides, and regularly maintains and renovates the exhaust gas treatment equipment to ensure compliance with the standards. Its subsidiary Jiaozuo Railway Cable Co., Ltd. actively responded to local government departments by carrying out special treatment of volatile organic compounds from industrial enterprises. It rebuilt and installed five sets of exhaust gas treatment equipment and treated the exhaust gas of 22 extrusion production lines. It passed the inspection by a third-party inspection agency, in which the monitored data was far lower than the emission targets specified by the local environmental protection authorities. The waste water is mainly recycled and discharged after reaching the standard.

### CSRC Emission in 2017(tons)

Emission types	2017
SO <sub>2</sub>	17.24
NO <sub>x</sub>	0.68
COD	2.09
NH <sub>3</sub>	0.4

### CRSC Hazardous Wastes Treated in 2017

Type of hazardous waste	2017
Hazardous chemical waste (tons)	11.84
Electroplating sludge (tons)	80
Organic solvents (tons)	5.1
Emulsion (tons)	7.52
Waste oil (tons)	3.82
Others (tons)	16.05

### CRSC Greenhouse Gas Emissions in 2017

Scope	2017
Scope 1 (tons)	8,118.26
Scope 2 (tons)	131,534.29
Total (tons)	139,652.55
CO <sub>2</sub> emission equivalent per 10,000 yuan of revenue (tons)	0.041



Hazardous wastes mainly include hazardous chemicals, electroplating sludge, organic solvents, and emulsions, etc. produced during the manufacturing process. For hazardous wastes, the Company implements partitioned storage and hand them over to a qualified third party for treatment.



Non-hazardous wastes mainly include office waste, construction waste, construction packaging materials, packaging materials used in the manufacturing process, etc. They are regularly collected and treated in compliance with standards.

#### CRSC General Wastes Treated in 2017

Type of general waste		2017
Manufacturing	Wood (tons)	274.02
	Plastic (tons)	532.65
	Metal (tons)	1,830.34
	Carton (tons)	84.6
Engineering	Construction waste (tons)	6,766.1
	Construction packaging materials - Wood (tons)	42.7
	Construction packaging materials - Plastic (tons)	25
	Construction packaging materials - Metal (tons)	599.61
	Construction packaging materials - Rebar (tons)	0.4
	Scrap copper wire (tons)	1.97
	Short cable (tons)	11.12
	Water pipe (batch)	3
Office	Waste paper (kg)	50,126.16
	Waste lamp (piece)	2,565
	Electronic waste (unit)	215
	Cartridges and other printing supplies (piece)	1,943
	Office waste (kg)	615,537.5

## Providing green solutions

Travel is an indispensable part of everyday life for urban residents. Choosing a green travel mode is of far-reaching significance for environmental protection. As the backbone of national rail transit construction, CRSC plays an important role in promoting the development of high-speed rail, subway, and other public modes of transportation, regulating social energy structure, and realizing the low-carbon development of economy and society.

With its core technology in the field of green travel, CRSC continuously integrates solutions for green transportation and updates technologies in the areas of energy grading and utilization, industrial parks transformation and upgrading, information-based monitoring and intelligent management, online simulation control, and intelligent and green buildings, etc. It has launched Sponge City, monitoring and alarm system for underground pipe gallery, integrated application system for intelligent building, centralized monitoring system for power and environment, railway infrastructure equipment such as screen door, PM2.5 air purifier (device), high-speed railway turnout conversion equipment like digital simulation platform, and so on.



# 04

## Good Environment for Talents

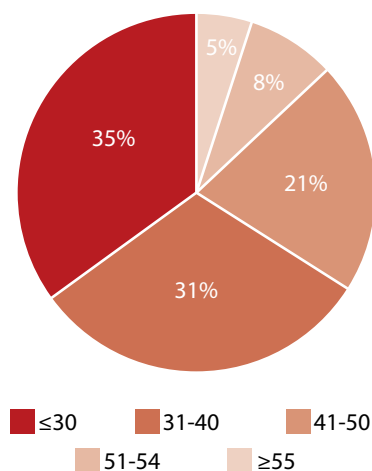
Based on the principle of “recruiting, appreciating, nurturing, and treasuring talents”, CRSC implements the talent strategy of “open access and elite concentration” which sets store by talents and respects employees. It adheres to labor standards and protects the legitimate rights and interests of employees. It provides diversified training opportunities and facilitates the promotion and development of employees. It also cares for employees and supports democratic governance, so as to achieve shared growth with employees.

- Protection of employee's rights and interests
- Assisting in talent development
- Caring for employees' health and living
- Promoting democratic management

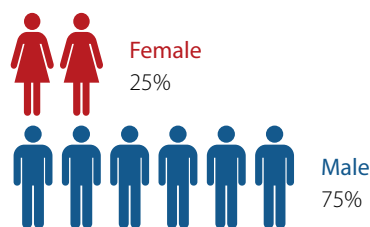


## Protection of employee's rights and interests

CSRC Employee Number by Ages



CSRC Employee Number by Genders



In strict accordance with the relevant laws and regulations such as the Labor Law of the People's Republic of China, Labor Contract Law of the People's Republic of China, and Trade Union Law of the People's Republic of China, CRSC formulated the Recruitment Management System and Measures for the Management of Labor Protection to regulate recruitment. The Company signs formal labor contracts or labor service agreements with employees in accordance with the law. It fundamentally eliminates the use of child labor and forced labor and earnestly obeys labor standards. It ensures fair opportunities and ensures that the employment, employee benefits, employee promotion and training, etc. are not affected by gender, age, ethnicity, religion, region, etc., so as to create a fair environment for employee development.

Adhering to the strategy of "open access and elite concentration", the Company comprehensively upgrades the value of human capital in order to realize the transformation from traditional personnel management to human capital management under the modern enterprise management system. It has formulated medium and long-term human resources planning and established a reasonable talent echelon to systematize personnel reserves. In line with the corporate development strategy CRSC has developed and continuously improved mechanisms for talent recruitment, training, use, assessment and incentives, etc. in order to gradually form a systematic human resources management system.

The Company places high emphasis on the health and welfare of its employees. It has set up management systems such as the Company Annuity Program and the Measures for the Management of the Supplementary Medical Insurance for CRSC Headquarters. In order to protect employees' salaries and benefits, the Company formulated the Measures for the Management of Staff Salaries at CRSC Headquarters to regulate and manage employee compensation.

As of December 31<sup>st</sup>, 2017, the Company had a total of 18,537 full-time employees, including 17,657 employees on labor contract, 17 employees on labor service agreement, and 863 employees dispatched by third parties. Among the employees on labor contract, there was one foreign employee and the rest were all Chinese.

CSRC Turnover Employees in 2017

Types		Numbers	Rate(%)
Employee turnover by ages	≥55	39	3.98
	51-54	20	1.45
	41-50	95	2.57
	31-40	338	5.77
	≤30	459	6.86
Employee turnover by genders	Male	757	5.44
	Female	194	4.15
Total		951	4.88

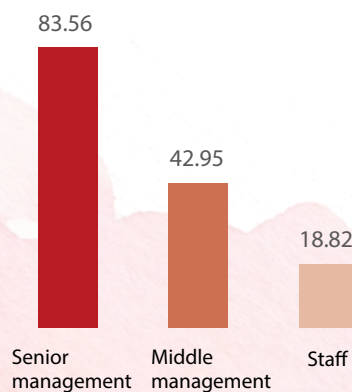


## Assisting in talent development



CRSC regards employees as the most valuable asset. In order to ensure the development of its employees, the Company formulated the Measures for Training Management, which stipulates that the Group's Human Resources Department is responsible for the organization, implementation and statistics of training. Through the summarization of training needs of various departments and subsidiaries, the Group's Human Resources Department coordinates internal and external resources to develop training plans, and distribute the plans to various departments and subsidiaries to ensure that the staff training meets their development needs.

**CSRC Average Training Hours  
per Employee by Category**



In the building of employee promotion channels, the Company has formulated a series of systems to manage employees' promotion channels and facilitate their promotion in an open and transparent manner. The systems established include Interim Measures for the Selection and Appointment of Leading Personnel, Measures for the Management of Transfer and Secondment of Leading Personnel, and Measures for the Management of Reserve Cadres, etc. which set uniform standards for promotion of employees. Professional and occupational support for employees such as training and internal rotation was also provided to help employees achieve personal development. In the development of professional skills of employees, the Company encourages title rating of employees. To this end, it formulated the Measures for the Management of Technicians and Senior Technicians and Measures for the Management of Rating and Hiring for Professional Technical Posts to regulate job evaluation and hiring management and provide employees with equal opportunities for development.

Under the unified management regulations, CRSC and its subsidiaries have conducted a number of employee training and development programs to provide development support for the target employees. In 2017, the Company organized various training programs such as "Beacon Guide" project manager training, "New Route Opening" project development manager & project technical manager training, "Sailing in Starry Sea" excellent grassroots manager training, and overseas project personnel safety training, etc. CASCO launched middle-level management personnel development programs to provide necessary professional support for key positions suited to its development needs, especially the management personnel, assisting them in acquiring necessary management skills.

In order to further motivate employees and realize their self-worth, the Company in 2017 formulated the Measures for the Management of Innovation Studios for Model and Advanced Workers. With advanced and model workers as the leader, talents with skills as the main body, innovation studios for model and advanced works were launched at the grassroots level to serve as a platform for technical exchange and innovation of talents with skills. Intensive efforts were made to organize labor competitions in order to improve the quality and contribution of employees to the Company. In accordance with the Company's own reality and industry characteristics, the Company's labor unions at all levels organized employees to participate in labor competitions under the theme of "practicing new ideas and contributing to the 13th Five-Year Plan". For instance, CRSC (Beijing) Railway Industry Group's trade union organized a labor competition with the theme of "carrying forward the craftsmanship and striving for becoming a craftsman"; the trade union of CRSC Engineering Group Co., Ltd. carried out a labor competition revolving around six aspects; the trade union of CRSC Urban Rail Transit Technology Co., Ltd. launched a labor competition entitled "Fighting 100 Days to Tackle Difficulties with Projects".

**CSRC Turnover Employees in 2017**

Types	Training Rate (%)	Average Training Hours
Male	78.61	23.79
Female	85.64	17.30
Total	80.40	22.03



### Case

#### CRSC holds the first financial accounting skill contest

In July 2017, CRSC held the first financial accounting skill contest in Beijing. With the theme of "compete and improve with original intention and mission in mind" the contest was designed to strengthen CRSC's financial team building and improve staff skills.

This contest served as an important platform for CRSC to promote the exchange of financial professionals and reserve professional talents. It was also an important practice of the strategy "Talents Grow the Company". Chief accountants of all entities, cheering squads of participating teams, and financial practitioners in Beijing – a total of nearly 200 people – attended as audience. This contest improved the professional quality of financial talents and further improved the Company's financial management.

### Case



#### CRSC holds a technical management exchange and training session

In September 2017, CRSC held a technical management exchange and training session in Beijing to further strengthen its science and technology management, promote the accountability for technical management, and consolidate the foundation of technical management. The Company's Technology Development Department, chief engineers, technical directors, and heads of science and technology management of all entities – a total of more than 60 people - attended the session.

The training involved four aspects of system integration, scientific R&D, manufacturing, construction and installation. All participants also visited the on-going Central Enterprise Innovation Achievement Exhibition to develop innovative ideas. The training also involved thematic lectures on team building and performance incentives.

## Caring for employees' health and living

CRSC holds solicitude for employees and set store by employees' work-life balance by actively carrying out various cultural and sports activities and enriching employees' spare time. The Company cares for female employees by implementing the Special Regulations on Labor Protection for Female Employees of the State Council and effectively protecting the special rights and interests of female employees. The Company cares about the health and life of front-line workers by continuously improving their production and living conditions. The Company helps employees with difficulties by carrying out "warmth sending" activities during the holiday season and continuing to improve the assistance mechanism for workers with extreme difficulties.

### Sports and cultural activities

In 2017, CRSC conducted various cultural activities in various forms for employees according to local conditions. Relying on a cultural and sports club, it actively organized cultural and sports activities for employees to implement the "Healthy China" strategy and promote the integration of employee fitness-keeping and health-enhancing activities.



### Case

#### Employee Speech Contest

In May 2017, CRSC held a theme speech contest "Chinese Dream, CRSC Complex, and Beauty of Labor – Congratulations on the Opening of the 19th National Congress of CPC". The contest focused on things and people around us to promote the spirit of model workers and craftsmanship. After the review, one first prize, two second prizes, 3 third prizes and 6 outstanding prizes were produced. The "Persons Who Left Home" submitted by CRSC Engineering Group Co., Ltd. won the first prize.

### Case

#### CRSC organizes the "Health Cup" basketball finals and regional badminton competitions

In 2017, CRSC conducted a wide range of sports events. It held the first "Health Cup" basketball finals and regional badminton competitions the Beijing-Tianjin and Shanghai regions. Through various events, the overall physical and mental health of employees was improved.





### Caring for female employees

In 2017, in order to protect the safety and health of female employees during work, the Company implemented the Special Regulations on the Protection of Female Employees and formulated the Measures for the Implementation of Labor Protection for Female Employees of CRSC Co., Ltd. to strengthen "four-phase" protection for female employees and protect effectively the special rights and interests of female employees.

In 2017, in order to thoroughly implement the strategic deployment of the CPC Central Committee and the State Council on "advocating universal reading and building a scholarly society", the Company organized an essay competition for female employees. With the theme of "Book Fragrance March 8", the competition solicited book reflections on family culture and family education. There were a total of 51 entries, of which 12 won prizes.

During the "March 8th" Women's Day, in order to increase the awareness of female employees on their own health, the Company invited women's health experts to teach health knowledge to female employees in Beijing, and about 600 female employees attended the lecture.

### Caring for the health and life of front-line workers

In 2017, the Company selected 9 key entities located in remote areas with poor infrastructure and relatively concentrated personnel. For employees of these entities, the Company allocated special funds for improving their "daily life, cultural life, and health". It carried out activities to build "Home of Staff", etc. and continued to improve the daily life, cultural life and health of workers at construction companies. These efforts greatly improved the working and living conditions of front-line workers.

The Company also paid on-site visits to key projects such as the "Chongqing-Guiyang Railway Capacity-expanding Renovation Project" and the "Beijing-Shenyang Special Passenger Line Project", sending gifts to 827 front-line workers.

### Helping needy employees

In 2017, the Company's labor union formulated the Measures for Implementation of Assistance and Relief and initially established a three-tier assistance system based on "the grassroots level, the Group level and the Company level". It established files for employees with difficulties. By taking special aid measures such as living subsidies, medical assistance for major diseases, and school subsidies, etc. the Company effectively help the employees with living difficulties, illness, and those who cannot afford their children attending school. For employees suffering from serious illness, besides the medical insurance stipulated by the state and the Company, the Company's labor union extends one-time medical assistance for the part of expenses that employees personally bear. In 2017, files were established for 24 employees with extreme difficulties in the Company. A total of 1.229 million yuan was allocated as financial aid to a total of 179 employees and their children, in addition to student grants of 154,300 yuan.

The Company actively carries out "warmth sending" activities on holiday seasons and sends gifts to first-line workers. In 2017, a total of 5.38 million yuan worth of warmth-sending funds was raised; the Company visited 793 households with difficulties; 78 frontline production teams received gifts; and it also visited 11,062 model and advanced workers, retired cadres, retired employees, front-line workers and dispatched workers.

In 2017, a total of 5.38 million yuan worth of warmth-sending funds was raised

**5.38** million yuan

visited 793 households with difficulties

**793** households

78 frontline production teams received gifts

**78**

visited 11,062 model and advanced workers, retired cadres, retired employees, front-line workers and dispatched workers.

**11,062**

## Promoting democratic management

CRSC has established and improved the Workers' Congress system to promote work on democratic management such as collective consultation. The Company formulated the Measures for the Implementation of Congress of Workers and Staff, Measures of the Collection and Implementation of Proposals by Workers' Congress, Voting Procedures of Workers' Congress, and Working System for Workers' Congress Joint Conference. These documents further standardize the democratic management such as the Workers' Congress and ensure that material matters concerning the reform and development of the enterprise and matters concerning the vital interests of employees are submitted to the congress for consideration or deliberation.



### Case

#### **CRSC holds the first Workers' Congress to promote democratic management**

In August 2017, CRSC Workers' Congress was held in Beijing. The Congress heard and reviewed the Implementation Plan for Corporate Restructuring (Draft) and Plan for Employee Resettlement after Corporate Restructuring (Draft), listened to the reports by candidates to workers' directors and supervisors, and by secret ballot voting deliberated and adopted the Plan for Employee Resettlement after Corporate Restructuring, and elected workers' directors and supervisors.

The Workers' Congress took the form of video conference. A main venue was set in Beijing, and branch venues were set at some subsidiaries. A total of 128 employee representatives attended the congress at the main and branch venues.







# 05

## Cooperation Promotes Development

CRSC actively implements national strategies. It promotes the “Belt and Road Initiatives” (BRI) overseas, commits itself to building a responsible industrial chain, and exerts a strict management of suppliers. It also pays attention to social development by supporting charity, donating to disaster relief, helping poverty alleviation, and strengthening community communication so as to promote socio-economic progress.

- Actively response to the BRI
- Responsible industry value chain
- Support for charity and donation for poverty alleviation



## Actively response to the BRI

As an important member of China's high-speed rail "going-global" consortium, CRSC has continued its momentum of "going global" by extending to dozens of countries on five continents. It followed up on Russia's Moscow-Kazan high-speed rail, California High Speed Rail, China-Thailand Railway, China-Laos Railway, Malaysia-Singapore high-speed rail, and Hungarian-Serbia Railway, etc. to promote China's high-speed rail and full-scale technical standards to go global and present to the world China's national business card "Chinese High Speed Rail".

In April 2017, CRSC successfully signed the first order of Chinese high-speed rail going global - the Indonesian Jakarta-Bandung high-speed rail. This was based on CRSC's experience of having implemented more than 20 projects overseas such as the four-electric system integration for the newly-built Mombasa-Nairobi Railway in Kenya, Pakistan's Orange Line Metro Train (OLMT), the signalling contract for the second section of India's eastern freight line, and the suburban rail in Buenos Aires, Argentina, etc.



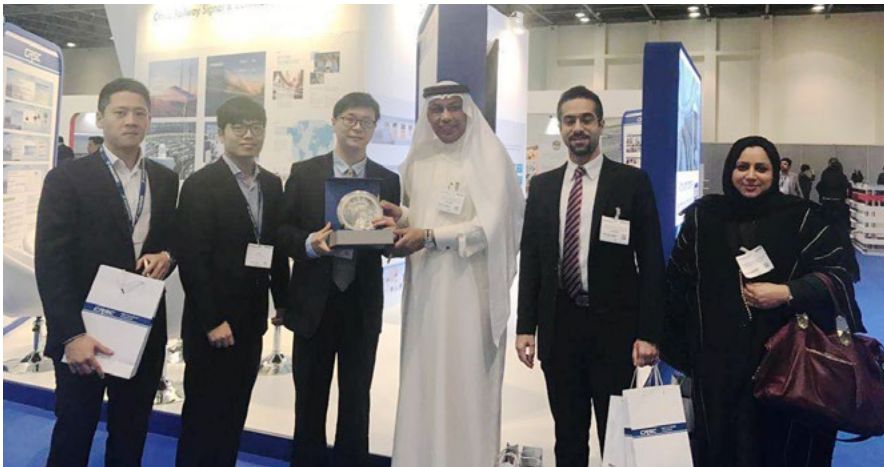
### Case

#### The opening of Mombasa-Nairobi Railway – CRSC Assist the Building of BRI

On May 31<sup>st</sup>, 2017, the Mombasa-Nairobi Railway, of which CRSC contracted communication, signal and information systems, was officially opened to traffic, marking China's first successful export of full-scale domestic railway standards overseas.

The opening of this 480-kilometer-long railway provided a total of more than 38,000 jobs for the Kenyan people. In all its employees, local employees account for about 90%. The long-term plan of the Mombasa-Nairobi Railway is to link six East African countries including Kenya, Tanzania, Uganda, Rwanda, Burundi and South Sudan, which will further improve the connectivity and integration of East African countries and promote economic development in these countries.

CRSC values highly cooperation with international peers by actively attending international peer forums and summits. It continuously raises its visibility in overseas markets and expands influence in global industry. It effectively promotes the development of BRI by accelerating the pace of "going global".

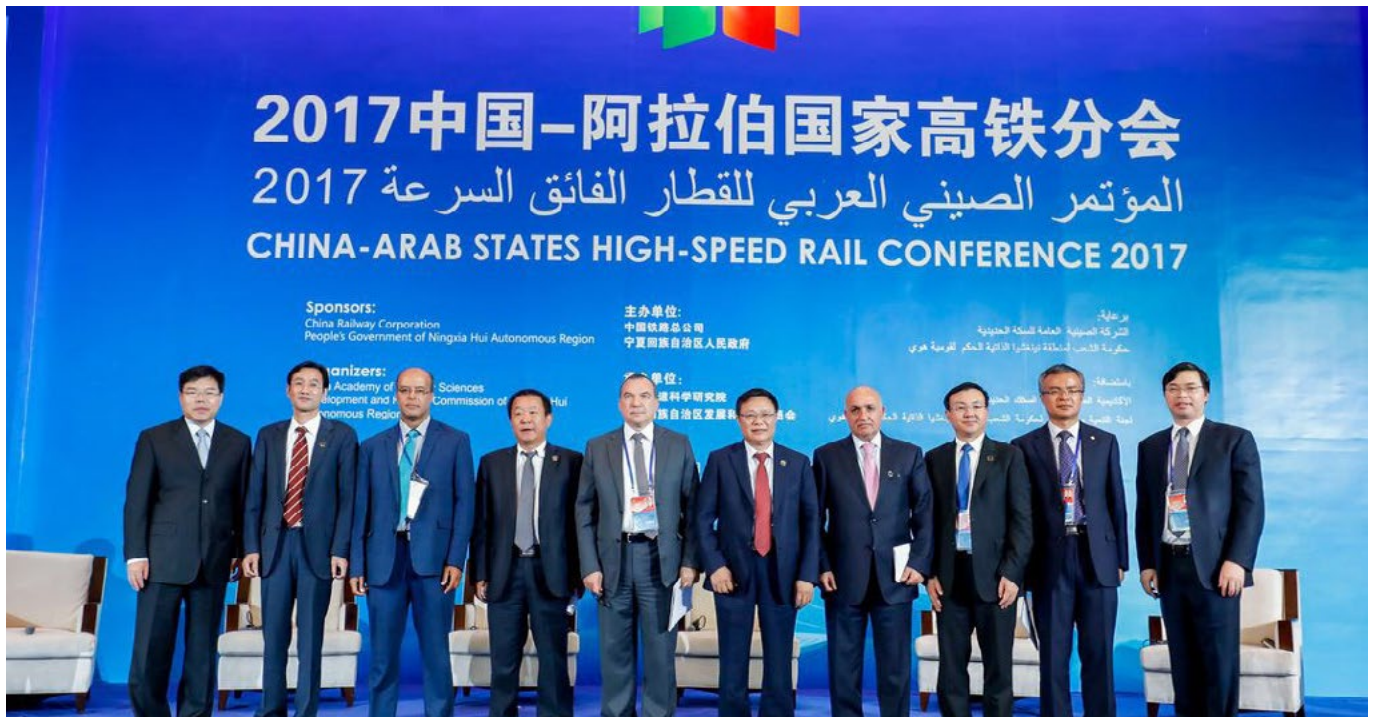


### Case

#### CRSC debuted at the 11th Middle East Rail

In March 2017, the 11th Middle East Rail was held at the Dubai International Convention and Exhibition Center in the UAE. CRSC displayed collectively its corporate information to the world including development history, market share, engineering performance, technical strength, etc. and received the visits and inquiries from participating officials and delegates from across the world.





## Case

### CRSC debuted at China-Arab States High-speed Rail Conference

In September 2017, the 2017 China-Arab States High-speed Rail Conference, jointly organized by China National Railway Corporation and Ningxia Hui Autonomous Region, opened at the Yinchuan International Exchange Center. The theme was to "promote the BRI and the joint contribution and benefits sharing of high-speed rails" with the help of the important platform China-Arab States Expo. More than 300 government officials, experts and scholars from China, the League of Arab States, and seven countries including Afghanistan, Algeria, Egypt, Morocco, Sudan, Indonesia, and Jordan attended the conference which demonstrated China's major technological innovation achievements and equipment of Chinese high-tech companies.

### CRSC debuted at the ASEAN Rail Summit 2017

In September 2017, CRSC attended as a main participant the first ASEAN Rail Summit held in Kuala Lumpur, Malaysia. The summit focused on the BRI combined with the Master Plan on ASEAN Connectivity 2025. With the theme of "One Belt and One Road for All-dimensional Connectivity, Rail Technology Innovation to Win-win Cooperation", the summit invited railway industry experts and decision-making leaders from ASEAN countries' government agencies, projects planning and construction companies, owner companies, suppliers of locomotives and vehicles, communications signalling and electromechanical security equipment, investment and financing agencies, law firms, and consulting agencies to focus on the ASEAN rail market.



### CRSC debuted at the 2017 International Railway Equipment Exhibition in India

On October 11<sup>th</sup>, 2017 CRSC debuted at the 2017 International Railway Equipment Exhibition (IREE) in India with its CBTC system, CIPS system, computer interlock system, and electrical operation and maintenance system. This IREE attracted industry insiders from all over the world and became an excellent opportunity for CRSC to communicate with existing owners, potential customers, suppliers and subcontractors, effectively promoting the BRI.





## Responsible industry value chain

Number of suppliers by geographical region

Region	Number
China	2805
Europe	18
North America	5
Asia (except China)	1

As the forerunner and leader of China's rail transit control system industry, CRSC focuses on establishing a responsibility industry chain to exert strict control over the supplier access and assessment systems and promote the sustainable development of the supply chain.

The Company issued governing documents for supplier management such as *Supplier Management Measures*, *Interim Measures for the Management of Supplier Credit Evaluation*, and *Measures for the Management of the Blacklist of Suppliers*. These special management systems stipulate the procedures for suppliers' access, evaluation, and exit, and gradually expand the evaluation content to realize comprehensive consideration, including quality, cost, delivery speed, and supplier's own environment, security and other aspects.

With these systems, the Company requires suppliers to have a good business reputation, a sound financial accounting system, the necessary professional skills and production, and supply capacity to fulfill the contracts, effective certifications such as one for management system, and no adverse credit record in the past two years. Suppliers must provide financial audit reports issued by certified public accountants, must not have been criticized in a circulated notice by the state, industry and the Company for quality responsibility accidents in the past two years, and must not have been included in the blacklist of suppliers.

### Supplier management system



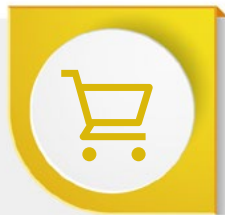
#### Supplier entry system

strictly enforce the supplier entry system, strengthen examination of supplier qualifications and conditions, and select suppliers based on criteria like qualification, brand, fiscal status, as well as product and service quality



#### Supplier credit evaluation

gradually implement the credit evaluation work for suppliers, formulating Method of Credit Evaluation for System Indentation Material and Equipment Supplier for Communication Engineering, Signal Engineering, Electrical Engineering and Electrification Engineering



#### Sunshine purchasing

Carry out pilot work of centralized purchasing, by unifying the purchasing standards, reinforcing purchasing regulations, and building platforms for logistics and material trading and then realize "Sunshine purchasing and transparent purchasing"



#### Supplier development

Communicate with suppliers; build exchange platforms through supplier meetings; encourage suppliers to improve product and service quality, and their self-management and then realize mutual development

## Support for charity and donation for poverty alleviation

CRSC is committed to helping the socio-economic development in impoverished and disaster-stricken areas. It continues to strengthen support in all aspects including education and capital and enhance local capabilities for development, promoting the normal development of public welfare activities.

### Fixed-point poverty alleviation

CRSC Party Committee shows great concern to targeted poverty alleviation. It regularly learns about the progress of work on targeted poverty alleviation, approves and circulates work briefings, studies the selection and dispatch of cadres, and deploys key tasks. At the beginning of 2017, in response to SASAC's call CRSC invested 50 million yuan to the first phase of industrial investment fund for poverty-stricken areas contributed by 51 central government-led enterprises. In 2017, the Company allocated 400,000 yuan of annual special fund for poverty alleviation to support anti-poverty development, and actively arranged for anti-poverty cadre selection and dispatch.

In 2017, CRSC's temporary anti-poverty cadres investigated a total of 116 households, including 65 poverty-stricken households in 11 poverty-stricken villages. In 2017, CRSC's first party secretary who stationed in Haozhai village was selected the "Top 10 First Village Party Chiefs in Sheqi County" and the Village-based Party Branch won the honorary title of "Outstanding Party Branch of Henan Province".



invested 50 million yuan to the first phase of industrial investment fund for poverty-stricken areas In 2017



In 2017, the Company allocated 400,000 yuan of annual special fund for poverty alleviation



In 2017, CRSC's temporary anti-poverty cadres investigated a total of 116 households

CRSC focuses on education to help the poor. The Company has always placed emphasis on infrastructure construction and accessibility to educational equipment in schools that are doing poorly in providing compulsory education in poor villages, on training of frontline teachers in poverty-stricken villages, and on offering inspirational rewards for poor students, living subsidies for impoverished students and grants for poor students to learn advanced vocational skills, among other aspects to reduce poverty by promoting education.

### Case

#### CRSC actively contributes to the accessibility to educational facilities and equipment

In September 2017, an 810-square-meter Haozhai Town Central Elementary School Teachers' Apartment Building was officially completed and put into use. The project was built with the accumulated RMB 820,000 CRSC allocated to the poverty alleviation account registered with the Sheqi County Education Bureau. This project can fully improve teachers' working and living conditions and improve the overall level of education. In October 2017, CRSC donated 41 scanners, computers, and printers to Haozhai Town, Sheqi County, which were used for key positions in education and poverty alleviation to improve the local office automation hardware.

CRSC not only extends assistance to poor areas, but also pays more attention to improving their self-development ability by promoting industry poverty alleviation and local prosperity.

## Case

### CRSC assists in building infrastructure and drives the economy of poor villages and counties

In 2017 CRSC won the bid for "Village Connection" highway construction project which resolved the existing "dead-end highway" problem. It organized the laying of 4 km cement road in Haozhai Village to facilitate the travel of the people. It spent more than 200,000 yuan of target poverty alleviation funds purchasing 1 garbage truck, 1 sprinkler truck, and 20 garbage transfer bins, which improved the hygienic conditions of Haozhai Town. It invested more than 8 million yuan in building a water-supply plant for which it laid 17,000 linear meters of pipelines, solving the problem of poor water quality and poor access to water in the village. It actively strived for funds for repairing dangerous buildings. From 2016 to 2017, it won the bid for 22 projects to repair dangerous buildings with cumulative capital of RMB 240,000, which improved the living conditions of villagers. It won access to RMB 1.62 million for building poverty alleviation workshops to promote the value preservation and increase of assets, to increase the income of the village collective, and to promote the employment of people nearby. It built 50KW photovoltaic power generation project in Haozhai Village which is expected to increase the annual income of 10 impoverished households by about 3,000 yuan, enhancing their self-development ability.





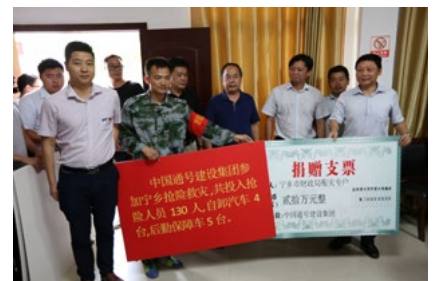


### Donation for disaster relief

In June 2017, Ningxiang City, Hunan Province suffered from a heavy rainfall that was the longest, most extensive, and most intense over the same periods of previous years. In order to help affected people overcome difficulties and rebuild their homes as soon as possible, CRSC Guizhou Construction Co., Ltd. organized support teams to participate in the dredging work after the disaster in Ningxiang, where a total of more than 20 vehicles of garbage were cleared. In addition, the Hunan Branch of CRSC Guizhou Construction Co., Ltd. donated 200,000 yuan to the disaster-stricken areas of Ningxiang, expressing their condolence and compression to the disaster-stricken people.



CRSC organizes volunteer teams to dredge



CRSC donates 200,000 yuan to disaster-stricken area in Ningxiang

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