



# 株洲中车时代电气股份有限公司

ZHUZHOU CRRC TIMES ELECTRIC CO., LTD.

(A joint stock company incorporated in the People's Republic of China with limited liability)

Stock Code: 3898

## **NOTES**

For better expression and reading, Zhuzhou CRRC Times Electric Co., Ltd. is represented as "CRRC Times Electric", "the Company" or "we" in this report.

The report is prepared with references to the Environmental, Social and Governance Reporting Guide set out in Appendix 27 to the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited ("Hong Kong Stock Exchange"), Guideline on Sustainable Development Report of the Global Reporting Initiative (GRI), Guideline on Social Responsibilities of Industries (GSRI-China) and "the Ten Principles" of the UN Global Compact, and based on the actual situation of CRRC Times Electric.

Unless otherwise specified, the report covers the period from 1 January 2020 to 31 December 2020. The currency used herein is RMB. This report covers the Company's headquarters and share-holding subsidiaries but not including joint stock companies, and uses the same scope, boundary and calculation methods as the previous reports.

This report is a faithful reflection of the Company's active fulfillment of its economic, environmental and social responsibilities and its full implementation of the sustainable development strategy. It is a report of full disclosure of the Company's management performance related to stakeholders' concerns and expectations. All the information and data herein are collected from the Company's official documents, statistical reports and sustainable development practices of functional departments and subordinate units.

This report is published in both Chinese and English versions. If there are discrepancies between the two versions, the Chinese version shall prevail.

Address of the Headquarters: Shidai Road, Zhuzhou City, Hunan Province, China

Electronic Version Available at: www.tec.crrczic.cc



# CONTENT

V. OPPORTUNITIES AND CHALLENGES

SPE	EECH BY THE GENERAL MANAGER	6
PA	RT I COMPANY PROFILE AND GOVERNANCE	7
I.	COMPANY PROFILE	7 🖳
	1. INTRODUCTION	7
	2. THE MAIN ECONOMIC PERFORMANCE OF THE COMPANY IN 2020	8
п.	CORPORATE GOVERNANCE	13
	1. CORPORATE GOVERNANCE MECHANISM	13
	1.1 CORPORATE ORGANIZATIONAL STRUCTURE	13 📜
	1.2 CORPORATE GOVERNANCE SYSTEM	14
	2. RISK MANAGEMENT AND INTERNAL CONTROL	15
	2.1 ORGANIZATIONAL SYSTEM CONSTRUCTION	15
	2.2 REGULATING SYSTEM CONSTRUCTION	15
	2.3 DETAILED IMPLEMENTATION	16
	3. COMBATING CORRUPTION AND ADVOCACY OF INTEGRITY	16
ш.	IMPORTANT HONORS OF THE COMPANY	17
IV.	CORPORATE VALUE AND STAKEHOLDERS	18
	1. CORPORATE VALUES	18
	2. CONCERNS OF STAKEHOLDERS	19
	3 DETERMINATION OF SIGNIFICANT TOPICS	20



21

		TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILITY	23
I.		CHNOLOGICAL INNOVATION	23
		INTRODUCTION TO TECHNICAL RESEARCH AND DEVELOPMENT	23
		R&D MANAGEMENT MECHANISM	23
	–	INVESTMENT IN TECHNOLOGICAL RESEARCH	24
		COMPETITIVE EDGE OF R&D TEAM AND HARDWARE RESOURCES	24
		TECHNOLOGICAL R&D RESULTS	25
		APPLICATION	25
		PATENTS	25
		AWARDS	25
		MANAGEMENT OF SIGNIFICANT PROJECTS	26
	3.1	RESEARCH AND DEVELOPMENT OF PERMANENT MAGNET SUBWAY SYNCHRONOUS TRACTION SYSTEM PLATFORM	26
	3.2	RESEARCH AND DEVELOPMENT OF ELECTRIC LOCOMOTIVE ELECTRICAL SYSTEM PLATFORM FOR	
		HIGH ALTITUDE ENVIRONMENT	26
	3.3	RESEARCH AND DEVELOPMENT OF LOCOMOTIVE AUTOPILOT SYSTEM	26
	3.4	RESEARCH AND DEVELOPMENT OF 200KW CENTRAL AIR CONDITIONING MAGLEV INTEGRATED	
		UNIT	26
	3.5	RESEARCH ON COMPREHENSIVE ENERGY-SAVING TECHNOLOGY FOR RAIL TRANSPORTATION	27
	4.	INNOVATION INFLUENCE	27
П.	PRO	DDUCT RESPONSIBILITY	27
	1.	PRODUCT QUALITY MANAGEMENT	27
	1.1	QUALITY MANAGEMENT SYSTEM AND CERTIFICATION	27
	1.2	QUALITY MONITORING METHOD	30
	2.	AFTER-SALES SERVICE	33
	2.1	AFTER-SALES SERVICE NETWORK	33
	2.2	AFTER-SALES SERVICE FUNDAMENTAL MANAGEMENT	34
	2.3	AFTER-SALES SERVICE TEAM MANAGEMENT	36
	3.	CUSTOMER SATISFACTION SURVEY AND CUSTOMER COMPLAINTS	37
	3.1	CUSTOMER SATISFACTION	37
	3.2	CUSTOMER LOYALTY	38
	3.3	CUSTOMER COMPLAINTS	38
	4.	PRODUCT SAFETY	39
	4.1	GUARANTEE OF PRODUCT RELIABILITY	39
	4.2	PRODUCT CERTIFICATION	40
	4.3	IMPROVED TEST AND VERIFICATION SYSTEM	41



	Ш.	HEALTH AND SAFETY  1. SAFETY OBJECTIVE AND TARGET MANAGEMENT	58 58
		2. OVERALL PLANNING AND COMPREHENSIVE LAYOUT FOR PERFORMANCE OF PRODUCTION SAFETY RESPONSIBILITY	58
		3. CONDUCTING EHS SYSTEM OPTIMIZATION TO CONTINUOUSLY IMPROVE ENVIRONMENT AND OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM	59
	IV.	INTERESTS OF STAFF	60
		<ol> <li>IMPLEMENTING SYSTEM OF WORKERS' CONGRESS TO SAFEGUARD EMPLOYEES' INTERESTS</li> <li>MAINTAINING MECHANISM FOR COMMUNICATION BETWEEN SENIOR MANAGEMENT AND FRONTLINE STAFF AND DIFFICULTY ASSISTANCE MECHANISM, AND ESTABLISHING MECHANISM</li> </ol>	60
		TO CREATE HARMONIOUS LABOUR RELATIONSHIP  3. DEEPLY INTEGRATING THE "THREE LEADING FUNCTIONS" OF TRADE UNION TO PROVIDE CARE FOR EMPLOYEES	61
	PAR	RT V SOCIAL HARMONY	65
	I.	SUPPLY CHAIN MANAGEMENT	65
		POLICIES FOR MANAGING ENVIRONMENTAL AND SOCIAL RISKS IN SUPPLY CHAIN     KEY PERFORMANCE INDICATORS	65 65
		2.1 NUMBER OF SUPPLIERS BY REGION	65
		2.2 PRACTICES RELATING TO ENGAGING SUPPLIERS, NUMBER OF SUPPLIERS WHERE THE PRACTICES ARE BEING IMPLEMENTED, AND HOW THEY ARE IMPLEMENTED AND MONITORED	66
		2.3 PRACTICES USED TO IDENTIFY ENVIRONMENTAL AND SOCIAL RISKS ALONG THE SUPPLY CHAIN, AND HOW THEY ARE IMPLEMENTED AND MONITORED	67
		2.4 PRACTICES USED TO PROMOTE ENVIRONMENTALLY PREFERABLE PRODUCTS AND SERVICES	07
		WHEN SELECTING SUPPLIERS, AND HOW THEY ARE IMPLEMENTED AND MONITORED	68
	II.	PUBLIC CHARITY	69
		CONTINUOUSLY ESTABLISHING THE "DANDELION" EDUCATION SUPPORTING PLATFORM FOR A  VARIETY OF EDUCATION SUBSIDIES	69
		2. CARRYING OUT VOLUNTARY BLOOD DONATION ACTIVITY OF "FIGHTING THE PANDEMIC AND	09
		CHEERING FOR LIFE"	70
		3. CARRYING OUT PUBLIC WELFARE ACTIVITIES	70
	PAR	RT VI FUTURE OUTLOOK	73
	PAR	RT VII APPENDIX	74
-			
	L		

# SPEECH BY THE GENERAL MANAG



In 2020, CRRC Times Electric and its partners across the world worked hand in hand and stood by each other through an extremely extraordinary journey. During the year, despite the complex international situation and rapidly changing pandemic which led to increasing uncertainty and instability around the world, China managed to record positive economic growth and made decisive achievements in its three major tasks. During the year, CRRC Times Electric actively responded to complex challenges, effectively facilitated high-quality development, continued to utilize the brand strength and platform advantages of CRRC, and strived to achieve the vision of "Becoming a global leading corporate group with multinational operation and developing rolling stock equipment as its core business".

At present, under the "New Infrastructure" plan proposed by China from a macro level, the Outline of Construction of a Strong Transportation Country continues to serve as an important guideline, and infrastructure construction will play an important role in economic development in the long run. With the emergence of new technologies, the production organization and value chain distribution in rail transportation industry are under constant transformation and adjustment with new models and business formats emerging and various enterprises expanding to other sectors, which will form a more diversified co-opetition ecosystem in the future. To response to such new development trend, by adhering to the core idea of "operating with high quality and high efficiency" and based on the industrial structure of "Three Core Businesses, Six Incremental Industries, Two Strategies and Two Markets", the Company put great efforts in multi-model innovation, actively expanded the business channels and ecosystem, continued to deepen reform and improved the quality of refined management, thereby forming a more solid overall development layout. Looking forward, under the leadership of the board of directors of the Company (the "Board"), the Company will strive to achieve high-quality development through concentric diversification.

With a heart of gratitude, the Company diligently fulfill its corporate social responsibility and always upholds the idea of striving to create and share the value of corporate development. In the opening year of the "14th Five-Year" plan, the Company will hold on to its mission and responsibilities on development with focus on four major core concepts of "integrity and diligence, quality-driven, value creation and business achievement", pass on and promote its traditions and legacy, ensure compliant operation, adopt innovation driven approaches and coordinate different elements and segments in the industrial chain to achieve asset appreciation and sustainable development in all aspects. It will also strive to make continuous contribution to industrial development, environmental protection as well as social and business progress, and share the fruits of corporate growth with the country, society, shareholders, customers, employees and stakeholders.

> Executive Director and General Manager of Zhuzhou CRRC Times Electric Co., Ltd. **Shang Jing**

## COMPANY PROFILE AND GOVERNANCE

#### I. COMPANY PROFILE

#### 1. Introduction

Zhuzhou CRRC Times Electric Co., Ltd. was established jointly by five units including CRRC Zhuzhou Institute Co., Ltd. in 2005. On 20 December 2006, the H Shares of CRRC Times Electric was successfully listed on the Hong Kong Stock Exchange (stock code: 03898 HK).

CRRC Times Electric is the backbone of the "golden card" of the PRC's high-speed rail, and is a domestic enterprise that possesses and applies proprietary core technologies on a mass scale. In order to achieve "higher reliability and safety, as well as higher efficiency and effectiveness", the Company adopts the rapid traction management model and adheres to the "concentric diversification" development strategy. Through continuous innovation, it possesses various core technologies and expands to advantageous sectors. Focusing on technology and market, it has established a complete industrial chain comprising "parts + systems + overall units" for various sectors, including railway transportation electrical equipment, railway engineering machinery, signal and communication system, power semiconductor component, sensor, marine engineering equipment, electric drive system for new energy vehicle, and industrial conversion, with the global presence in over 20 countries and regions.

With the purpose of "connecting the world to benefit human", CRRC Times Electric aspires to work with the community, in order to make outstanding contributions to the growth of China's high-end equipment industry.



#### 2. The Main Economic Performance of the Company in 2020

The Company's main business performance indicators remained basically stable in 2020. Set out below are the business performance indicators:

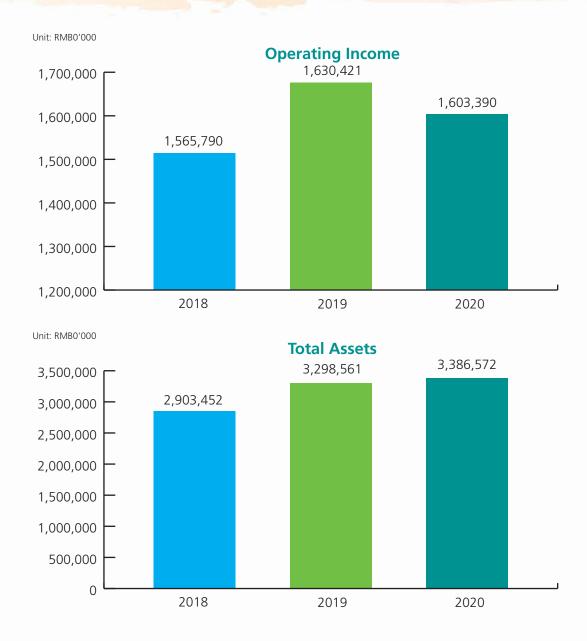
#### Table of major business performance indicators

Unit: RMB ten thousand

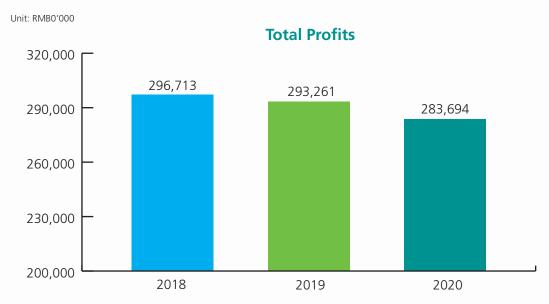
Year Indicator	2018	2019	2020
Operating income	1,565,790	1,630,421	1,603,390
Total assets	2,903,452	3,298,561	3,386,572
Total profits	296,713	293,261	283,694
Total tax payment	116,892	151,422	118,237
Operating costs	979,025	996,573	1,006,667
Revenue distribution	52,896	52,896	0

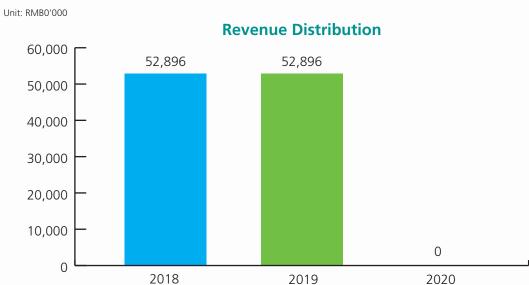
\*Note: In view of the Company's proposed Initial Public Issue of A Shares and Listing on the Science and Technology Innovation Board of the Shanghai Stock Exchange ("SSE") (the "Issue"), it has been considered and approved at the Board meeting, general meeting and class meeting of the Company, and has been considered and approved by the Listing Committee of Science and Technology Innovation Board of the SSE. According to the requirements of Article 18 of the Administrative Measures for Securities Issuance and Underwriting promulgated by the China Securities Regulatory Commission: "where a listed company with a plan for issuance of securities has any plan for profit distribution or conversion of capital reserve into share capital which has not yet been submitted to its shareholders' general meeting for voting, or it has been approved by the shareholders' general meeting but has not been implemented yet, the issuance of securities shall be proceeded after such plan has been implemented. Prior to the implementation of the relevant plans, the lead underwriter shall not underwrite the securities issued by the listed company". In order to avoid time clash between the implementation of the Profit Distribution Plan for 2020 and the issuance of shares by the Company under the Issue as well as to facilitate the smooth progress of the Issue, the Board, after careful discussion, decided not to make any profit distribution for 2020, nor will it convert any capital reserve into share capital or make any bonus issue. The outstanding balance of the undistributed profits shall be retained by the Company. To ensure a reasonable return on investment, the Company will consider the profit distribution at an appropriate time in light of the Issue and will seek separate approval by the Board meeting and the general meeting.

## **COMPANY PROFILE AND GOVERNANCE**



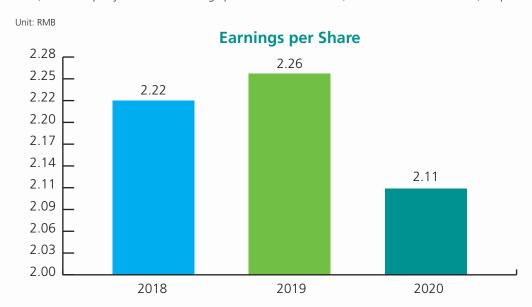
# PART I COMPANY PROFILE AN





#### COMPANY PROFILE AND GOVERNANCE PART I

From 2018 to 2020, the Company recorded earnings per share of RMB2.22, RMB2.26 and RMB2.11, respectively.



Business performance of sub-product

In 2020, the Company achieved an operating income of RMB16.034 billion, including RMB13.890 billion from the business of railway transportation equipment, RMB1.901 billion from the business of emerging equipment and RMB0.242 billion from other businesses.

# PART I COMPANY PROFILE AN

Operating income from major products in the past three years is as follows:

#### Operating income from major products in previous years

(Unit: RMB million)

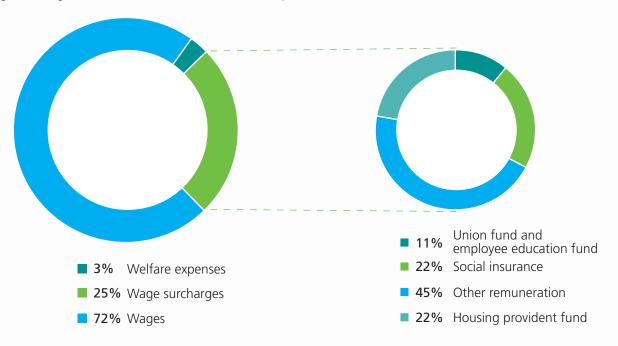
Major business	2018	2019	2020
Business of railway transportation equipment	13,822	14,434	13,890
Business of emerging equipment	1,756	1,765	1,901
Others	80	105	242
Total operating income	15,658	16,304	16,034

Significant financial support from the government

From 2018 to 2020, the Company has undertaken various major scientific and technological projects of the state, the Ministry of Railways and Hunan Province. Total government incentives and grants for scientific and technological projects amounted to RMB123.13 million, RMB246.37 million and RMB401.57 million in 2018, 2019 and 2020 respectively.

Employees' total remuneration and classification

In 2020, the total remuneration of our employees was RMB2,106.53 million, including wages of RMB1,520.36 million, wage surcharges of RMB515.08 million and welfare expenses of RMB71.09 million.

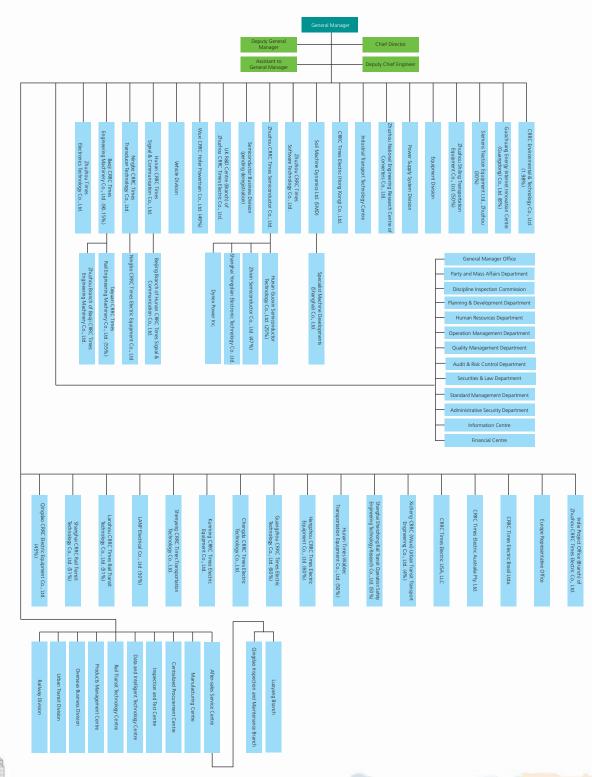


## **COMPANY PROFILE AND GOVERNANCE**

#### II. CORPORATE GOVERNANCE

- 1. Corporate Governance Mechanism
- 1.1 Corporate Organizational Structure

Organizational chart of CRRC Times Electric



# PART I COMPANY PROFILE AND

#### 1.2 Corporate Governance System

#### Board of Directors

As at the date of this report, the Board of the Company is comprised of 10 directors, each with different industry backgrounds and expertise. The Board fully represents the interests of shareholders and is accountable to the general meeting. It formulates the Company's development strategy and monitors the implementation of management and finance within the terms of reference as required in the Articles of Association and in accordance with the procedures set out in the Rules of Procedures of the Board, and takes long-term performance and returns as its priority. Five specific committees, namely strategy committee, audit committee, risk management committee, nomination committee and remuneration committee are established under the Board.

The Company has 5 independent non-executive directors, representing half of the total number of directors. Independent non-executive directors focus on the improvement of corporate governance and major decisions of the Company, express fair and objective advice on major matters and connected transactions of the Company, and employ scientific approaches in the decision-making of the Board so as to safeguard the interests of the Company and minority shareholders.

The Company held 10 meetings of the Board in 2020.

#### Board of Supervisors

As at the date of this report, the board of supervisors is comprised of 4 supervisors, including 1 independent supervisor, 1 shareholder representative supervisor and 2 staff representative supervisors. In particular, staff representative supervisors shall be recommended at the workers' congress and elected at the shareholders' general meeting. The board of supervisors exercises supervision rights independently according to the law to safeguard the legal rights and interests of shareholders, the Company and its employees.

The Company held 7 meetings of the board of supervisors in 2020.

#### • The Management

The senior management of the Company is responsible for executing strategic decisions of the Board and management of daily operations of the Company. Daily supervision and annual assessment of the management are performed by the Board. The positions of Chairman of the Board and General Manager of the Company are held by different individuals, for which the duties are clearly defined to ensure the independence of the Board's decision and daily management and operation. The Company sets up annual goals for the respective subordinate units by dividing its strategic objectives for different years and layers and establishes an objective-based evaluation system for senior management and managers of subsidiaries, business units, the centres and functional units to form a performance-linked incentive and disciplinary mechanism. Assessment criteria and methodology are determined in the form of annual undertaking of target management responsibility and performance remuneration of the management is directly linked with results of appraisal.

## PART I COMPANY PROFILE AND GOVERNANCE

#### • Information Disclosure Policy

In strict compliance with the relevant national laws and regulations as well as the requirements of the Securities and Futures Commission and Hong Kong Stock Exchange, the Company issues regular reports and discloses relevant information in a timely, accurate and complete manner to ensure that investors and stakeholders can keep abreast of the Company's operation and management. Besides, the Company has also established dedicated departments, positions and specific mailbox to enhance communication with its investors. The Company strictly fulfils the confidentiality obligations in information disclosure and there was no significant premature disclosure or misstatement of information in 2020.

#### 2. Risk Management and Internal Control

To ensure the smooth process of the Company's production, operation, and business activities and keep them in line with the Company's strategic objectives, operational objectives and shareholders' vision and in compliance with regulators' requirements, the Company has established a sound risk and internal control system. According to the requirements of relevant laws and regulations such as the Company Law and Securities Law as well as the Rules Governing the Listing of Securities on the Hong Kong Stock Exchange, the Company has established a risk and internal control system with the Articles of Association as the general rules, and the Rules of Procedures for the Board of Directors and Board of Supervisors and working rules of professional committees as the main framework; established an internal control system consisting of three levels, i.e. the corporate system, fundamental management system and business management system; adhered to the development strategies of the Company; and formed an all-around risk management system through the effective implementation of all sections of comprehensive risk management.

#### 2.1 Organizational System Construction

The Company is dedicated to building a sound, stable and effective risk management system and internal control system. The Board is responsible for the establishment, improvement and effective implementation of risk management system and internal control system of the Company. The risk management committee under the Board is responsible for reviewing the Company's risk strategy, risk management system, work report on risk control, internal control system and procedure, regular assessment of risk management policy, supervision of the implementation of various rules and regulations and material operational decisions as well as assessment of significant matters. The board of supervisors is responsible for supervising the operation of the Company's risk management and internal control system. The General Manager is responsible for organizing and leading the design, operation and assessment and evaluation of the Company's risk management system and internal control system.

#### 2.2 Regulating System Construction

The Company has established a regulating system covering operation and management of various business activities, formulated and published the Internal Control Manual, Internal Control Evaluation Manual, Comprehensive Risk Management Measures, Overseas Enterprise Risk Management Measures, etc., thereby continuously improving the risk management and internal control system.

# PART I COMPANY PROFILE AND

#### 2.3 Detailed Implementation

In 2020, the Company focused on the hotspots and difficulties in corporate development, made innovation in internal audit method, increased the depth and width of internal audit, and conducted effective risk management and internal control. By forming a joint audit and risk control task force and adopting innovative audit models in new areas, the Company established a scientific and three-dimensional risk control system "point, line, plane" and a grid-based system for audit supervision, assessment and control "before, during and after" project implementation, and deeply implemented various major special management projects related to audit, risk and control. In 2020, the Company carried out special audit on risk management of accounts receivable from sales process, special audit on compliance in packaging and transportation process, special audit on outsourcing management, special audit on sporadic infrastructure and maintenance operations, and follow-up audit on closed-loop management of problem rectification. It also facilitated the mitigation of material risks related to accounts receivable, carried out pandemic risk identification and response, including special risk identification for overseas business, and conducted special audit on risk control and management for three overseas subsidiaries, namely CRRC Times Electric Australia Pty Ltd., Dynex Semiconductor Limited and Soil Machine Dynamics Limited. In 2020, the Company conducted risk assessment on various major merger and acquisition and joint venture projects to ensure risk control before project implementation. It also implemented annual risk assessment, formed the database of risk incidents for 2021 and carried out follow-up supervision and management with focus on high-risk events to ensure that risks can be prevented and controlled. In 2020, a special internal control improvement project was also carried out to improve and enhance the control standards of key businesses such as procurement business, sales business and production management. The Company performed an annual internal control assessment to assess the effectiveness of the design and implementation of internal control of the Company in phases, which identified that the Company had no material deficiencies. Deloitte Touche Tohmatsu Hua Yong Certified Public Accountants LLP was engaged for internal control audit and the result of which indicated that there were no material deficiencies in terms of the design or implementation of the internal control of the Company. As for the general management issues proposed by Deloitte, the Company proactively organized rectifications and achieved closed-loop management.

#### 3. Combating Corruption and Advocacy of Integrity

In 2020, the Company carried out discipline inspection works based on its actual situation to support operation and overall development, and emphasized on the main responsibilities and tasks of "supervision, discipline inspection and accountability" to persistently promote integrity and maintain discipline. It also effectively facilitated the performance of main responsibility of comprehensive and strict management of the Party at different levels of Party organizations through ways such as the signing of responsibility letters, integrity interview, inspection and supervision. Based on the results of political inspection by the SASAC, the Company rectified and improved its inspection and supervision works, carried out special supervision and facilitated the prevention and control of integrity risks to effectively perform the supervision responsibility of comprehensive and strict management of the Party. The Company systematically constructed the integrity culture education system of CRRC Times Electric that integrates four dimensions of "position, activity, standard and mechanism", strengthened the education on anti-corruption for the party, and put great efforts in creating an atmosphere of diligence and integrity under the idea of "facilitating the development of a company by self-cultivation, hard work, integrity and accountability". In addition, the Company also carried out in-depth reform of discipline inspection and supervision system, optimized the mechanism, system and procedures of discipline inspection works, strengthened the construction of the discipline inspection team with focus on ability improvement and diligent performance of duties, promoted the idea of "deter, disable and discourage" corruption by strengthening regulation and enhancing corruption-free consciousness, and facilitated the construction of integrity culture of the party and high-quality development of discipline inspection and supervision works, thereby providing powerful political and disciplinary protection for development of the Company.

In 2020, there was no case of corruption in respect of the Company or its employees, and there was no non-compliance with relevant laws and regulations in relation to prevention of listing, extortion, fraud and money laundering.

# PART I COMPANY PROFILE AND GOVERNANCE

#### III. IMPORTANT HONORS OF THE COMPANY

with a Speed rd
ce Mills" was
n for Electric n System for Third Prize of pplication of of the Hunan
norary title of
was granted
tly developed uipment with cond Prize of
was granted
Independent Science and
Electric Drive d Technology
Independent Science and
s granted the
cond Prize of
Independent nery Industry
of CRH380A Ower Supply
In Scool

# PART I COMPANY PROFILE AN

#### IV. CORPORATE VALUE AND STAKEHOLDERS

#### 1. Corporate Values

Core value: Walking the righteous path with the righteous mind and doing good deeds with good

intention

Organizational climate: Positive and harmonious, candid and honest, open and inclusive

Work style: Strong commitment, sense of timeliness and pursuit of excellence

Spirit of enterprise: Integrity, Dedication, Innovation and Excellence

Missions: Connecting the world to benefit human

Vision: Becoming a leading company group with top multinational operation and rolling stock

equipment as its core business

#### Strategic Guiding Ideology in 2020:

The Company adhered to the development idea of "operating with high quality and high efficiency", captured the opportunities in the strategic development period of China, further enhanced the awareness of crisis and innovation, continued to deepen reform, strengthened refined management, accelerated the construction of an intelligent, integrated and comprehensive system, and further developed concentric and diversified businesses to ensure long-term stable development in the future and create new growth drivers under the original intention and mission of CRRC.

## PART I COMPANY PROFILE AND GOVERNANCE

#### 2. Concerns of Stakeholders

With the core goal of sustainable development, the Company pays close attention to various stakeholders, continuously strengthens exchanges and communication with them, fully understands and collects their requests and makes responses positively in view of the actual situation of the Company. The Company has always strived to cooperate with stakeholders to create and share value and promote sound and rapid development of the Company.

Stakeholders	Ways of Communication	Requirements & Expectations	Main Indicators
Government	Laws and regulations, release of policies, meetings, theme reports, report forms and visits	Complying with laws and regulations, ensuring tax revenue, providing job opportunities, and developing rail transit equipment industry	Total tax income and new job opportunities created
Customers	Collecting comments, daily liaison with and visits by sales representatives	Providing products and services with good quality and competitiveness, and improving them continuously	Customer satisfaction rate and products qualification rate
Investors	Regular report, unscheduled announcement, general meetings and circulars	Continuously enhancing company value, preventing corporate risks and ensuring sustainable development	Profits, return on equity, gearing ratio, owner's equity
Employees	Proposal of Workers' Congress, employee mark-based reward system, executives reception day, consultation, democratic assessment, employee exchange forum, etc.	Providing employees with safe, fair and comfortable working environment, more benefits and growth opportunities	Employee satisfaction and loyalty, turnover rate and investment in employee training
Suppliers	Suppliers meeting, negotiations on contracts and agreements, regular visits, tendering meetings and collecting comments	Long-term cooperation for reasonable profits	Project bidding, claim on quality defect from suppliers, etc.
Community	Communications by such means as suggestion box and questionnaire surveys, festival parties, active participation in and support for community activities	Civilized manufacturing to promote a prosperous and harmonious community with safe and healthy living environment	Investment in community constructions, times of participation in community activities and amount of donations

# PART I COMPANY PROFILE ANI

#### 3. Determination of Significant Topics

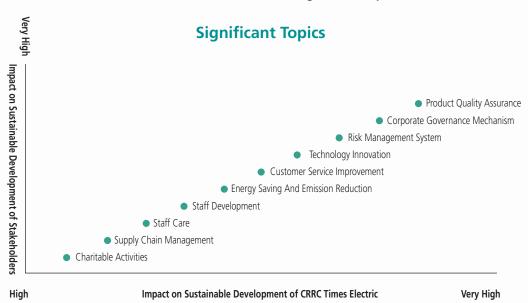
The Company continued to improve the process for the determination of content for reporting with reference to the requirements of the ESG Reporting Guide of the Hong Kong Stock Exchange. The Company enhances the interaction with stakeholders through various means, identifies and determines material issues that concern stakeholders, and eventually determines the extent and scope of disclosure, so as to ensure a more accurate and comprehensive disclosure of information.

#### **Process of selection of social responsibility issues**

Source of issues	Standards of selection
Guidance on Standards of Social Responsibility	Contribution to sustainable development
Company management and staff	General concern of stakeholders
Government and investors	Emphasis on the Guidance on Standards of Social Responsibility
Suppliers and customers	Compliance with the Company's needs of strategic development
Community	

Analysis of information from various channels

#### Results of determination of significant topics



# **COMPANY PROFILE AND GOVERNANCE**

#### V. OPPORTUNITIES AND CHALLENGES

The current era is full of uncertainties: tensions between various powers such as globalization and counter-globalization, economic growth and recession, political culture's radicalization and conservatism. The complex domestic and international environments, coupled with the global impact caused by the pandemic, have led to unprecedented changes. The Company's future development is confronted with various potential threats such as volatile international environment, continuous downward pressure on domestic economy, technological innovation, industrial structure upgrade, and co-opetition relationship within the industry. In addition, driven together by supply-side reform and demand-side management, a new development pattern is gradually taking shape dominated by the domestic economic cycle with mutual support between domestic and international cycles. A series of policies such as carbon neutrality, new infrastructure and "shoring up weak spots" have brought significant benefits, which will surely provide rare opportunities for technology-based enterprises to facilitate proprietary technological innovation and brand promotion.

#### Opportunities

For the future development trend of China's economy, the long-term positive fundamentals of the national economy remain unchanged, and favourable policies such as new infrastructure and "shoring up weak spots" indicate that the "dual cycle" pattern is taking shape. After the rapid development in the recent years, China's rail transit industry has laid a sound foundation for the establishment of a comprehensive railway transportation network across the country, with the development goal of achieving "tri-networks integration" of trunk railway, intercity rail and urban transit in the future, bringing new opportunities for the growth of rail transit equipment market. The General Plan on Building National Strength in Transportation in the New Era by Prioritizing Railway Development proposed that the length of national railway network will reach approximately 200,000 kilometers by 2035, including 70,000 kilometers of high-speed railway. In the future, with the in-depth implementation of the key projects of regional inter-city railway in Beijing-Tianjin-Hebei region, Yangtze River Delta and Guangdong-Hong Kong-Macao Bay Area as well as the Sichuan-Tibet railway, the demand for rail transit equipment will remain stable.

The continuous implementation of the "Belt and Road Initiative" has brought many development opportunities to the PRC economy. The focus in the near term is to attain the "inter-operability of infrastructure, interconnection of access, convergence of sectors and introduction of resources", while the long-term goal is to achieve the "interconnection of business and culture, integration of regional economies and mutual prosperity". The construction of rail transit has gradually become a global trend. More than 100 countries around the world will invest in railway construction and the annual average procurement needs of rail transit equipment are expected to reach approximately USD70 billion. China's high-speed railway undertakes the mission of promoting domestic high-end equipment to the world, which will facilitate the development of the relevant enterprises in the overseas market.

At this stage, as a series of favorable policies such as carbon neutrality, new infrastructure, and " shoring up weak spots "provide opportunities for technology-based enterprises to facilitate proprietary technological innovation and brand promotion, the Company's products with proprietary intellectual property rights will become more competitive in the domestic market. As a national strategic industry, the semiconductor industry will be given certain attention and support from China. In particular, as IGBT is in line with the national industry development trend of environmental protection and energy saving, it will be presented with great opportunities. Electric passenger vehicles will become the development trend of personal transportation, which brings great development potential to passenger vehicle electric drive industry.

# PART I COMPANY PROFILE AND

#### Challenges

Currently, we are facing development changes in four aspects. First, the complex and volatile international political situation and the strengthened trade protectionism around the world hindered the global economic integration, and "re-industrialization" is accelerating in Europe and the United States. As such, the Company's foreign trade and foreign investment are facing huge challenges, and overseas expansion will be subject to more difficulties and risks. Second, new business models and formats are emerging (such as standardized subway and intelligent urban railway). A new round of scientific and technological revolution characterized by big data, 5G and cloud computing is accelerating. Under such trend, information communication, talent concentration and technology development accelerate, resources acquisition becomes more convenient, revolutionary technologies and models continue to emerge, and cross-sectoral innovation and competition have become the new normal, posing higher requirements and challenges to the Company in terms of technology and management capabilities. As such, the Company shall strengthen its study and discussion on these new business models and formats, and develop effective response strategies to prepare for cross-sector competition and dimension reduction. The third aspect is the change of industry landscape. As the in-depth adjustment and transformation in railway transportation industry continues, resource consolidation accelerates and competition further intensifies in the industry, which pose new challenges to the Company in respect of market expansion, technology innovation, quality and cost. In addition, for competition in common sectors such as industrial converter and new energy vehicle, the Company still needs to further enhance its comprehensive competitive advantages.

#### Our Solutions

- Facing both challenges and opportunities, the Company will increase its innovation efforts. The Company will accelerate the iteration and upgrade of existing products and technologies and fully utilize the "business empowerment effect" of new technologies such as big data. It will also fully utilize the Company's multi-system, multi-disciplinary and cross-sectoral advantages to develop the optimal solution for intelligent "comprehensive system" with unremitted efforts and promote digital research and development and establish a research and development system suitable for the new competitive landscape.
- 2. The Company will accelerate the reform by promoting in-depth reform of system and mechanism to release the business growth potential and revitalize the business operation mechanism. It will also capture the opportunities from industry development and reform to facilitate the implementation of relevant reform projects, conduct technological research and planning and make good use of capital strength to rapidly strengthen key capabilities.
- 3. Through in-depth implementation of refined management, the Company will promote digital transformation, further consolidate and improve the internal management fundamentals, and enhance the overall operation efficiency and benefits of the Company through digital, visualized and flexible operation, thereby providing powerful support to the decision-making and services of the Company.
- 4. The Company will strengthen collaborative development. With an open mind, the Company will strengthen the collaboration, utilize the advantages in resource consolidation and industry collaboration, and continuously optimize the market expansion strategy. It will also make plans based on the overall situation, and adhere to the development principle of concentric diversification, thereby facilitate the collaborative and highly efficient development of the industrial chain.

#### TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILITY **PART II**

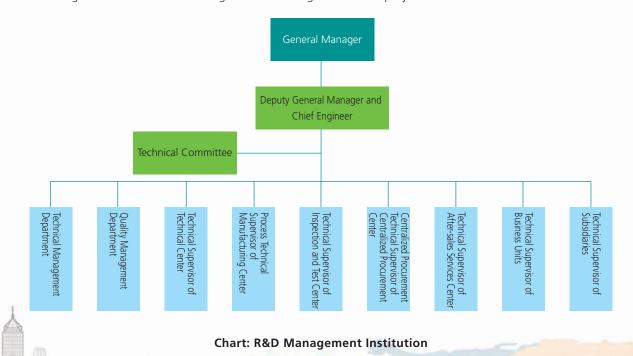
#### I. TECHNOLOGICAL INNOVATION

The Company's technological innovation management always adheres to the tenets of serving technological innovation and the Company launches various activities to enhance management performance, including digital research and development, refined management and optimization of product management process. The aforesaid activities increase the intensity, breadth and depth of technological research project management, qualification and result management, external scientific technology reporting management as well as management of expertise and engineering development and standardization. The Company also promotes cost reduction and efficiency enhancement through research and development and revises and improves relevant management procedures and systems of research and development to enhance the working efficiency and quality, thereby safeguarding the orderly development of daily work and steady advancement of various key works at all levels.

#### 1. Introduction to Technical Research and Development

#### 1.1 R&D Management Mechanism

The Company attaches great importance to the establishment and improvement of R&D management mechanism, and has established a Technical Committee, which comprises the deputy general manager in charge of technology (chief engineer), deputy chief engineer, technical expert, and technical supervisors in all business units. The Technical Committee provides support for the decision making in relation to technological research technology of the Company. Based on the advanced concepts and ideas such as CMMI and integrated product development ("IPD"), the Company has established a multi-layer and collaborative R&D operation model integrated with fundamental frontier technology, generic technology, platform technology and application technology. It has also established the MOTIF technology innovation system and the lean R&D system, as well as advanced information systems such as product lifecycle information platform, knowledge engineering platform, quality data tracking and project management system, which support the orderly operation of the Company's technological innovation business. The Company fully implemented project management for proposal, execution and completion of technological research, and established and improved the rules and regulations for project management – Administrative Measures for Technological Research Projects and Measures for Assessment and Incentive of Significant Technological Research Projects. It also ensures accurate investment and output of research and development resources, optimizes the approval process of technological research projects, strengthens the collaboration with the market and product line, and carries out refined management and control of budget for technological research projects.



# TECHNOLOGICAL INNOVAT

#### 1.2 Investment in Technological Research

Investment in technological innovation provides basic guarantee for strengthening the Company's independent innovation ability. The work in this regard adheres to two main concepts of "innovation" and "benefit", aiming to achieve sustainable development of the Company and striving to set another new record in operation results by leveraging its technological R&D. The Company continued to increase its investment in technological innovation, which accounted for over 10% of sales revenue in the year. In 2020, the Company approved 717 proposals of technological research projects.

#### 1.3 Competitive Edge of R&D Team and Hardware Resources

Over 18% of the Company's employees possess a master's degree or above. On the basis of highly educated talents, a professional research and development team with high qualities and efficiency has been developed through a comprehensive talent training system. The Company fully utilizes global innovation resources and strengthens the development of "1+X" global R&D network centered on China through joint venture and university-enterprise alliance, and has set up an overseas R&D center in the UK and established cooperation relationship with more than 20 key universities at home and abroad.

In addition, the Company also possesses strong capabilities in technological research and experiment, testing and inspection and system production, and owns a number of specialized production bases. Among which, the Company's power semiconductor production base mainly produces bi-polar power rectifiers, thyristors, GTO, IGCT and IGBT. The Company also has the first high-power IGBT packaging manufacturing base in China and successfully delivered the first batch of chips under the automobile components supporting construction project. The inspection and testing system is comprised of over 20 laboratories, including electromagnetic compatibility laboratory, vehicle-mounted electrical systems lab, electrical machinery lab, large-scale vibration testing system lab, electrical equipment reliability and environmental engineering lab, passenger car electrical lab, large-scale engineering machinery electrical system lab, TCN networking product consistency lab, electrical system semi-physical simulation lab, information technology application lab etc., covering research test, type test and factory test in different business sectors of the Company.

#### TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILITY **PART II**

#### 2. Technological R&D Results

#### 2.1 Application

In 2020, 23 external technology projects of the Company were approved, including: 1 national project, 12 provincial-level and city-level projects and 10 CRRC major and key projects. The Company was granted full amount of incentives and subsidies of over RMB16 million as the support of R&D activities in Hunan Province, ranking among the top of nearly 3,000 enterprises in Hunan Province.

#### 2.2 Patents

In 2020, the Company applied for a total of 702 patents, with 407 patents authorized, including 213 authorized invention patents. As of the end of 2020, the Company has cumulatively been granted 2,810 patents, 1,528 of which are invention patents.

Year of Application	Number of Application
2018	543
2019	603
2020	702

#### 2.3 Awards

In 2020, the Company was granted 8 awards at provincial level or above. In particular, the "Key Technology and Application of Virtual Rail Intelligent Express Transportation System" was granted the First Prize of the Hunan Technical Invention Award, the "Key Technology and Equipment for Power Supply of Island/Land-based Multi-Energy Independent Microgrid System and Relevant Application" was granted the First Prize of the Hunan Science and Technology Progress Award, the "Intelligent Troubleshooting and Tuning Technology and its Application to Rail Vehicles" was granted the First Prize of the Jiangsu Science and Technology Award, and the "Research and Application of Key Technologies for Network and Traction Control System of CRH380A EMU" was granted the First Prize of the China Railway Technology.

# PART II TECHNOLOGICAL INNOVATIO

#### 3. Management of Significant Projects

In order to ensure the sustainable development of its significant technological research projects, the Company insisted on the rolling development mechanism of significant projects and continuously injects new ideas and concepts to guarantee the continuous enhancement of technical strength for technological research. In early 2020, after several reviews by the experts from the Technical Committee, it was finally determined that 62 technological research projects with great strategic significance or economic benefits would be added as significant projects, including key projects such as research and development of 200km/h centralized power EMU electrical system, research, development and testing of core system of serial China standardized subway train, research of subway CIMRES electrical and mechanical system platform, research and development of 200kW central air conditioning maglev integrated unit, research of active collision avoidance technology for trains, research, development and application of intelligent training inspection system, research and application of PHM technology for key train components and research and development of automotive-grade reverse Conduction IGBT. In 2020, the Company continued to implement the assessment and incentive mechanism for significant technological research projects, strictly put into practice the weekly reporting, monthly reporting and monthly regular meeting system and effectively pushed forward the process control and objective management of significant projects, which ensured the annual targets of 103 ongoing significant research projects in 2020. Through strict project process control, the general progress of projects was well under control; of which 38 projects were completed, with an annual project milestone completion rate of 98%.

#### Examples of major project implementation:

#### 3.1 Research and Development of Permanent Magnet Subway Synchronous Traction System **Platform**

The Company has built a set of permanent magnet synchronous traction system product platform applicable to DC1500V power supply, developed a set of subway permanent magnet synchronous traction system products with features of low cost and low maintenance workload, which can significantly reduce the whole life cycle maintenance cost of traction motor as compared with asynchronous motor and substantially reduce the energy consumption of operation of permanent magnet traction system trains, thereby providing significant energy-saving economic benefits.

#### 3.2 Research and Development of Electric Locomotive Electrical System Platform for High Altitude Environment

The Company built its first technical platform for high-altitude AC transmission electrical system, carried out a half-year environmental simulation test, and completed multi-dimensional comprehensive test verification including dielectric voltage withstand, temperature change and low air pressure, which are of great significance to improve the Company's portfolio of high-altitude products and enrich the design experience in special environments.

#### 3.3 Research and Development of Locomotive Autopilot System

The Company has successfully developed a locomotive autopilot system based on SIL4 safety computer platform, which has achieved a revolutionary change in locomotive driving mode. The product has been successfully applied in certain railway bureaus, which established a locomotive autopilot product technology system and firmly secured an industry leading position in locomotive control sector. At present, the system has been installed and applied in more railway bureaus and railway companies, and has reached a normal operation status with safe operation of over 1 million kilometers in aggregate.

#### 3.4 Research and Development of 200kW Central Air Conditioning Maglev Integrated Unit

Under the same power and cooling capacity, the Company has developed the key technologies of overall inverter model, electric, magnetic, thermal and structural strength simulation, mastered the calculation and simulation of active maglev bearing load capacity, and successfully developed the 200kW central air conditioning maglev integrated unit with higher level of integration and power density to achieve optimal system matching and integration.

#### **PART II** TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILIT

#### 3.5 Research on Comprehensive Energy-Saving Technology for Rail Transportation

To facilitate the comprehensive integration of electrical and mechanical systems, the Company fully considered the characteristics of different sectors including power supply, operation and trains, understood the factors affecting energy consumption of such sectors, and proposed a multi-dimensional energy-saving solution for subway train operation, operation scheduling and ground power supply system, which provided an effective way for energy-saving of subway operation.

#### 4. Innovation Influence

In 2020, the Company continued to build the innovation development platform and organized experts to formulate and publish 6 international standards as the contributing drafter. It also formulated and published 8 national standards, 6 industry standards and 9 association standards. The Company fully promoted open style innovation, and continued to strengthen the technological exchange and cooperation with domestic and overseas universities and research institutes, thereby continuously improving the Company's influence in the industry.

#### II. PRODUCT RESPONSIBILITY

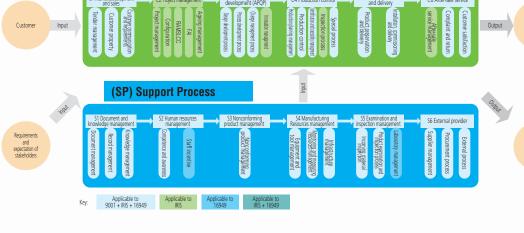
#### 1. Product Quality Management

The Company has always considered product quality as its core value, for it is essential to the very existence of a corporation. Adhering to the policies of "Optimizing platform for sharing of knowledge, Improving the ability of technological innovation, Focusing on quantitative analysis of processes, Setting up life cycle management, Insisting on enhancement of scientific prevention, Enhancing awareness of quality and safety, Paying attention to details and Pursuing customer satisfaction" for quality of its product realization process and customer services, the Company continuously carries out researches and fosters on-going improvement to achieve effective control on all aspects and processes from product design to delivery through a series of assurance mechanisms.

#### 1.1 Quality Management System and Certification

The Company has established a complete quality assurance system based on the ISO9001:2015 quality management standard. It has also complied with the requirements of ISO/TS22163 standard (IRIS 03 International Railway Standard) to implement quality control during the production process of its products and the realization process thereof, while keeping suppliers under strict management and actively promoting project management and RAMS (reliability, availability, maintainability and safety) management.

# Quality System Management Mode: (MP) Management Process (COP) Customer Oriented Process



#### TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILIT PART II

#### System certificates:

Types of system

#### Certificate

#### Description

ISO9001



The Company passed the ISO9001:2000 version quality assurance system certification of British Standards Institute Limited (BSI) in 2005;

German TUV French BV German DQS French BV

British BSI

It passed the review for the certification (2008 version) in November 2009;

In October 2010, TUV Rheinland (Guangdong) Co., Ltd. carried out the review;

The Company passed the ISO9001 certification of Bureau Veritas Certification (Beijing) Co., Ltd. in December 2014;

The Company passed the review for the certification of German DQS (2015 version) in October 2017;

The Company passed the review for the certification of Bureau Veritas Certification (Beijing) Co., Ltd. (2015 version) in September 2020.

International Railway Industry Standard (IRIS)



In October 2009, the Company passed the IRIS 01 certification of TUV Rheinland (Guangdong) Co., Ltd;

It passed the IRIS 02 certification of Rheinland (Guangdong) in October 2011;

The Company passed the IRIS Certification of Bureau Veritas Certification (Beijing) Co., Ltd. in October 2014;

The Company passed the review of German DQS in October 2017;

The Company passed the IRIS Certification of Bureau Veritas Certification (Beijing) Co., Ltd. in September 2020.

French BV

German TUV

German DQS

French BV

# PART II TECHNOLOGICAL INNOVAT

Types of system	Certificate	Description	
CMMI Level 3	Grief Cite! Impact Paint   Prime Impacts (COM)   to analoge / to 20   10 of 17   20    (大きないのでは、 17    (大きない	The Company passed the CMMI-system Level 3 certification in December 2009; The Company passed the renewal review in December 2019.	SEI (Software Engineering Institute)
EN15085-CL1 (Welding Certification System for the Rail Transit Industry)	CERTIFICATE  Wheeling of rashings used to the	The Company passed EN15085-CL4 certification in November 2012;  The Company passed the EN15085-CL1 certification of Bureau Veritas Certification (Beijing) Co., Ltd. on 5 July 2014;  The Company passed the EN15085-CL1 certification of German TUV in 2017;  The Company passed the EN15085-CL1 certification of German TUV in 2020.	German SLV French BV German TUV

#### **Quality Awards:**

First Hunan Governor Quality Award in 2011

Industrial Enterprise Quality Benchmarking Enterprise by Ministry of Industry and Information Technology in 2013 Hunan AA Enterprise for Industrial Product Quality Classification Regulation in 2013

AAA Enterprise of Hunan for Quality Credit from 2013 to 2019

Excellent enterprise of Hunan Province for quality management group activities for eight consecutive years National excellent quality management group for eight consecutive years 2nd China Quality Award in 2016

#### 1.2 Quality Monitoring Method

The Company has set up and improved a sound and comprehensive system of quality management and assurance system throughout the product life cycle including marketing, design and development, procurement, manufacturing and product services etc. at a preliminary stage through a number of system certifications and effective monitoring of its processes.

#### TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILITY **PART II**

#### **Process Monitoring:**

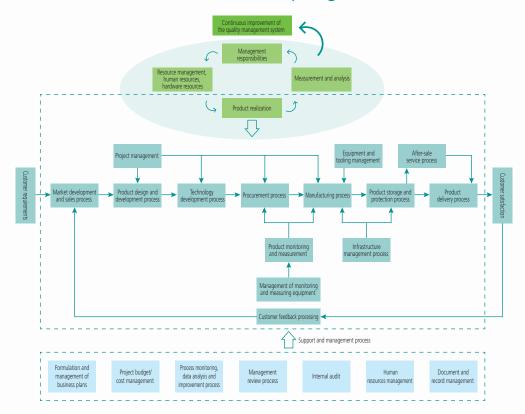
#### Quality Indicators for Measurement and Continuous Improvement of System

The Company has established an indicator measuring system for the entire process, including sales, R&D, manufacturing, logistics, procurement and service, etc., which has enabled the Company to comprehensively define and quantify process quality and carry out measurement and monitoring.

#### Internal Audit and Inspection

The Company has established a multi-dimensional continuous improvement system to ensure quality control through process review, process testing, internal and external audits, regular management review, ad hoc quality inspection, data analysis, process improvement, etc. With this, the Company can therefore identify opportunities for improvement and request for delegation of responsibilities, implementation of plans as well as tracking and verification for matters which require improvement, with a view to guaranteeing the achievement of the improvement goals and ensuring continuous improvement of the whole quality management system.

#### **Process Relationship Diagram**



# PART II TECHNOLOGICAL INNOVATION

#### Quality Management of Design and Development Process Complete Product Development Process System:

The system supports the management and quality control of the entire lifecycle of mechanical products, electric products and software products development. Project development is carried out on a project basis and quality control is carried out throughout the development including design, operation, testing and the achievement of design from user requirements to product model finalization.

#### Platform-Based Development for Product and Design:

With continuous accumulation and construction of relatively complete databases in terms of standards, guidelines and examination of products, technologies and processes, the Company incorporates the databases into the IT information systems and applies them to quality control of new product designs. The Company has also built up a platform for homogeneous product lines featuring huge pool of data that has been widely used and undergone examination for its reliability so as to improve the quality and reliability of product design.

#### Quality Management for Production and Manufacturing Process

The Company attaches high emphasis on improvement of technique and adheres to the guiding principle of "paying attention to details" and fully implements refined production by adopting an on-site oriented approach. Accordingly, it establishes standardized technique development process, technique management procedures and working standards for each position. Personnel holding relevant certifications are required for key positions.

#### A Complete Set of Documentations for Operation and Inspection:

The Company provides detailed and comprehensive guidebooks of operation for the site in which each step of product production technique is provided with detailed regulations and prescribed with illustrations. With which, workers at the site can clearly and easily understand each step and avoid faulty operations. Meanwhile, corresponding guidebooks for product inspection, inspection checklists, QC schematic diagrams, etc. are also maintained at the site so that workers can conduct inspection with photos taken for each key process in accordance with these documentations.

#### Complete Technical Testing System:

The Company's manufacturing bases are equipped with a complete technical testing system including AOI, flying probe test, online test, X-RAY inspection to check the welding quality of circuit boards and high and low voltage lines inspecting device to check the quality and reliability of wiring. A number of technical programs and measures are adopted to check the sealing features of cabinets. The above measures ensure that the whole production process from a single board to the whole set including cabinet processing is timely and effectively monitored.

#### Stringent Control over Electronic Components:

The Company has also established a sound ESD and MSD control system for the manufacturing bases to exercise stringent control over electronic components in terms of workers, machines, materials, methods, environment and measurement, which in turn helps ensure product reliability.

#### Sound Management System of Outsourcing Suppliers:

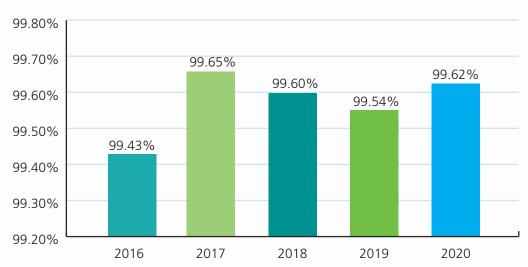
The Company has set up an outsourcing control group and adopted an inspection mode pursuant to which on-site inspectors will carry out inspection at the warehouse. In addition, the Company also established a supplier on-site inspection system and held meetings with outsourcing suppliers for the discussion of supplier performance and quality improvement on monthly basis. As such, the Company improved the quality management mechanism in terms of development, prototyping, small scale trial production to mass production by outsourcing suppliers.

#### **PART II** TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILIT

#### Product Delivery Quality

The one-time passing rate of the Company's products remained at above 99% for the last five years.

#### **One-time Passing Rate**



#### 2. After-sales Service

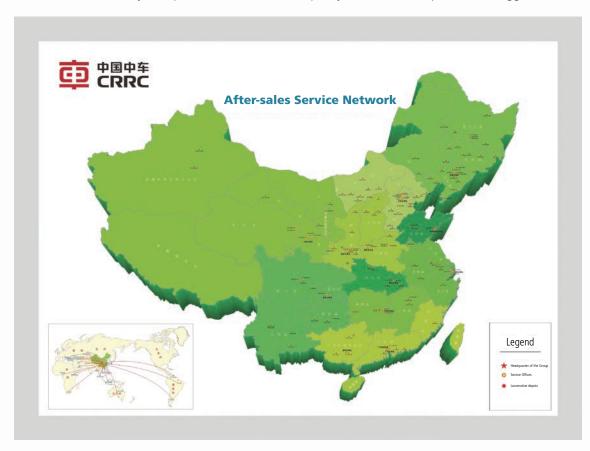
#### 2.1 After-sales Service Network

In 2004, the Company introduced the service philosophy of providing "fast, effective and satisfactory" services in the after-sales service area, aiming to respond to customer needs as soon as possible, and provide comprehensive services to customers in a regulated and orderly manner. For more than ten years, the after-sales service team has grown from a team of over 60 people to a professional team with more than 300 employees. We have established a global after-sales service network by setting up domestic service offices in Beijing, Shenyang, Shanghai, Xi'an, Wuhan, Zhuzhou, Guangzhou, Nanning, Chongqing and Lanzhou and overseas service offices in America, Africa and Southeast Asia, fully covering major customers, regions and products. Meanwhile, taking into account the overhaul strategic plan of State Railway Group, the Company continuously optimized the overhaul market layout, and established 18 regional inspection and maintenance bases across the country and set up inspection and maintenance branches in Qingdao and Luoyang.

The Company has set up a three-level service management model for after-sale services, under which the service network is linked up by the Company's service headquarters, service office and service station. Should our customers have any demands, the Company guarantees to promptly respond with staff deployed to the site in 8 hours and solve problems within 24 hours to gain customers' confidence.

# PART II TECHNOLOGICAL INNOVAT

In order to further adapt to the information and digital transformation in the future, the Company established the Green Shade Service platform (MRO) and set up two hotlines: 800-878-8968 and 400-8899-927, and 64 workstations to maintain sound communication with our customers at any time and ensure effective after-sales services, technical supports, business consultancy, comprehensive information, quality feedbacks, complaints and suggestions.



#### 2.2 After-sales Service Fundamental Management

#### **Product services and maintenance**

- Product services: In 2020, we provided after-sales services for nearly 200 urban railway projects, over 100 EMU projects and over 170 locomotive projects which covered over ten thousand locomotives of approximately 400 stations all over the world.
- (2) Product maintenance: In 2020, we provided repair and maintenance services for over 900 locomotives, over 400 EMUs and over 60 urban railway trains. Starting from Qingdao, our repair and maintenance business has rapidly expanded to over 20 cities in China.

#### PART II TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILITY

#### Continuously optimizing refined management

- We continuously optimized the organizational structure. In order to meet the urgent needs of industrial development, strengthen the standardization and consistency of service and maintenance management in the after-sales service centers, further improve the professional and technical level of the after-sales service team, and continue to explore the management mode of "maintenance + repair", the Company has gradually improved the organizational structure of the after-sales service centers and formed a business management mode based on the IPD control model and CMMI after-sales service maturity model of the Company.
- (2) We further enhanced the level of informatization. We vigorously promoted the development of remote operation and maintenance service capability, comprehensive service support capability, and maintenance execution process capability, and built a whole life cycle service management platform (MRO) and maintenance process execution system (OES) to achieve informatization of the whole process from delivery and commissioning to on-site operation and maintenance, and from incoming material inspection to maintenance of finished products, laying a solid foundation for digital operation, intelligent operation and maintenance, and maintenance big data analysis.
- (3) We further consolidated the safety management fundamentals. Through the establishment and improvement of various mechanisms for safety reward and punishment, risk and hidden danger classification and control and visualized safety operations, we further clarified the safety responsibilities, further strengthened the safety awareness among our staff, and further consolidated safety fundamental management.
- (4) We achieved multi-dimensional and highly efficient management by implementing the contracted office-based responsibility system with focus on "cost control and refined operation". In 2020, the contracted offices fully explored the potential of internal operation and management, and improved the business capabilities of the service teams while saving operating costs. 14% improvement in staff efficiency was achieved in the six contracted offices. In addition, we also achieved outstanding results in team management, talent training and hierarchical management.
- (5) We achieved the transformation from specialization to standardization by implementing in-advance commissioning. We have achieved full coverage of commissioning capability in 28 urban rail service stations, formed commissioning capability based on configuration software, cable tester and protocol analyzer by upgrading commissioning tools and equipment, and have developed the in-advance commissioning capability for all conventional urban rail projects and highly extendable EMU projects, which shortened the commissioning cycle of a single project by 15%.
- (6) We achieved breakthrough in both talent cultivation and platform construction through polarization. In terms of talent cultivation, we deeply promoted the cultivation of "expert" talents and cultivated 18 expert talents during the project period, among whom 4 were evaluated to reach the level of quasi-experts. In terms of platform construction, we focused on rapid troubleshooting and lowering the requirements of service personnel, we completed the development of standardized troubleshooting APP and professional fault diagnosis system, compiled more than 250 operation instructions in relation to service processes such as program update, disassembly and installation, and enabled portable access of information through mobile terminal, and built a fault diagnosis application mode based on the professional diagnosis system.
- (7) We achieved standardized and effective components management through components refined management. By strengthening planning, management, control, coordination and allocation, transportation costs were significantly reduced compared with the previous year. In addition, we further promoted the development of key parts and components repair capability in overseas service sites and repaired a total of over 300 pieces of various types of products, effectively improving the turnover and utilization efficiency of overseas spare parts.

# PART II TECHNOLOGICAL INNOVATION

## 2.3 After-Sales Service Team Management

The Company carried out the in-depth development of the talent echelon. The Company fully implemented the strategy of "polarization" and took various measures to cultivate maintenance/service technical experts. Through the "apprenticeship system", skill competition, manager responsibility system, director rotation, supplier support, green shade service qualification certification and other forms of specialized management and technical personnel cultivation, the Company has created a team of "fine soldiers and strong generals". During the year, the Company cultivated more than 50 key staff; completed post qualification for 533 persons and certification of key special production skills for 243 persons, realizing the annual target of "working with qualification" for every staff working at site; achieved new breakthroughs in the evaluation of employee skill level, during which 50 persons reached L4 and 92 persons reached L3. Laborers are included in the scope of skill level evaluation and over 300 persons participated in the test with a participation rate of 90%.



#### **PART II** TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILITY

## 3. Customer Satisfaction Survey and Customer Complaints

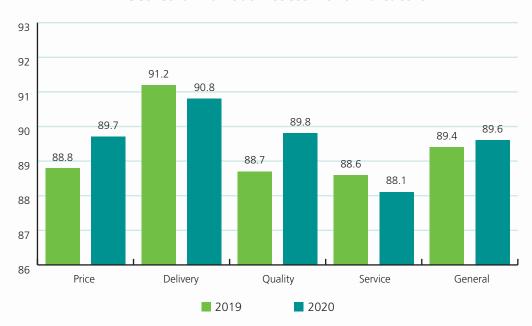
## 3.1 Customer Satisfaction

The Company always takes the continuous improvement of product and service quality and continuous enhancement of customer satisfaction as its goal. Every year, the Company collects customers' opinions and suggestions on our products and services by different targeted means, including questionnaire survey, interview of customers, telephone inquiry and product promotion event, and immediately takes corresponding measures to make improvement.

The general principle for 2020 external customer satisfaction survey of CRRC Times Electric was: focusing on rail transit products while giving consideration to other traditional products. Products under this survey mainly include railway transportation electric drive control system, security monitoring devices, rail engineering machinery, etc.; and vehicle types involved include urban rail transit, harmony type high-power alternative transmission locomotive, high-speed EMUs and other traditional products such as testing equipment. This survey involved 148 users, including 18 subway corporations, 14 locomotive depots, 8 EMU institutes, 9 car depots, 10 main engine plants/overhaul plants, 6 road bureaus, 8 local railway users, 16 track maintenance inspection institutes (machinery division), 22 track maintenance divisions and 37 power supply sections. This survey covered 100% major product types and over 90% of our users. Based on customers' feedback and survey data analysis, the assessment indicators on the Company's general customer satisfaction index, product brand, product delivery, product quality and service quality all scored above 88.

#### Customer satisfaction survey rates in the past two years

## **Scores of Various Assessment Indicators**

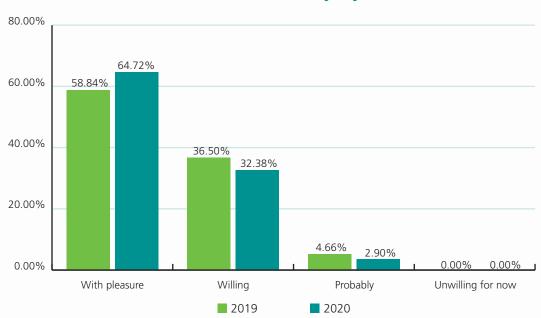


# TECHNOLOGICAL INNOVAT

## 3.2 Customer Loyalty

Customer loyalty was 97.1% for 2020, which basically remained flat as compared to 2019. The data of customer loyalty includes the proportion of customers that are pleased and willing to continue to use the Company's products.

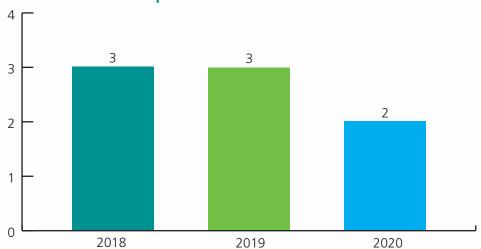
## **Customer Loyalty**



## 3.3 Customer Complaints

The Company attaches great importance to the settlement of customers' complaints and has established a customers' complaint settlement team led by the quality management department. This team gives prompt response to each customer complaint, timely understands customers' demand, conducts in-depth investigation of and analysis on problems, puts forth effective solutions and improvement methods, eliminates problems from the system operation, and replies to customers in a timely manner to ensure their satisfaction.

## **Customer Complaints Statistics in the Past Three Years**



#### TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILIT **PART II**

### 4. Product Safety

As a large-scale rail transit equipment manufacturing enterprise integrating research and development, production, distribution and sales and a core supplier of components for railway locomotive vehicles, the Company's products are widely used in high-speed trains, and the safety and reliability of its products are therefore directly related to the lives and safety of millions of passengers. Product quality equals to safety, and safety is the life assurance of millions of passengers, which is also the golden rule for an enterprise's survival. The Company has always regarded product safety as the core of its product quality work. Based on the technology safety policy of "Complying with railway safety standards to establish product safety concept; Understanding product safety effectiveness to improve safety rules and norms; Producing safe and reliable products to ensure train traffic safety", the Company implements strict control measures on various aspects including marketing, design, procurement, production, delivery and after-sales, and resolutely puts an end to product quality and safety problems.

In 2020, the Company did not violate relevant laws and regulations in relation to health and safety for the products and services provided.

## 4.1 Guarantee of Product Reliability

☆The Company reasonably utilized the RAMS analysis method and analysis to ensure product reliability and safety by incorporating reliability, availability, maintainability and safety analysis in the whole process of product development.

☆The Company continued to carry out research and development of key material and technology and analysis of model selection, certification, verification and quality issues, established a comprehensive material management and control mechanism, and enhanced the product reliability.

☆The Company conducted the accelerated life cycle test and the design of accelerated stress test system for key electrical materials, and carried out in-depth study on failure mechanism and malfunction model, which provided powerful support for reliable product design.

☆The Company carried out study on the expectation of useful life of key components of electrical system by adopting reliability assessment method and establishing useful life expectation model.



# PART II TECHNOLOGICAL INNOVAT

## **4.2 Product Certification**

In 2020, the Company's headquarter has obtained/effectively maintained the CRCC certification for a total of 81 models of railway products under 16 categories in the five sectors of power supply, signal, passenger trains, locomotives and EMU:

			Model &			
No.	Sector	Types of Product	Quantity	No. of Certificate	Issue Date	Issuing Agency
1	Power supply	Vehicle contact network operation status detection device (3C)	1	CRCC10217P10959R2L-27	2018/7/13	China Railway Test & Certification Centre
2	Signal	Train operation control system APT vehicle equipment hardware for CTCS-2	1	CRCC10217P10959R2L-21	2019/11/5	China Railway Test & Certification Centre
3		Train operation monitoring system hardware for LKJ-15	2	CRCC10217P10959R2L-26	2018/8/16	China Railway Test & Certification Centre
4		Train operation monitoring device hardware	2	CRCC10217P10959R2L	2019/4/18	China Railway Test & Certification Centre
5	Passenger trains	Charger for passenger trains	2	CRCC10217P10959R2L-4	2017/11/16	China Railway Test & Certification Centre
6		Inversion power source for air conditioning of passenger trains	9	CRCC10217P10959R2L-5	2019/10/17	China Railway Test & Certification Centre
7		Charger for passenger trains (including single-phase inverter)	5	CRCC10217P10959R2L-25	2019/10/17	China Railway Test & Certification Centre
8	Locomotives	Network control system for AC locomotives	12	CRCC10217P10959R2L-22	2019/10/17	China Railway Test & Certification Centre
9		Central processing unit for AC locomotives	10	CRCC10217P10959R2L-23	2019/10/17	China Railway Test & Certification Centre
10		Locomotive automatic video monitoring and recording subsystem	1	CRCC10218P10959R2L-9	2019/3/21	China Railway Test & Certification Centre
11		Train power supply monitoring subsystem	2	CRCC10218P10959R2L-10	2019/3/21	China Railway Test & Certification Centre
12		Locomotive auxiliary electrical enclosure and DC600V power supply unit	7	CRCC10218P10959R2L-3	2018/8/23	China Railway Test & Certification Centre
13		Railway locomotive traction variable current power module	21	CRCC10218P10959R2L-6	2021/2/11	China Railway Test & Certification Centre
14		Traction converter for AC locomotives	3	CRCC10219P10959R2L-027	2019/3/21	China Railway Test & Certification Centre
15	EMU	EMU network control system	2	CRCC10218P10959R2L-15	2020/9/24	China Railway Test & Certification Centre
16		EMU shaft temperature alarm system	1	CRCC10218P10959R2L-19	2018/2/1	China Railway Test & Certification Centre
	Total		81			

#### PART II TECHNOLOGICAL INNOVATION AND PRODUCT RESPONSIBILITY

## 4.3 Improved Test and Verification System

## ☆ Approval and Authorization

The Company invested in and constructed national key laboratories for traction and control of EMU and locomotive.

## ☆ Inspection and Testing Capability Traction system laboratory

The traction system laboratory is capable of conducting tests on traction and drive features, temperature rise, energy consumption, anti-skid and others based on the requirements of relevant international and national standards, and are available to meet the testing requirements of converter and transmission system applied in high-speed EMUs, urban railway trains, electric locomotives, diesel locomotives, industrial transmission and other fields.



#### ☆ Reliability and environmental engineering laboratory

#### (1) Climate and environment testing capacity

The climate and environment testing system is capable of conducting thermal test (thermal change and thermal shock), steady state damp heat test, alternating temperature and humidity test, icing test, salt spray test, dust and water resistant test (IP68 and below), operational condition, insulation and dielectric voltage withstand test and temperature rise test of electric and electronic products based on national standards and IEC standards, and the full power test for 150 kW inverters with a weight of 6,000 kg at high and low temperature.



## (2) Testing capability in mechanical environment

The mechanical environment testing system meets the requirements of vibration and shock testing of electric traction system and equipment, network control system and equipment, and other products for locomotives. It is also capable of conducting vibration test and data analysis for on-site operation. It has comprehensive portfolio of environment and sustainability testing of parts and leading testing capability in the industry.

# TECHNOLOGICAL INNOVATION

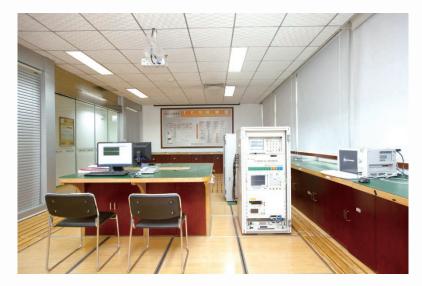
## ☆ Electromagnetic compatibility laboratory

Electromagnetic compatibility laboratory is capable of conducting tests on the strength of magnetic field, electromagnetic radiation, disturbance voltage at power supply end and disturbance current. The testing frequency of the EMI testing system is 18 GHz, while that of the EMS testing system is 8GHz. It is capable of conducting radio-frequency and electromagnetic field radiated immunity test at 30 V/m, which covers the 4G and 5.8G fields.



#### ☆ Network and wireless laboratory

The network and wireless laboratory has formed the leading network consistency testing system, wireless communication testing system and point responder testing system in the PRC. With environmental collection, image processing, distributed database and other advanced technologies, it is capable of conducting consistency test of route network communication products for urban transit, locomotives and EMUs, dynamic simulation test of on-board WiFi and wireless communication equipment and other tests.



#### **ENVIRONMENTAL PROTECTION** PART III

#### I. ENVIRONMENTAL PROTECTION POLICY

We pursue the policy of people-oriented, continuous improvement, environmental protection, health and safety.

#### II. DATA ON ENVIRONMENTAL PROTECTION PERFORMANCE MANAGEMENT

#### 1. Discharge of Industrial Solid Waste and Hazardous Waste

Our Company sorts, collects and stores solid wastes in the same manner as general industrial solid wastes and hazardous wastes. Our Company will put priorities on the recycling of the general industrial solid wastes, whereas unrecyclable wastes will be sent to qualified units for hazard-free disposal and hazardous wastes will be sent to the relevant units responsible for hazardous waste treatment for disposal. Our Company strictly follows the relevant national laws, regulations and policies in the process of hazardous waste treatment. Hazardous waste transfer sheet will be completed and reported to Zhuzhou Environmental Protection Bureau for record upon transfer. During 2020, the Company generated a total of approximately 284 tons of hazardous waste. A qualified treatment rate of 100% was achieved.

## 2. Discharge or Emission of Waste Water and Exhaust Gas in Compliance with Required **Standards**

Year	Volume of wastewater discharge (ten thousand tons)	Volume of wastewater treatment (ten thousand tons)	Compliance rate of discharge
2014	41	41	100%
2015	36	36	100%
2016	16	16	100%
2017	25	25	100%
2018	22	22	100%
2019	19	19	100%
2020	38	38	100%

In 2020, the Company strictly followed the relevant regulations and standards to manage various types of sewage treatment and exhaust gas treatment facilities. All pollutant discharge data, as supervised and monitored under the entrustment of the Company and by monitoring authorities and government environmental protection administration, conformed to the emission standards. A compliance rate of 100% was achieved.

In 2020, the industrial wastewater discharge, emission of industrial exhaust, chemical oxygen demand and ammonia nitrogen emission of the Company amounted to approximately 380,000 tons, approximately 2.08 billion cubic meters, approximately 11 tons and approximately 1 ton respectively for the year.

# PART III ENVIRONMENTAL PRO

#### III. ENVIRONMENTAL MANAGEMENT

## 1. Environmental Management System and Certification

The Company obtained the certification of ISO14001 environmental management system in 2006. Through the process control under the environmental management system such as performance monitoring, internal audit, supervision, check, management review, the operational performance of the Company's environmental management system has improved continuously. In November 2017, the Company passed the upgrade review of British Standards Institution (BSI) for its ISO14001:2015 environmental management system certification. In November 2018, the Company passed the external audit of British Standards Institution (BSI) for its ISO14001:2015 environmental management system. In November 2019, the Company passed the external audit of British Standards Institution (BSI) for its ISO14001:2015 environmental management system. In November 2020, the Company passed the three-year renewal audit of British Standards Institution (BSI) for its ISO14001:2015 environmental management system.



ISO14001 Environmental Management System Certificate

#### 2. Environmental Protection Products

The Company received the Hunan green factory certification in 2019 and the national green factory certification in 2020. In the process of production, the Company always advocates the "Green" concept of CRRC's core brand value and vigorously promotes the use of environmentally-friendly materials and environmentally-friendly technologies so as to create environmentally-friendly green products for the society.

## IV. DESCRIPTION OF ENVIRONMENTAL COMPLIANCE

Prior to project construction, the Company actively carried out environmental impact assessment of construction work so as to ensure that the environmental protection facilities and construction projects will be designed, constructed and put into operation at the same time.

During the process of production and operation management, the Company has complied with the relevant national, Ministry of Ecology and Environment, provincial and municipal environmental protection laws, regulations and statutes, and timely obtained, updated and conveyed the relevant environmental protection regulations and standards. The Company conducted its day-to-day internal environmental protection management based on these new regulations and standards. Meanwhile, the Company actively fulfilled its corporate environmental protection obligations and implemented the principles and policies of national energy saving and emission reduction. There was no penalties imposed by the relevant departments due to any violation of environmental regulations.

#### PART III **ENVIRONMENTAL PROTECTION**

## V. ENERGY SAVING, CONSUMPTION REDUCTION AND COMPREHENSIVE **GOVERNANCE**

## 1. Energy Saving and Consumption Reduction

In 2020, under the background of the global fight against the COVID-19 pandemic, CRRC Times Electric adhered to the goal of promoting the sustainable development of green transportation and energy, continued to build a green manufacturing system, provided safe and convenient core power for the society, integrated the environmental protection concept of green energy-saving into the whole life cycle of products, and strived to achieve the simultaneous development of ecological civilization and people.

In 2020, CRRC Times Electric consumed electricity of 133.77 million kWh, natural gas of 3.63 million cubic meters and water of 1.38 million tons. In 2020, the comprehensive water consumption per output of RMB10,000 was 0.86 tons/ RMB10,000, and the comprehensive energy consumption per RMB10,000 in output value was 0.013 tons of standard coal per RMB10,000, representing a slight increase as compared to last year.

## Comprehensive energy consumption per RMB10,000 in output value (Tons of standard coal per RMB10,000)



The increase in comprehensive energy consumption was mainly due to the huge energy consumption during the trial operation of the Company's new semiconductor production line and the lack of output value for the time being.

In terms of resource reuse, with the implementation of a series of new energy-saving measures in 2020, CRRC Times Electric reused 160,000 tons of water with a reuse rate of 8.4%, representing an increase of 38% as compared to last year; and recycled waste heat and waste energy of 19,800 million kJ with a waste heat and waste energy recycling rate of 3.2%, representing an increase of 52% as compared to last year. The self-built photovoltaic power plant generated electricity of 1.45 million kWh, which was basically the same as last year.

# PART III ENVIRONMENTAL PR

Based on the work of last year, CRRC Times Electric continued to improve energy management with the main measures as follows:

## 1.1 Implementing Energy Management System Update And Certification Integration Measures

With the implementation of the "three categories" innovative management mode in 2019, the Company clarified the work direction of energy system management. In 2020, CRRC Times Electric continued to make significant changes to energy management by changing the original 3 parallel certificates (headquarter of the Company + 2 major energy-consuming companies in other areas) to a model of general certificate plus sub-certificates (general certificate of the Company and sub-certificates of independent business units with relatively high energy consumption). By lowering the certificate level of the subsidiaries Baoji CRRC Times Engineering Machinery Co., Ltd. ("Baoji Times") and Ningbo CRRC Times Sensor Technology Co., Ltd. ("Ningbo Times"), we reduced their management difficulties and improved the overall energy management efficiency of the Company. In addition, we established separate sub-certificate for Zhuzhou CRRC Times Semiconductor Co., Ltd ("Times Semiconductor"), the business unit with largest energy consumption in the Company's headquarter to enhance its energy management level and effectively strengthen the management of key energy-consuming unit. Such task was carried out simultaneously with the certification update, and the new ISO50001:2018 system certificate was issued by the certification authority at the end of December 2020.

Through the update and upgrade of new energy management system certification of CRRC Times Electric, we consolidated the management foundation, closed the loopholes in the original management, achieved full management coverage of functional departments, resource centers, business divisions, branches and subsidiaries, and fully established a three-level performance parameter management mechanism for the Company, secondary energy-consuming units and key energy-consuming equipment and processes, which enabled the Company to carry out energy management in a more regulated and standardized manner.

With the adoption of sub-certification mode for Baoji Times, Ningbo Times and Times Semiconductor, the three largest energy-consuming units under CRRC Times Electric, not only will it not lower the socio-economic benefits brought by the system certification, it may also reduce the overall workload and cost of the original system certification and match with the existing management model of headquarter and branches with scalability.

#### **ENVIRONMENTAL PROTECTION** PART III

## 1.2 Organizing Special Energy Saving and Cost Reduction Measures Based on Industry **Characteristics**

In 2020, CRRC Times Electric invested a total of approximately RMB7 million in energy-saving transformation and saved approximately RMB6.25 million in annual energy costs, reducing 6% of costs and expenses. For the Company's two different businesses of machinery and semiconductor, we took targeted measures to organize and implement special energy saving and cost reduction activities.

In addition to system management improvement, in 2020, CRRC Times Electric made remarkable results in energy saving and cost reduction by promoting seven measures of energy saving and cost reduction, and saved energy consumption cost of RMB3 million per year. Favourable results were achieved mainly in basic electricity costs and optimization of power supply, such as the replacement of halogen lamps with LED lights in the factories of Ningbo Times, the elimination, upgrade of outdated water pumps in Shenyang CRRC Times Transportation Equipment Co., Ltd, the elimination and upgrade of lithium bromide units to maglev scroll units in manufacturing center, the frequency conversion transformation of central air conditioners in Qingdao repair and maintenance base, etc.



Photo 1 – Elimination and upgrade of lithium bromide units to maglev scroll units in manufacturing center of CRRC Times Electric

# PART III ENVIRONMENTAL PRO

For Times Semiconductor which has huge energy consumption and strong technical expertise, in 2020, CRRC Times Electric engaged a professional energy-saving consulting firm, invited reputable experts in the industry to conduct energy-saving diagnosis, conducted research on benchmark enterprises and carried out subsequent energy-saving technical improvement measures, which saved energy consumption costs of approximately RMB3.25 million for Times Semiconductor throughout the year. Main measures included vacuum process frequency conversion transformation, cooling tower packing transformation, hot and pure water and wastewater reuse transformation. In addition, based on experts' recommendations, we conducted research and technical demonstration of three major energy-saving projects including on-site nitrogen production, reuse of diluted fluorine wastewater and intelligent collective control of refrigeration room, which were expected to be formally implemented in 2021, which will save approximately RMB15 million of energy costs of nitrogen and new water per year.





Photo 2 - CRRC Times Electric engaged experienced semiconductor factory management experts to conduct energy-saving diagnosis

#### 1.3 Applying for National Green Factory and Other Honors

In 2020, CRRC Times Electric was granted the award of the 5th batch of national green factories, while the management innovation project under the theme of green factory construction won the second prize of Hunan Management Innovation Award and the third prize of Management Innovation Award of the Ministry of Transportation. In the process of establishing the intelligent management system of green factory, the Company fully considered and implemented green and energy saving measures in the whole life cycle of products including product market planning, product design, product supply chain, product manufacturing, after-sales service and recycling, which improved the utilization rate of resources and reduced the negative impact on the environment, thereby realizing the win-win situation of both the corporate economic benefits and social benefits.

#### **ENVIRONMENTAL PROTECTION** PART III

### 1.4 Implementing Green and Energy-Saving Product-Oriented Strategic Plan

In 2020, CRRC Times Electric implemented green and energy-saving product-oriented strategic planning with focus on green transportation development, developed a series of green and energy-saving products, and provided green manufacturing system solutions for rail transit locomotive, new energy and other enterprises. For example:

CRRC Times Electric independently developed the traction converter with permanent magnet motor. Compared with the asynchronous motor, the EMU traction system with permanent magnet motor consumes less energy under traction conditions and gives more energy feedback under electric braking conditions in the same operating interval, distance, number of stops and similar running time, so the overall energy consumption is effectively reduced and the whole traction system has more noticeable energy-saving advantages.



Photo 3 – A permanent magnet traction converter of a Fuxing EMU of CRRC Times Electric

CRRC Times Electric designed the core system equipment for the next generation subway trains such as hybrid silicon carbide based permanent magnet traction system and high frequency auxiliary converter based on grid-connected power supply. Through the implementation of such project, the Company has successfully developed the first hybrid silicon carbide traction converter in China with 30% increase in output capacity and 30% reduction in power loss to meet the application requirements of permanent magnet traction system for 140km/h subway trains. It also successfully established the product platform of high frequency auxiliary converter based on grid-connected power supply with 40% reduction in weight and improvement of rated efficiency from 90% to over 92%, which has been promoted to and applied in Chengdu, Hangzhou and other cities.

# PART III ENVIRONMENTAL PRO

## 2. Social Management and Comprehensive Governance

In 2020, the Company's safety construction work closely focused on its overall objectives of technological research, operation, production and management, closely followed the responsibility culture advocated by the Company as the general guidance, timely formulated measures and systems to effectively prevent and combat the outbreak of the COVID-19 pandemic by making emergency response, continued to promote the construction of multi-level comprehensive management system, adopted problem-oriented approach, and adhered to the key guidelines of "nine nos" set out in the Annual Responsibility Statement with the key objectives therein as the major tasks of the year. With such efforts, the Company recorded no accident or matters required to be reported to higher authorities in respect of internal safety, fire safety and road safety, and fully achieved the annual work objectives with details as follows:

## 2.1 Effectively Preventing and Controlling the Pandemic with Concerted Efforts in Strict Accordance with Relevant Requirements

Since the outbreak of COVID-19, in order to effectively respond to the pandemic, the Company improved its working plan and emergency plan, and developed and adopted a series of positive measures, management systems and handling procedures in strict accordance with the requirements of the government and pandemic prevention authorities at all levels, and carried out health monitoring and access control for incoming and outgoing personnel and vehicles. The Company disinfected the shuttle buses twice at the beginning and end of each day in strict accordance with relevant requirements, fully implemented the real name registration system for passengers and weekly reporting mechanism, summarized relevant information to ensure that passengers sat at designated seats of designated shuttle buses. In the event of large number of passengers on the same bus, additional bus was arranged to split the passengers. The Company also continuously implemented and strengthened the regular inspection and confirmation of health declaration QR code and travel records of its staff to effectively ensure that the pandemic prevention and control were carried out in a standardized, orderly and controllable manner.

## 2.2 Fully Facilitating In-depth Management of Safety Construction in an Orderly Manner According to the Annual Work Plan

- During the year, we completed the drafting and release of the documents of the Company's safety construction work leading group, and improved, revised and released the work plans, assessment rules, management systems and security ledgers to strengthen the foundation and responsibility at source. During the year, we also provided guidance, support and supervision and other work functions and carried out resource coordination to improve the quality of safety construction work management in each unit. At the end of the year, we inspected, verified and assessed the steps and content of the overall safety construction work management system.
- (2) We further strengthened and enhanced the awareness of safety responsibility, and comprehensively improved the working atmosphere and working mechanism of "one position bearing two kinds of responsibility", "joint responsibility between party and government", "everyone shall bear responsibility" and "accountability for failure to perform duties", and completed the signing of the Annual Safety Construction Work Responsibility Statement with subordinate departments and units in accordance with the requirements of internal safety prevention and control, so as to clarify and lower the management risks of daily safety construction work at each level, and further improved the good working situation of "full participation and responsibility for everyone" for safety construction management.
- (3) In accordance with the working principle of "combining prevention and control", we comprehensively strengthened the awareness of responsibility in the prevention area, and strictly implemented the shift duty system. With the concerted efforts of all security personnel, wee successfully completed the Company's tasks of "Safe Spring Festival", "Safe National Day" and "Ceremony of Launch of Chips".

#### **ENVIRONMENTAL PROTECTION PART III**

## 2.3 Strengthening Routine Preventive Management to Ensure Effective Fire Safety Control and Management

- We effectively implemented the fire safety responsibility system. Firstly, we formulated the annual work plan (1) for fire safety and supervised the implementation of such plan. Secondly, we broke down the fire safety responsibilities layer by layer and organized each level to sign the fire safety work responsibility statement. Thirdly, we held regular safety construction and security special meetings to make arrangement for fire safety work in special period and important holidays. Fourthly, we established and improved the fire safety management system to ensure that fire safety management is carried out based on relevant laws and rules. Fifthly, we put efforts in prevention measures based on the actual situation, organized and guided different units to complete emergency drills on the operation of fire equipment and emergency evacuation of personnel throughout the year, and timely replaced and replenished various types of fire equipment. Sixthly, we implemented and strengthened daily supervision and inspection, identified problems and shortcomings and provided operational guidance and assistance to create a good atmosphere for fire safety management.
- (2) We strengthened fire prevention fundamentals and improved fire emergency response management. In order to improve the Company's "firewall" project of all units, solidify the effectiveness of fire safety infrastructure, facilitate the development of "four capabilities" of the Company, strengthen the regular and fundamental works of fire safety management and keep the fire facilities in buildings intact and effective, we (i) further strengthened the Company's fire safety management, continuously improved the basic records of fire safety management so as to have a clear picture in mind and relevant strategy in place to make response; (ii) organized fire equipment and facilities inspection to ensure that the Company's building fire facilities can achieve the expected effectiveness and maintain normal and effective operation; (iii) continuously provided trainings on emergency skills to members of "micro fire station" based on the requirements set out in the instructive documents from the fire departments at provincial and municipal levels, in order to lay foundation for the early rescue, small-size extinguishment, three-minute in position as well as interactive emergency response for early stage fire accidents.
- (3) With the target of improving the Company's "ability in fire safety training and education", we increased our promotion efforts to enhance the safety awareness among our staff. Through the activities of national "Production Safety Month" and "119" fire safety promotion day, we promoted fire safety in various ways including display of pictures and fire accident records and promotion of relevant laws and regulations and safety knowledges. We also conducted company-wide fire safety training for "knowledgeable people", made PPT training materials on fire safety laws and regulations, fire safety management, fire safety basic knowledge and emergency response management and presented such material on the OA network and television wall to cultivate the awareness and consciousness of all staff of the Company to participate in and be responsible for fire safety work. During the year, we engaged Hunan Fire Protection Association, Puxie, Xiecheng and other fire safety training institutes to provide over 20 trainings for all business units of the Company with nearly 2,000 participants. In addition, we also organized 17 fire drills to improve the safety awareness of the Company's staff, enable them to remain calm and make active response to protect themselves, and strengthen the ability of emergency response.

# PART III ENVIRONMENTAL PRO

## 2.4 Strictly Implementing the Control System to Effectively Improve the Standard Management of Road Safety

- Based on the actual situation and the adjustment of the road safety management organization, we timely (1) improved, revised and published the Company's "Road Safety Management Measures" and "Compilation of Road Safety Management System" to guide the in-depth implementation of the Company's road safety work based on relevant system. In addition, we also strictly performed the daily supervision, inspection, evaluation and assessment management functions, and comprehensively promoted the standardized and orderly implementation of road safety management.
- (2) We continuously implemented and strengthened the safety management of employee (student) shuttle bus to effectively identify and eliminate hidden dangers in a timely manner and ensure safety, conducted a total of 11 unscheduled inspections on the condition and operational safety of employee shuttle bus, formed a regular management mechanism, timely reported the items that need rectification and conducted closed-loop follow-up review. During the year, we operated 12 shuttle bus routes, finished 4,932 trips and transported 49,165 person-times with no traffic accident.
- (3) We arranged and instructed road safety coordinators of the Company to maintain road safety and order on a regular basis, effectively regulated the orderly entry and exit of the Company's vehicles to relieve the road safety pressure at the Company's entrance, and assisted the local traffic police department in performing major road safety tasks within the area of the Company for 32 times. In addition, we coordinated with the local traffic police department to organize business skills training for the Company's designated coordinators for 3 times to continuously improve their business skills to better perform the Company's traffic duty.

## 2.5 Improving Emergency Drill Mechanism To Construct and Improve Emergency Response System

- Taking emergency response and drills as the starting point, we organized and facilitated the update and (1) revision of the overall emergency plan of the Company, unified and coordinated the timely update and improvement of each affiliated special plan to ensure that such plans are close to reality and practically improve scientificity, rationality and operability of the plans.
- (2) We continued to strengthen the supervision, guidance and appraisal of the security and emergency response team. With the target of "improving the individual skills of emergency response", we increased our efforts in education and training, and further enhanced the awareness of safety, responsibility, service and emergency response among security and emergency response personnel, thereby continuously maintain and enhance the emergency response ability and emergency response management level of the Company.
- In accordance with the annual work plan and in combination with the work requirements of "Safety Production (3) Month", we organized and completed emergency drills on "Fire Safety Evacuation" and "Maintaining Stability and Emergency Response", on the basis of which, the Company will continue to improve the emergency response system and working mechanism and fully enhance the awareness of emergency personnel and their response skills in order to effectively maintain the safety and stability of the Company.

#### I. OUR STAFF

Employee team is the most valuable asset of the Company and the foundation for corporate development. The Company will employ staff in strict compliance with the laws and will never harm their interests. By closely monitoring the interest of the staff and creating a good environment, the Company contributes to self-achievements and well development of the staff. In 2020, the Company was not subject to any administrative penalties due to non-compliance with any employment and labour standards, nor was there other case of material non-compliance with relevant laws and regulations.

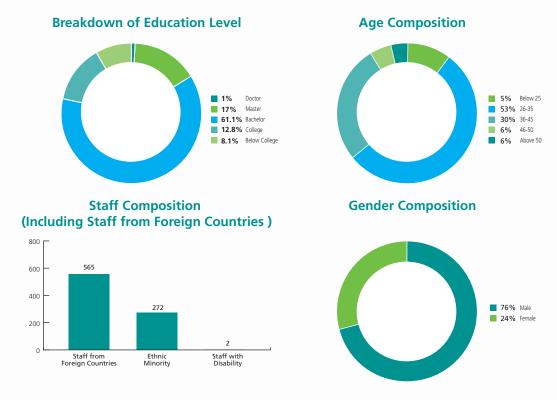
As of 31 December 2020, the Company has executed labor contracts with 8,204 employees in total (including employees of overseas subsidiaries and contract-based employees)

## 1. Employment Diversity

## 1.1 Current Employment Overview

The Company continues to strengthen the optimization and management of human resources and strives to establish a dynamic and competent team with high academic qualifications, young age, advanced techniques and strong professional skills. Currently, the Company has recruited a number of talents possessing core expertise, high-end technique as well as operation and management skills of the industry, which lays a solid foundation for the Company's development.

The Company has a relatively stable workforce. Over the last three years, the employee turnover rate was maintained at below 5%, and was only 3% in 2020.

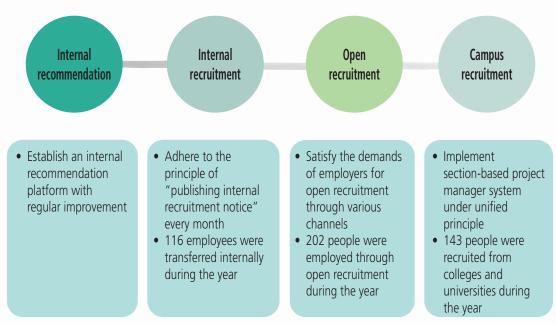




#### 1.2 Staff Recruitment

The Company maintained a sound staff recruitment process in accordance with the requirements under the Labor Law, the Employment Contract Law, the Law on the Protection of Minors, the Law on Protection of Rights and Interests of Women and the relevant laws and regulations, and strictly carried out reviews on the basic information of job applicants. The Company forbade the employment of child labour and forced labour, and adhered to the principle of equality between men and women. The Company does not discriminate against staff on nationality, race, age, gender and marital status.

The Company has established various recruitment channels based on different needs of talents for various positions, including internal recommendation, internal recruitment, open recruitment and campus recruitment. It also introduced innovative measures to conduct recruitment of talents in various aspects such as railway signaling, rail transport digitalization and intelligence, maglev, electric motor system for passenger trains, deep water equipment and semi-conductor and overseas talents, which will provide the Company with talents supporting its major industrial development.



#### 2. Staff Salary and Benefits

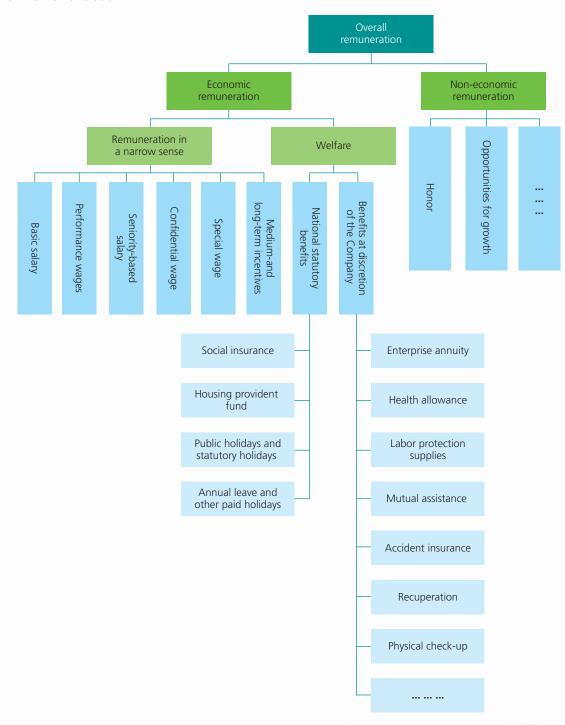
The Company provides remuneration and benefits in accordance with the requirements under national laws and regulations and relevant policies, maintains a comprehensive remuneration and welfare management system, and adheres to the principle of equal pay for equal work and legal remuneration.

The Company adheres to the principle that puts efficiency as top priority while giving consideration to fairness and equality, and establishes a salary system which integrates salary with position, capability and performance.

In accordance with the requirements of national laws, regulations and related policies, the Company provides and maintains statutory benefits for its staff, including basic pension insurance, basic medical insurance (including medical insurance for serious illnesses), work injury insurance, maternity insurance, unemployment insurance and housing provident fund, etc. It also provides the staff with various benefits at the discretion of the Company, including corporate annuities, supplemental medical insurance, lunch subsidies, health allowance, labour protection supplies, physical check-up, recuperation, transportation and communication subsidies, mutual assistance, accident insurance for family planning, etc.

Staff is entitled to day-off on public holidays, wedding leave, funeral leave and maternity leave. In addition, they are entitled to annual leave according to national Regulations on Paid Annual Leave and Implementation Measures for Paid Annual Leave for Corporate Employees.

The Company promotes the concept of overall remuneration. It has extended the concept of remuneration to include welfare and other non-economic rewards such as honours, career development, etc. Accordingly, the staff can have a comprehensive understanding of the returns given by the Company, which enhances the incentive provided to them in the form of remuneration.





#### II. TRAINING AND DEVELOPMENT

## 1. Staff Training and Management

## **Accurate Identification** of Demand

Comprehensive survey and study on training demand conducted by the Company at the beginning of the year

#### **Scientific Plan Formulation**

Training plan formulation on the basis of the data from the training demand survey

## **Various Forms** of Training

Internal training + external training + outsourced training; internal and external lecturers

Based on the extensive training demand survey and study alongside with the analysis on various training needs of strategic development and department operations and employee's career development, the Human Resources Department of the Company actively allocates its resources and arranges training at different levels, in different forms and on different aspects by engaging internal and external lecturers.

The Human Resources Department persists in revising and updating training management and system development, and eliminating obsolete ones by enlarging efforts on monitoring and best practice benchmarking to ensure implementation of training projects at organizational level. Moreover, the Company encourages independent design based on three levels of learning, namely position, competence and career development and integrates resources of internal and external programs in order to help enhance motivation, ability and perseverance of its staff in learning, and rendering the staff training more targeted and directional.

In order to uphold the requirements of the Company's strategic human resources management, realize the common development of employees and organizations, and at the same time standardize and coordinate the training management within the Company, the Company optimized the training system based on the operation mode of the training centre in 2020. At the same time, the Company began to build its training brand and established the brand image of the training centre among employees, customers and external companies.

Talents are the core competitiveness of the Company and play a critical role in corporate development. The Company values the cultivation of talents and development of talent team. Based on the position and development strategy of the Company, we organized and carried out the training for talent pool, training for core frontline staff, profiling and training for ideal positions based on business scenarios, training for international talents and other training activities. By providing different trainings with different tutors, we developed various core talent teams comprising talent reserves, international talents, marketing talents and internal trainers.

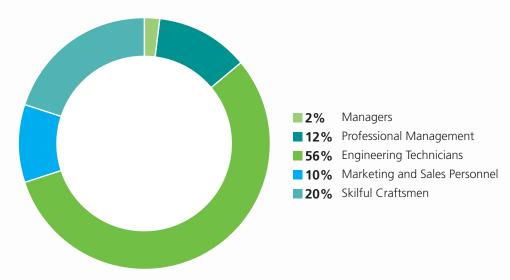
In 2020, the Company's total investment in training was approximately RMB 8 million. The training time per capita was 45 hours, 8,000 person-times received relevant trainings, and over 2,000 training projects were completed. The implementation rate of the Company's annual training plan was 92.26%.

## 2. Staff's Career Development

The Company has developed a "bridge" shape career development system with 5 career development paths for managers, engineering technicians, professional management, marketing and sales personnel and skilful craftsmen. Every staff may realize his/her own career development through the planned career path of the job he/she engages. Currently, staff above C-level accounted for 57.6% of total number of staff.

Currently, the Company has a team of experts possessing core expertise of the industry, operation and management talents as well as core technological talents. The team includes 2 "scientists", 6 "chief technological experts", 29 "senior technological experts", 149 "technological experts", 1 "chief management expert", 5 "senior management experts", 35 "management experts", 1 "senior skilful expert" and 17 "skilful experts" of CRRC.

Composition of career development paths:



Note: The scope of statistics does not include DYNEX and SMD.



#### III. HEALTH AND SAFETY

## 1. Safety Objective and Target Management

The Company adheres to the occupational health and safety policy of "people-oriented, continuous improvement, environmental protection, health and safety".

In 2020, the Company did not experience any accidents involving deaths, serious and minor injuries, as well as new cases of occupational disease. There were also no Class I fire and explosion accidents, material and liable traffic accidents, and other accidents with material effects. The situation of safe production was generally good. The Company did not violate relevant laws and regulations in relation to the provision of a safe working environment and the protection of employees from occupational hazards.

## 2. Overall Planning and Comprehensive Layout for Performance of Production Safety Responsibility

The Company has released the implementation plan of the annual safety focus, annual safety inspection plan and overall planning of the year's safety work, and has clarified the objectives, evaluation criteria, responsible subjects and schedules for annual safety work, working out an early plan and layout for the Company's safe production.

The Company has implemented safety production responsibility at all levels. The general manager, party committee secretary and each business division (department) of the Company signed the "2020 Safety Management Objective Responsibility Letter", which clarified the annual safety assessment indicators and key work assessment indicators for each division. The professional managers of each division have paid a security risk deposit of RMB935,000 to the Company.

The Company pays attention to safety investment. In 2020, the Company has actually invested over RMB30 million for the labour protection fee and safety production cost, which are used for employees' labour protection and safety hazard rectification. The actual safety production cost withdrawn was in compliance with the requirements of relevant national laws and regulations.

The Company regularly organizes quarterly safety committee meetings to summarize the current safety production work, arrange the next stage of work, and study and solve problems in such work.

The overall work planning, the signing of the safety objective responsibility letter, the implementation of the safety risk deposit system, the safety investment and the safety committee meeting mechanism have formed a situation of "joint responsibility between party and government, one position bearing two kinds of responsibility, and joint control and management among various departments", laying a solid foundation for the Company's 2020 annual safety management objectives and indicators.

## 3. Conducting EHS System Optimization to Continuously Improve Environment and Occupational **Health and Safety Management System**

The Company updated the sources of risks and environmental factors in a timely manner and ensured that they were under control. In 2020, the Company identified 49 major sources of risks and 25 important environmental factors, and further improved the controlling measures through engineering, warning, training, management, labour protection and emergency response to strengthen risk management and control.

The Company regulated hazardous waste, carried out special tasks for hazardous waste disposal, formulated special rectification plan for hazardous waste, categorized the hazardous waste of each unit, prepared the list of hazardous waste of the Company, standardized the notice boards and safety warning signs of hazardous waste premises, and ensured that the hazardous waste storage places, packaging bags and containers were properly labelled with signs of hazardous waste.

In 2020, the Company obtained the latest national Environment, Health and Safety (EHS) laws and regulations through government websites, "Eagle Eye" law platform and other channels. In 2020, a total of 7 new laws and regulations, 10 new standards, 10 updated laws and regulations and 2 updated standards were obtained. Through monthly safety meetings and quarterly safety committees, the Company conducted publicity on newly obtained laws and regulations and carried out compliance evaluations to ensure that the Company's production operations comply with relevant national laws and regulations.

Through various approaches such as "Going out and Bringing in", the Company has further strengthened various safety and environmental education and training work, organized various forms of education and training activities to improve staff safety, with over 8,300 person-times of safety trainings at all levels in 2020.

The Company and each unit organized various safety inspections and handled security risks according to the "Five Implementations" principles, namely the implementation of rectification measures, provision of rectification funds, designation of person in charge for rectification, setting of time limit for rectification and implementation of emergency plans. 3,125 security risks were discovered in inspections at all levels, among which 3,101 were rectified, representing a rectification rate of 99.23%.

The Company regularly conducts occupational health checks for employees engaged in positions involving occupational hazards before, during and after their tenure to keep abreast of the health condition of employees and avoid occupational accidents. The Company engaged the occupational disease prevention and control centre to conduct on-site monitoring of occupational hazards. The number of detection sites was 89, and the number of sites meeting the standard was 84, representing a compliance rate of 94.38%.

The Company continuously facilitates improvement proposal work. In 2020, the Company received a total of 508 safety related improvement proposals from the staff through the point-based management system, among which 1 was granted the third prize, 2 were granted the fourth prize, 171 were granted the fifth prize, 227 were granted the sixth prize and 107 were granted the encouragement prize. Through the submission of improvement proposals, safety information has been communicated, exchanged and solved in a timely manner.



#### IV. INTERESTS OF STAFF

## 1. Implementing System of Workers' Congress to Safeguard Employees' Interests

As the basic form of practicing democratic management by enterprises, the Workers' Congress is an organization body for workers to exercise the power of democratic management in accordance with the provisions of laws. Based on the principle of democratic centralism, the Company established its Workers' Congress system in accordance with relevant requirements under the Trade Union Law.

The Council of Labour Union is the operating authority of the Workers' Congress and is responsible for the daily work of the Workers' Congress. It has 149 existing staff representatives elected democratically from cadres (staff) in various departments (units), involving personnel from various fields of the Company, such as management, technology, production and marketing. The Workers' Congress system has strengthened the Company's democratic management effectively, guaranteed the rights of staff to exercise democratic management according to the law, fully utilized staff's motivation and creativity, and therefore effectively enhanced our enterprise quality and economic benefits.

Nearly 100 opinions and suggestions were received at the 2020 Workers' Congress. After collection and processing, they mainly involved issues such as labour management, cost reduction and efficiency increase, livelihood measures, talent flow and cultivation, and industrial development.

The Company organized employee representatives to provide opinions and feedback on 14 administrative documents including "Guidance on Placement and Allocation of Employees in the Process of Reform and Restructuring", and collected a total of over 50 pieces of opinions. For suggestion on performance-based annual salary, over-fulfillment profit incentive and accountability for non-compliant operation and investment proposed by frontline staff, the Company made active communication and coordination to solve such problems.



## 2. Maintaining Mechanism for Communication Between Senior Management and Frontline Staff and Difficulty Assistance Mechanism, and Establishing Mechanism to Create Harmonious **Labour Relationship**

- (1) In order to continuously increase corporate competitiveness and establish a harmonious labour relationship, the Company actively expanded the democratic channel with a view to motivating staff's incentives and creativity as well as effectively exploiting potential resources. In 2020, the Company accepted over 2,000 reasonable proposals from its staff. The adoption rate of reasonable proposals from its staff was 100%.
- (2) The Company set up contact sites for public opinions to serve fundamental staff, with branch presidents as the liaison officers of the units for public opinions. The Company also established fundamental labour union that covered all systems of the Company with targeted communication and liaison stations for the fundamental staff and other employees, so as to gain an in-depth understanding of the staff's concerns and requests.
- (3)The Company implemented a point-based award management system by establishing a point-based award platform, where fundamental staff are awarded for reasonable suggestions, so as to encourage them to actively participate in management innovation and improvement of production quality of the Company. In 2020, the Company received a total of 6,654 improvement proposals.
- (4) In 2020, the Company further promoted the contact point system of the management members, who carried out the management work along with integration of required content and optional content, with an aim to understand the situation, provide guidance and solution at the lower level. Throughout the year, the management members and members of the party committee carried out 61 frontline surveys, 41 cadre/ employee symposiums and 12 functional department exchange meetings and participated in various forms of team activities for 28 times, and truly went deep into the front line. In addition, the Company also listened to the voices of the frontline staff in various ways such as issuing opinion forms, holding seminars and setting up opinion boxes, and summarized and replied to more than 70 opinions and suggestions on various aspects including business development, compensation and benefits, logistics support, employee care and party construction.

# 3. Deeply Integrating the "Three Leading Functions" of Trade Union to Provide Care for

The Company's trade unions put great efforts in establishing mechanisms, strengthening functions and increasing effectiveness with focus on strengthening "three leading functions", constantly innovated the content and form of trade union works, implemented and improved the frontline construction mechanism, promoted staff quality improvement and staff care and support projects, and gathered the wisdom and strength of the staff to facilitate the Company's development, thereby making contribution to serving the general plan of the Company and providing care for employees.

Strengthening "emotional leading function" through precise care activities. We launched the "emotional (1) support through precise care" campaign, continued to carried out the "Six Donations and Three Focuses" activities. During the year, we provided cooling supplies of RMB920,000 and cooling facilities of RMB380,000 to frontline staff under high temperature condition and after-sales service staff who work outdoor regularly, donated RMB171,000 to 81 employees in difficulties, provided student grants of RMB110,000 to support 19 students. We also provided "Three Focuses" solatium of RMB180,000 to employees in difficulties, gave birthday gifts worth of RMB1.16 million to 5,682 employees, and gave rice, edible oil, flour and other gifts of Dragon Boat Festival and Mid-autumn Festival worth of RMB3.52 million to members of the trade union. We arranged body check for 4,621 staff and gynecological examination for 1,161 married female staff on the basis of "regular items + optional items", thereby offering precise care with benefits in kind. In addition, during the pandemic period, we carried out point-to-point and one-stop staff support activities, provided over 9,000 packs of traditional Chinese medicine to three frontline trade unions of production and manufacturing industry in the industrial park and centrally cooked the medicine to facilitate pandemic prevention, and provided over 200 heating pads to two frontline trade unions. We organized 1,071 staff to voluntarily purchase traditional Chinese medicine for pandemic prevention to strengthen psychological and physical resistance, and comforted 24 employees who left their home for quarantine by sending them and their families fruits, snacks and other materials for care and emotional support. In addition, at the time when there was shortage of supplies for pandemic prevention, we actively searched and provided information to frontline staff in respect of the channels to purchase pandemic prevention supplies such as masks and disinfectant, and sent comforts and warmth to the staff to relieve their temporary difficulties.





(2)Carrying out leisure activities to promote "long-term leading function". We have established arts and cultural societies and sports clubs to provide more leisure options for staff and enrich their lives through the operation of clubs and societies, established a cultural and sports talent pool, gathered advantageous resources to create brand activities and "warm living space", and established a two-level management mode for cultural and sports activities. We carried out popular cultural and sports activities for staff and broadened the scope of competition, which attracted more cultural and sports enthusiasts to participate in cultural and sports exercises and competitions and improve their physical quality. We organized and carried out the "polishing the golden card" campaign, held a livestreaming sharing session under the theme of "Internal Discussion on Developing our Home with Responsibility and Joy" in which we selected a sharing team comprised of leaders, chairman, backbone staff and new generation staff from the frontline trade unions to have a face-to-face conversation on their respective special topics, which showed the new thoughts and key practices of cadres and staffs at different levels under the new situation. We established the "Joyful Mind and Joyful Acts" reading club which held the "Shall I Compare Thee to an April Spring" reading and sharing activity to praise the beauty of April full of "love, hope and responsibility" by reading online through the WeChat platform and guide the female employees to play a unique role in maintaining the stability of family and society by reading. More than 1,600 staff from the frontline trade unions participated in the online "Quiz on Pandemic Prevention Knowledge" activity and shared 316 pictures of food and 88 pieces of pandemic prevention stories and holiday wishes, fully demonstrating the staff's love for life and delicate crafting skills during their leisure time and enabling them to actively tackle new challenges with a healthy mindset. We carried out the "Safe Return to Work" campaign and received over 30 "Micro Class" photos, over 50 family videos of pandemic prevention and control and nearly 40 entries of the "One Bite" competition before returning to work. We produced short and lively 2-minute video cartoons on "psychological adjustment during pandemic period" which were distributed to and well received by frontline staff; organized the blissful "Micro Class" online training courses in which the "Micro Class" teacher taught a series of courses on the Tik Tok platform to share knowledge with the staff and their families on pandemic control and prevention, precautions for safe return to work and education of children at home, thereby building a solid psychological defense line. We carried out various "Micro Club" online activities and organized the yoga club and traditional culture club to hold the "Fighting the Pandemic with Concerted Efforts" staff care livestreaming activities to lead the staff and their families to practice yoga and learn to draw online in order to improve their physical and mental health and guide the staff to maintain a positive attitude and behavior.





Promoting the "growth leading function" by creating "New Tiny Home". We fully launched the "New Tiny (3)Home" campaign to promote harmony and facilitate development. With the "New Features" of the New Tiny Home, and by strengthening the promotion of guiding opinions, backbone staff training and classification quidance, we unified our ideas, standardized relevant systems, provided organizational support and showcased our characteristics in specific occasions, and strived to fully achieve "cross-form co-construction, cross-unit co-construction, business co-construction and customer co-construction" under the theme of "building our home with responsibility, joy and practical actions". We launched the construction of a total of 36 "New Tiny Homes" with an investment of nearly RMB900,000, of which 16 New Tiny Homes were completed with an investment of nearly RMB260,000. In particular, the "Home of Incense" representing technology inheritance, the "Home of Learning" representing production and manufacturing, and the "Home of Four Oceans" representing after-sales services were highly recognized by the trade union of CRRC. For staff who go on long-term business trips or are stationed in subsidiaries, we established the "Home of Heart" and "Home of Australia" for overseas business divisions to enhance the sense of belonging of overseas staff. Based on the innovative "new mode" of online home building and the current requirements of pandemic prevention and control and production and operation mode, we explored a new way of online home building and transferred part of the trade union works to online operation through the internet. By establishing the "CRRC Times Electric Micro Staff Club" livestreaming platform, we organized yoga, traditional culture and reading clubs to hold online livestreaming sessions and utilized online platform to live stream the major annual cultural and sports activities and basketball games to enable the staff to watch such activities and games and leave their cheering comments.



#### PART V **SOCIAL HARMONY**

#### I. SUPPLY CHAIN MANAGEMENT

## 1. Policies for Managing Environmental and Social Risks in Supply Chain

To achieve the target of "high quality, low cost and quick response", CRRC Times Electric implements supply chain management based on current situation and conditions of the supply chain in the industry, formulates the supply chain management policy of "reliable performance, optimal cost and flexible supply", and develops the work style of fast response and enhanced execution to cope with the social supply chain risks and challenges, thereby rendering the supply chain a pillar of business development.

### 2. Key Performance Indicators

Taking the Company's development strategy as the development orientation, the strategic layout of the Company's key business segments has corresponded to the external supply chain resource management, focusing on the improvement of the manufacturing capabilities of the external suppliers. With the QCD indicator as the traction, for suppliers such as Riwang, Huaxin, Electromechanical and Wiring, the Company has set up project teams and adopted planned support management through training, exchanges, seminars, reports, and management forums. The Company has fully helped suppliers understand the needs and communicated with them to form a mutually beneficial and win-win ecosystem. The Company has the following main ideas in respect of support and assistance.

## 2.1 Number of Suppliers by Region

In 2020, CRRC Times Electric had a total of 642 key suppliers and their distribution by type and region is as follows:

Type of supplier	North America	Europe	Asia (excluding China)	China (including enterprises registered in mainland China, Hong Kong, Macau and Taiwan)	Total
Agents	/	/	/	129	129
Traders	/	1	1	18	20
Manufacturers	1	14	1	477	493
Total	1	15	2	624	642

The geographical distribution of suppliers is based on the registered location of suppliers, and its dimensions have not changed from the past.

## PART V SOCIAL HARMONY



## 2.2 Practices Relating to Engaging Suppliers, Number of Suppliers Where the Practices Are Being Implemented, and How They Are Implemented and Monitored

### 1. Code of Conduct for Suppliers

CRRC Times Electric will sign the Supplier Code of Conduct Agreement with suppliers, which mainly sets out "compliance with laws and regulations, prohibition of forced labor, prohibition of child labor, respect for the basic human rights of staff, wages and benefits that meet the local basic living requirements, requirements related to corruption and bribery, requirements for integrity and self-discipline, requirements for product and service quality, and requirements for supplier visits".

## 2. Supply Chain System

CRRC Times Electric has established a supplier relationship management information system with detailed information system operation manuals. The functions of the information system cover the core business processes in procurement such as supplier life cycle management, source finding management, contract management, order management, delivery management, quality management and invoicing management. Through the information system, suppliers can be informed of the relevant management requirements and procurement needs of CRRC Times Electric, and can carry out procurement business activities such as online quotation, bidding and business process collaboration, which reduce transaction process costs for suppliers.

### 3. Supplier Management Strategy

CRRC Times Electric implements category management and will develop an annual category strategy, which includes supplier management strategy (supplier integration strategy, supply resource development strategy, performance result application strategy) and will be reviewed and published by the procurement committee of CRRC Times Electric and implemented as the action plan of category management.

#### 4. Supplier Admission Process

CRRC Times Electric has developed a special "New Supplier Admission Process", the main procedures of which are: online registration and supplementing enterprise qualification information, developing new supplier development plan, signing of cooperation agreements (Confidentiality Agreement, Quality Assurance Agreement, PCN Agreement, Supplier Code of Conduct, Material Framework Procurement Contract Agreement, Supplier Admission Cooperation Response Agreement), implementing on-site supplier certification (on-site certification of suppliers in technical, quality and commercial aspects), supplier rectification, approval of suppliers for trial production, approval of temporary suppliers and approval of qualified suppliers.

#### 5. Supplier Training

CRRC Times Electric will organize regular supplier trainings in the form of on-site training and online remote training.

## 6. Supplier Performance Evaluation

CRRC Times Electric will conduct supplier performance evaluation on a regular basis which are mainly carried out in four aspects, including quality, cost, delivery and service. Each aspect is assigned with different weights to assess the final performance score, which is divided into four status of excellent, good, average and unqualified based on the performance score. Unqualified suppliers will be eliminated and average suppliers need to make special improvement plans. Meanwhile, the performance results will be released to suppliers through the supplier management platform, and we will communicate with suppliers on their performance results, propose our performance expectations to suppliers, and jointly formulate improvement measures with suppliers.

#### **SOCIAL HARMONY** PART V

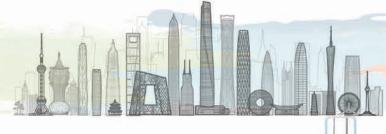
## 7. New Suppliers in 2020

In 2020, CRRC Times Electric developed new relationship with a total of 102 suppliers, including 83 manufacturers and 19 agents, signed with all suppliers the Confidentiality Agreement, Quality Assurance Agreement, PCN Agreement, Supplier Code of Conduct, Material Framework Procurement Contract Agreement, Supplier Admission Cooperation Response Agreement and other agreements related to admission, and completed the on-site certification for 83 new suppliers.

## 2.3 Practices Used to Identify Environmental and Social Risks Along the Supply Chain, and How They Are Implemented and Monitored

- Supply development engineering and procurement managers collect supply risks from suppliers on a quarterly 1. basis, and category managers and their material teams comprehensively analyze the specific impact of the risks reported by the suppliers on the Company and develop countermeasures, which are considered and approved based on the scope involved in the countermeasures with the deputy general manager as the highest approving personnel. For unexpected risk events such as earthquake and tsunami, according to the risk control procedures, we determine the scope of impact of the event, locate the specific impact on the Company, and develop a response plan. For risks collected regularly, preventive measures are generally taken, such as increasing the procurement of materials that may subsequently be in shortage based on relevant strategy. For unexpected events, remedial measures are mainly taken, such as procuring from alternative suppliers and finding sources in the spot market. For risks of long-term concern, we mainly take preventive measures, and for emergencies, we mainly take mitigation and remedial measures.
- 2. The Company has set up an internal disciplinary inspection department and is also subject to external audits every year. For problems identified, we will require relevant departments to formulate improvement measures and follow up on the specific improvements.
- 3. When introducing a new supplier, the supplier must meet the Company's environmental requirements such as the EHS management system.
- 4. We are mainly subject to three types of risks: supply market fluctuation including raw material shortage, price increase, demand surge and extended turnaround time of delivery; unstable political situations such as trade frictions and trade sanctions; and natural disasters such as earthquake, tsunami and pandemic.
- 5. We will assess the performance of suppliers in four aspects including Q (quality), C (cost), D (delivery) and S (service) and based on major indicators such as inventory pass rate, number of quality issues in a year, price reduction rate and timely delivery rate.

## PART V SOCIAL HARMONY



## 2.4 Practices Used to Promote Environmentally Preferable Products and Services When Selecting Suppliers, and How They Are Implemented and Monitored

- The environmental protection products of CRRC Times Electric are defined and implemented in accordance 1. with the CRRC standard of "Q/CRRC-J26 Prohibited and Restricted Substances in Rail Transit Equipment Products", which is prepared with reference to relevant EU standards on hazardous substance requirements such as RoHS/REACH/POPs;
- 2. We have designated staff responsible for management and control of environmental matters related to material who will monitor the environmental performance of products in accordance with Q/CRRC-J26 and other relevant rules and reports the results to the project manager;
- 3. In the supplier inspection process before the admission of suppliers, the Company will conduct audit on the environmental, health and safety (EHS) capabilities of suppliers, review the emission of harmful substances to the environment in their products and production processes, and urge suppliers to use environmentally friendly raw materials and apply environmentally friendly production techniques;
- 4. In the material FAI stage, we will ask the suppliers to provide third-party test reports on volatile hazardous substances such as formaldehyde and TVOC and prohibited substances such as lead, mercury, cadmium and bromine;
- 5. Packaging recycling: such as the recycled iron packaging for material traction motors, the products we sold to customers (including traction converter, charger and power box) use recycled iron or plastic packaging.

#### **SOCIAL HARMONY** PART V

#### **II. PUBLIC CHARITY**

In 2020, the Company actively launched different kinds of activities under the themes of social responsibility and dedication, including social assistance, student support and environmental practice, in order to contribute to the society with gratitude and actively assume the Company's social responsibility.

## 1. Continuously Establishing the "Dandelion" Education Supporting Platform for a Variety of **Education Subsidies**

The Company relied on the Yuexing Volunteer Association to establish the charitable "Dandelion" platform for education sponsorship. In order to continue to support the growth of students in poverty, promote the volunteering spirit and fulfill social responsibility, we carried out the "Guarding Dreams through Home Refurbishment" Dandelion education supporting activity during the year, visited the families of students in poverty in Dazhou Elementary School in You County, launched fundraising activity for home refurbishment and charity sales within the Company, and completed the refurbishment of study rooms of the students in poverty. In particular, we raised a total of RMB17,759.24 from the fundraising activity targeting all staff of the Company and received RMB2,736.5 from the charity sales. "Dandelion" education supporting activities will continue in the future to gather love and care and support the students in poverty to realize their dreams, and guide the Company's staff to fulfill their social responsibility and establish a good corporate image.



## PART V SOCIAL HARMONY



## 2. Carrying Out Voluntary Blood Donation Activity of "Fighting the Pandemic and Cheering for Life"

The Company carried out the voluntary blood donation activity of "Fighting the Pandemic and Cheering for Life" through the Yuexing Volunteer Association. Since the outbreak of the COVID-19 pandemic, Zhuzhou experienced serious difficulties in blood collection and supply and faced great challenges in ensuring blood supply. As an emergency blood donation enterprise in Zhuzhou, the Company carried out the voluntary blood donation activity of "Fighting the Pandemic and Cheering for Life" through the Yuexing Volunteer Association with approval from the pandemic prevention and control leading group of the Company. 70 staff participated in the activity voluntarily, and 53 staff successfully donated a total of 19,100 ml of blood. The activity demonstrated the Company's young staff's commitment to social responsibility and their spirit of contributing to the society with practical actions.



#### 3. Carrying Out Public Welfare Activities

The Company cooperated with the Zhuzhou Evening News Volunteer Association to carry out the caring activity of "Strive to be the Pioneer of Young Generation to Honor the Lei Feng Spirit". In the activity, we gave groceries including rice, edible oil, noodle and milk and certain number of face masks to 32 senior citizens living alone in 18 communities in Zhuzhou to help the elderly solve their practical problems, which reflected the tradition Chinese value of "respecting and honoring the elderly" and showed the dedication and commitment of the young staff of the Company in the new era.



#### **SOCIAL HARMONY** PART V

The youth volunteer team of Baoji Times, a subsidiary of the Company, helped the elderly in nearby community to clean and sanitize the community environment and disinfect public facilities. In addition, the youth volunteers communicated and exchanged ideas with the elderly of no family in the community, asked them about their needs and help, and offered help within their capacity, which strengthened the ideological and moral construction of the young staff, integrated the Lei Feng spirit into promotion of pandemic prevention and control and volunteer service work, and enriched the spiritual world of the young staff of the Company with enhanced cohesiveness.



Ningbo Times, a subsidiary of the Company, cooperated with various community activity rooms to carry out book donation activity and received a total of 132 books from 30 staff. Through this public welfare activity, we revitalized the used books to facilitate knowledge sharing in the community, and advocated the young generation to study Lei Feng's "nail spirit" of "dedicating to work, actively learning skills, diligently performing duties and enhancing personal quality" and comprehend the "positive" mindset and pursuit of "righteous" value in Lei Feng's spirit.



## PART V SOCIAL HARMONY

The Company identified five elderly in extreme poverty living alone in the Xinmin community as the supporting targets. We carried out fundraising activity and invited caring families and volunteers to visit the homes of the elderly in extreme poverty, donate goods and send comforting messages. In the end, we received donations from 12 caring staff, and the donations included rice, noodle, oil, salt, toilet paper, laundry detergent, masks and other groceries and supplies for pandemic prevention, which showed the altruistic spirit of young generation who care about public welfare and are willing to help others, and further promoted Lei Feng's spirit and fulfilled the social responsibility of the enterprise and the young generation.

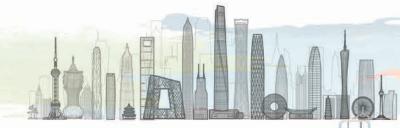


#### **FUTURE OUTLOOK** PART VI

In 2021, we will capture development opportunities and strive to expand the market, thereby striving for breakthrough in terms of operation scale and efficiency.

- 1. Focus on innovation of key technology and facilitate key technology breakthrough. The Company will increase its efforts in the development of fundamental capabilities, upgrade the resources and abilities in technological research and testing, and establish an intelligent and integrative "big system".
- 2. Strengthen strategic guidance and plan implementation. The Company will develop its core business in railway, urban rail and railway engineering industries to consolidate its industry position; make breakthrough in incremental industries including signal and communication, semi-conductor, industrial converter, electric motor system for passenger vehicles and sensor to capture development opportunities; and develop marine engineering equipment and intelligent businesses, make breakthrough in key overseas markets, and expand in maintenance service market, thereby capturing market demand and creating growth drivers.
- 3. Accelerate reform and create new development momentum in the value chain. The Company will release its capacity, enhance the input-output ratio of the capital chain, put forward innovative ideas of capital operation and stimulate human resources efficiency. It will also enhance the operation efficiency, facilitate flexible supply chain management, improve the management of external suppliers and strengthen internal lean operation.
- 4. Optimize the quantitative and precise management system and increase the "depth", "breadth" and "compatibility" of refined management. The Company will strengthen organizational protection of corporate governance, continuously improve corporate governance and focus on prevention and control of major risks.





## INDEX OF THE ENVIRONMENTAL, SOCIAL AND GOVERNANCE REPORTING GUIDE

		Environmental, Social and Governance Reporting Guide	Subject Areas
		General disclosure: relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste:	P43-44
		<ul><li>(a) the policies; and</li><li>(b) compliance with relevant laws and regulations that have a significant impact on the issuer</li></ul>	143 44
		A1.1 The types of emissions and respective emissions data	P43
	A1 Emissions	A1.2 Greenhouse gas emissions in total (in tons) and, where appropriate, intensity (e.g. per unit of production volume, per facility)	P43
		A1.3 Total hazardous waste produced (in tons) and, where appropriate, intensity (e.g. per unit of production volume, per facility)	P43
		A1.4 Total non-hazardous waste produced (in tons) and, where appropriate, intensity (e.g. per unit of production volume, per facility)	Undisclosed
		A1.5 Description of measures to mitigate emissions and results achieved	P43
Environmental		A1.6 Description of how hazardous and non-hazardous wastes are handled, reduction initiatives and results achieved	P43-44
	A2 Use of Resources	General disclosure: Policies on the efficient use of resources, including energy, water and other raw materials	P45
		A2.1 Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility)	P45
		A2.2 Water consumption in total and intensity (e.g. per unit of production volume, per facility)	P45
		A2.3 Description of energy use efficiency initiatives and results achieved	P45-48
		A2.4 Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency initiatives and results achieved	P45-48
		A2.5 Total packaging material used for finished products (in tons) and, if applicable, with reference to per unit produced	Not applicable
	A3 The Environment and Natural Resources	General disclosure: Policies on minimising the issuer's significant impact on the environment and natural resources	P45-49
		A3.1 Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them	P45-49

# PART VII APPENDIX

			Environmental, Social and Governance Reporting Guide	Subject Areas
	Empl	loyment and Labour Pra	octices	
	B1	Employment	General disclosure: relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare:  (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer	P53-55,57
			B1.1 Total workforce by gender, employment type, age group and geographical region	P53
			B1.2 Employee turnover rate by gender, age group and geographical region	Undisclosed
	B2	Health and Safety	General disclosure: relating to providing a safe working environment and protecting employees from occupational hazards:	
			<ul><li>(a) the policies; and</li><li>(b) compliance with relevant laws and regulations that have a significant impact on the issuer</li></ul>	P58-59
C ' I			B2.1 Number and rate of work-related fatalities	P58
Social			B2.2 Lost days due to work injury	Undisclosed
			B2.3 Description of occupational health and safety measures adopted, how they are implemented and monitored	P58-59
	B3 Developm Training		General disclosure: Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities	P56
		Development and Training	B3.1 The percentage of employees trained by gender and employee category (e.g. senior management, middle management)	Undisclosed
			B3.2 The average training hours completed per employee by gender and employee category	P56
	B4 Labor Standard		General disclosure: relating to preventing child and forced labour:	
		Labor Standards	(a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer	P53-54
	7	b4 Edbor Standards	B4.1 Description of measures to review employment practices to avoid child and forced labour	P54
			B4.2 Description of steps taken to eliminate such practices when discovered	Undisclosed

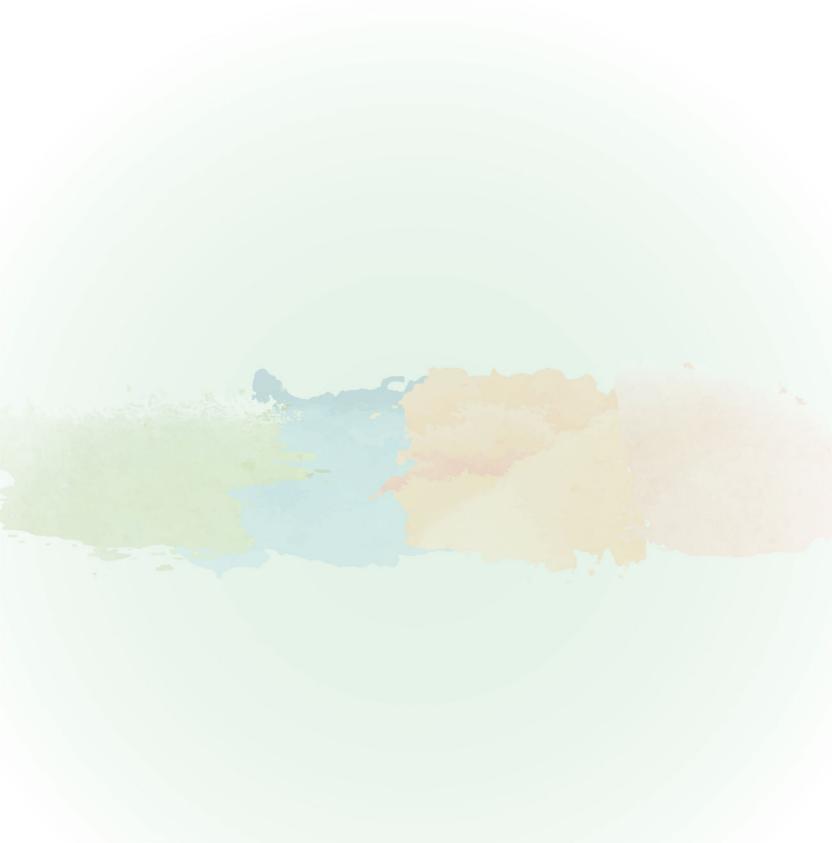
# PART VII APPENDIX



			Environmental, Social and Governance Reporting Guide	Subject Areas
	Oper	ating Practices		
		Supply Chain Management	General disclosure: Policies on managing environmental and social risks of the supply chain	P65-68
	B5		B5.1 Number of suppliers by geographical region	P65
			B5.2 Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, how they are implemented and monitored	P65-68
			General disclosure: relating to health and safety, advertising, labelling and privacy matters relating to products and services provided and methods of redress:	P27-42
			<ul><li>(a) the policies; and</li><li>(b) compliance with relevant laws and regulations that have a significant influence on the issuer</li></ul>	
		Responsibility	B6.1 Percentage of total products sold or shipped subject to recalls for safety and health reasons	Not applicable
Social			B6.2 Number of products and service related complaints received and how they are dealt with	P38
			B6.3 Number of products and service related complaints received and how they are dealt with	P23-27
			B6.4 Description of quality assurance process and recall procedures	P27-42
			B6.5 Description of quality assurance process and recall procedures	Undisclosed
	B7 Anti-corrup	(a) (b)	General disclosure: relating to bribery, extortion, fraud and money laundering:	
			(a) the policies; and (b) compliance with relevant laws and regulations that have a significant influence on the issuer	P16
		, and corruption	B7.1 Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases	P16
			B7.2 Description of preventive measures and whistle-blowing procedures, how they are implemented and monitored	P16

# PART VII APPENDIX

		Environmental, Social and Governance Reporting Guide	Subject Areas				
Social	Community	Community					
	B8 Community	General disclosure: Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests	P69-72				
	Investment	B8.1 Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport)	P69-72				
		B8.2 Resources contributed (e.g. money or time) to the focus area	P69-72				





株洲中车时代电气股份有限公司 ZHUZHOU CRRC TIMES ELECTRIC CO., LTD.