

中国铁路通信信号股份有限公司
China Railway Signal & Communication Co., LTD.

2019

环境、社会及管治报告
Environmental, Social and Governance Report

关于本报告

本报告是中国铁路通信信号股份有限公司发布的第七份社会责任报告暨环境、社会及管治报告，本着客观全面、规范透明的原则，详细阐述2019年度公司环境、社会及管治工作的管理理念、亮点实践及年度成效。本报告包括中、英两个版本，内容上如有细微出入，请以中文版为准。

报告范围：

除特殊说明外，本报告涵盖中国铁路通信信号股份有限公司总部、分支机构及附属公司，与《中国铁路通信信号股份有限公司2019年年度报告》对外披露范围保持一致。

时间范围为2019年1月1日至2019年12月31日，部分内容超出此范围。

参考标准：

全球报告倡议组织《可持续发展报告指南（GRI Standard）》
国务院国资委《关于中央企业履行社会责任的指导意见》
中国社会科学院《中国企业社会责任报告指南(CASS-CSR4.0)》
香港联合交易所主板上市规则附录二十七《环境、社会及管治指引》
上海证券交易所《上市公司环境信息披露指引》

发布周期：

本报告为年度报告，于每年3-4月发布。

称谓说明：

为便于表达，本报告中提及的“中国通号”“公司”“我们”等均指代“中国铁路通信信号股份有限公司”。

数据说明：

本报告关键财务绩效摘自《中国铁路通信信号股份有限公司2019年年度报告》，其他数据来自公司内部管理体系。

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About This Report

This report is the seventh Environmental, Social and Governance Report of China Railway Signal & Communication Co., Ltd. Based on objective, comprehensive, regulative and transparent principles, this Report expounds management ideas, key practices and annual achievements for environmental, social and governance work of China Railway Signal & Communication Co., Ltd. in 2019. This Report is released in Chinese and English versions. Should there be any minor content difference, the Chinese version prevails.

Scope of the Report

Unless otherwise stated, this Report includes China Railway Signal & Communication Co., Ltd.'s headquarters, all its branches and subsidiaries, with the same scope of 2019 CSRC Annual Report.

The reporting period is from January 1, 2019 to December 31, 2019. Some contents are sourced from historical data.

Reference Standards

The Sustainability Reporting Guidelines issued by the Global Reporting Initiative (GRI)
The Guidelines on Corporate Social Responsibility of State-owned Key Companies issued by State-owned Assets Supervision and Administration Commission (SASAC) of the State Council
The Chinese Corporate Social Responsibility (CSR) Report Preparation Guide (CASS-CSR4.0) by the Chinese Academy of Social Sciences

Appendix 27 Environmental, Social and Governance Reporting Guide of the Rules Governing the Listing of Securities on HKEX (Listing Rules)

The Guidelines on Environmental Information Disclosure of Listed Companies issued by Shanghai Stock Exchange

Reporting Cycle

This is an annual report released in March or April.

Reporting Specification

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

Data Specification

All key financial performance data disclosed in this Report are collected from *China Railway Signal & Communication Co., Ltd.'s 2019 Annual Report*, and other data are mainly sourced from internal management systems of the Group.

Reliability Guarantee

The Board of Directors of China Railway Signal & Communication Co., Ltd. promises to supervise the contents of this Report and makes sure that it is free of false records, misleading statements or material omissions.

Access to the Report

You may browse or download the Report at the official website of CRSC (Investors Relations - Regular Reports) or at the website of Hong Kong Exchanges.

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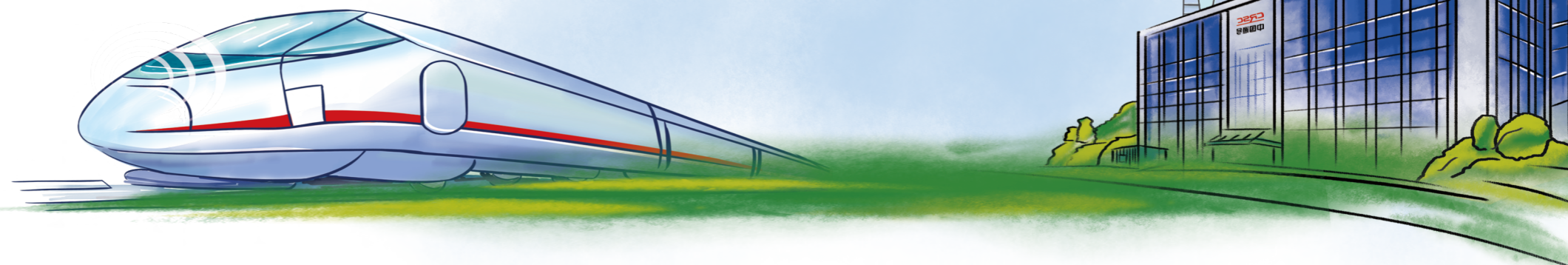
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2019年 中国通号十大新闻 Memorabilia of 2019

01

参与建设开通的京张高铁获得 习近平总书记重要指示批示

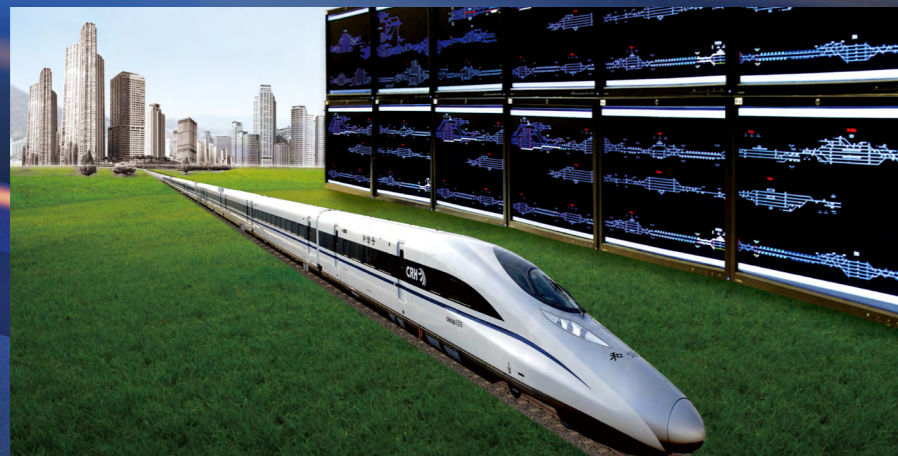
Beijing-Zhangjiakou High-speed Railway, to which CRSC contributed, won important instructions from General Secretary Xi Jinping

北京至张家口高速铁路12月30日开通运营，中共中央总书记、国家主席、中央军委主席习近平作出重要指示。他指出，1909年，京张铁路建成；2019年，京张高铁通车。从自主设计修建零的突破到世界先进水平，从时速35公里到350公里，京张线见证了中国铁路的发展，也见证了中国综合国力的飞跃。

京张高铁是由我国自主设计建造，是世界上最先进的时速350公里的智能高速铁路，中国通号负责通信、信号等工程的建筑安装、设备采购、系统集成，并配合联调联试、试运行等工作，为“智能京张”装备大脑和神经中枢——通信信号列车运行控制系统。

Beijing-Zhangjiakou High-speed Railway was put into operation on December 30, and General Secretary, President and Chairman of the Central Military Commission Xi Jinping made important instructions. He pointed out that, Beijing-Zhangjiakou Railway was built in 1909, and Beijing-Zhangjiakou High-speed Railway was open to traffic in 2019. From zero breakthrough of independent design and construction to the world's most advanced level, from 35 km/hour to 350 km/hour, Beijing-Zhangjiakou Line witnessed the development of Chinese railways, and the great leap of China's comprehensive national strength.

Beijing-Zhangjiakou High-speed Railway is the world's most advanced intelligent high-speed railway with a speed of 350 km/hour independently designed and built by China. CRSC is responsible for the construction, installation, equipment purchase, system integration, testing, commissioning and trial operation of communication signal engineering for this Railway, equipping it with a brain and nerve center, communication-based train control system.



02

国务院国资委党委书记、主任郝 鹏到中国通号调研

SASAC Party Secretary and Director Hao Peng conducted a survey in CRSC

5月30日，国资委党委书记、主任郝鹏到中国通号调研并和干部职工座谈，强调要以习近平新时代中国特色社会主义思想为指导，不折不扣落实党中央重大决策部署，坚持以人民为中心的发展思想，保持战略定力，做好自己的事情，强化使命担当，强化自主创新，将轨道交通核心技术牢牢掌握在自己手中，持续提升核心竞争力，不断增强应对挑战、抵御风险能力，为我国铁路建设和运输安全提供坚强保障，为高质量共建“一带一路”和高铁“走出去”强化核心技术支撑。

On May 30, SASAC Party Secretary and Director Hao Peng conducted a survey in CRSC and had a discussion with the cadres. He emphasized that under the guidance of Xi Jinping's thought on the socialism with Chinese characteristics in the new era, we should resolutely implement major decisions and deployments made by central government, adhere to the people-centered development thought, keep to our strategic goals, do our job well, shoulder our responsibilities, enhance independent innovations, firmly master core technologies of rail transit, constantly improve core competitiveness and enhance our capabilities of rising to the challenges and withstanding risks, thus providing solid guarantee for railway construction and safe transport in China, and offering core technical support for high-quality construction of "Belt and Road" and "Going Globally" of High-speed Railway.



03

连续四年获得央企经营业绩考核A级

CRSC was rated Level A in business performance assessment of heads of central government-led enterprises for four consecutive years

7月26日，国务院国资委在京召开中央企业负责人研讨会，继续获得2015年、2016年、2017年度经营业绩和2013-2015年度任期考核A级评级后，中国通号凭借优秀的经营业绩和稳健的发展势头超额完成各项考核指标，获得2018年度和2016-2018年任期考核“双A”评级，被评选为2016-2018年任期“业绩优秀企业”。

On July 26, SASAC held a seminar on heads of central government-led enterprises in Beijing. After successively obtaining level-A ratings for 2015, 2016 and 2017 business performance assessment and 2013-2015 term assessment, based on its excellent business performance, steady development momentum and overperformed assessment indicators, CRSC won "Double A" rating for the 2018 and 2016-2018 term assessments, and was listed among "Outstanding Performance Enterprises" for the 2016-2018 term.



04

成功首批登陆上交所科创板

CRSC was successfully listed on STAR Market of Shanghai Stock Exchange as one of the first ones

2019年，中国通号坚决贯彻落实习近平总书记关于在上海证券交易所设立科创板并试点注册制的决定，创造了145天科创板上市的中国通号速度。7月22日，中国通号成功在A股科创板首批挂牌上市，股票简称“中国通号”，股票代码“688009”，成为登陆科创板的首家大型央企和A+H股的科创板上市公司，募集资金105亿元，居科创板之首。

In 2019, CRSC resolutely implemented General Secretary Xi Jinping's decision on the establishment of STAR Market in SSE and the trial operation of registration system, making a CRSC speed of going listed within 145 days. On July 22, CRSC was successfully listed on the A-share STAR Market of Shanghai Stock Exchange (stock name: CRSC; stock code: 688009), becoming the first large-scale state-owned enterprise with A+H stock on STAR Market. It raised a capital of 10.5 RMB yuan, ranking the top among all listed companies on STAR Market.



05

国资委党委调整中国通号领导班子

SASAC Party Committee made some adjustments on CRSC leaders

11月19日，中国通号集团在总部召开干部大会，国务院国资委企干二局局长姜维亮宣布国资委党委关于调整中国通号领导班子的决定，任命徐宗祥任中国铁路通信信号集团有限公司党委副书记、董事，提名为中国铁路通信信号集团有限公司总经理人选。

12月4日，中国通号股份公司董事会审议通过提名徐宗祥为公司执行董事候选人，并委任徐宗祥为董事会战略与投资委员会成员及质量安全委员会主席、总裁。

On November 19, CRSC Group convened a cadre meeting at its headquarters, and the Director Jiang Weiliang of Enterprise Leaders Management Bureau of SASAC announced SASAC's decision on adjusting CRSC leaders: Xu Zongxiang was appointed as Deputy Party Secretary and Director of CRSC Group and nominated as the general manager candidate for CRSC Group.

On December 4, CRSC's Board Meeting agreed to nominate Xu Zongxiang as the general manager candidate for CRSC and appointed him as a member of Strategy and Investment Committee under the Board of Directors and the Chairman and President of Quality and Safety Committee.



06

全产业链助力国家轨道交通建设

CRSC contributed to the construction of national rail transport through full industrial chain

2019年，中国通号以设计研发、装备制造和工程服务“三位一体”完整产业链持续助力国家轨道交通发展。铁路领域，助力开通鲁南、商合杭、郑万、徐淮盐、黔张常等12条高铁，开通里程再创历史新高；成功中标安九、连徐、赣深等重大高铁建设项目；地铁CBTC累计开通总里程突破1,700公里，居全国首位。

In 2019, CRSC continued to facilitate national rail transport development with a trinity-based full industrial chain, namely, design and research, equipment manufacturing and engineering service. CRSC engaged in the construction of 12 high-speed railways including Tizhao-Lankao, Shangqiu-Hefei-Hangzhou, Zhengzhou-Chongqing, Xuzhou-Yancheng and Qianjiang-Changde, making a new record; it also successfully won the bids of major high-speed railway construction projects like Anqing-Jiujiang, Lianyungang-Xuzhou and Ganzhou-Shenzhen; in terms of metro CBTC, the total mileage reached 1,700km, ranking the top all over the country.



07

科技创新活力持续增强

CRSC's scientific and technological innovation vigor was constantly enhanced

坚决贯彻落实习近平总书记关于加快科技创新的重要指示批示精神，以通号科技保障全国13.9万公里铁路、3.5万公里高铁和全国40多个城市的100余条地铁安全高效运营。2家企业成功入选国家企业技术中心，1项成果荣获2019年度中国专利奖银奖，12项科技成果喜获2019年度中国铁道学会科学技术奖，20余项科技成果获得省部级表彰。全年新申请专利888项，其中发明专利447项，企业累计有效授权专利达1,901项。

CRSC resolutely implemented General Secretary Xi Jinping's important instructions on accelerating scientific and technological innovations, and guaranteed safe and efficient operations of 139,000 km railway, 35,000 km high-speed railway and more than 100 metros in over 40 cities in China. 2 subsidiaries of CRSC were successfully rated as national enterprise technology centers, 1 scientific achievements won the Silver Award of 2019 China Patent Award, 12 scientific achievements won 2019 Science and Technology Award of China Railway Society, more than 20 scientific achievements won awards from different provinces. Besides, CRSC applied 888 new patents in 2019 (including 447 invention patent). Its valid licensed patents amounted to 1,901.



08

建成中国首个海外高铁列控核心技术实验室 推进海外工程建设

CRSC completed China's first overseas core technology laboratory for high-speed railway control, promoting construction of overseas projects

6月25日，中国通号为欧洲匈塞铁路量身打造的匈塞铁路ETCS-2（欧洲列车运行控制系统）系统实验室在塞尔维亚首都贝尔格莱德落成，成为中国企业在海外建成的首个高铁列车运行控制系统实验室。

On June 25, the European Train Operation Control System (ETCS-2) laboratory tailored by CRSC for the European Hungary-Serbia Railway was completed in Belgrade, the Serbian capital, which became the first high-speed railway train operation and control system laboratory built overseas by a Chinese company.



7月29日，中国通号成功完成肯尼亚蒙内铁路和内马铁路交汇点内罗毕南站行车指挥控制系统换装工程，实现了肯尼亚首个铁路枢纽站——内罗毕南站的升级改造，助力肯尼亚蒙内铁路和内马铁路实现行车指挥控制系统互联互通。

On July 29, CRSC successfully completed the retrofitting of the traffic command and control system at the Nairobi South Railway Station where the Kenyan Nairobi-Maraba Railway and the Mombasa-Nairobi Railway meet, achieving the upgrading of the first railway terminal-Nairobi South Station, helping to realize the interconnectivity of the operation of the traffic command and control systems for the Kenyan Nairobi-Maraba Railway and the Mombasa-Nairobi Railway.



12月27日，中国通号成功签约泰国铁路历史上金额最大通信、信号系统项目，也是泰国交通类基础设施工程承包历史上首个完全由中资企业联合体独立中标的项目，实现了中国通号信号系统和装备技术输出的多个“第一次”，助力“一带一路”建设。

On December 27, CRSC signed a communication and signal system project successfully, which is the largest amount in Thai railway history, and the first project wholly won by a Chinese-funded consortium alone in Thailand's transportation infrastructure project contracting history. CRSC has achieved multiple "First" in signal system and output of equipment technology, assisting the construction of BRI.



09

成为首批获人力资源和社会保障部认定的技能等级认定试点央企

CRSC was listed among the first batch of pilot state-owned enterprises for skill level certification approved by the Ministry of Human Resources and Social Security

12月26日，经人力资源和社会保障部职业技能等级认定工作评审专家组评定，中国通号成为首批18家开展职业技能等级认定工作的中央企业之一，为中国轨道交通行业培养大批技能人才。

On December 26, after registration and review by the Expert Team of the Occupational Skill Level Accreditation Department of the Ministry of Human Resources and Social Security, CRSC Group was recognized as one of the first batch of 18 state-owned enterprises to carry out vocational skill level certification work in an attempt to cultivate a large number of skilled personnel for China's rail transportation industry.

中国技能大赛 — 中国铁路通信信号集团有限公司职业技能竞赛

<p>每两年举办一届</p> <p>每届 9人获得“全国技术能手”</p> <p>12人获得“中央企业技术能手”</p> <p>39人“中国通号技术能手”</p>	<p>技术能手</p> <p>6000余名技能人才中遴选出120名</p> <p>从这里走出</p> <p>60名全国技术能手、99名中央企业技术能手、209名中国通号技术能手</p>
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10

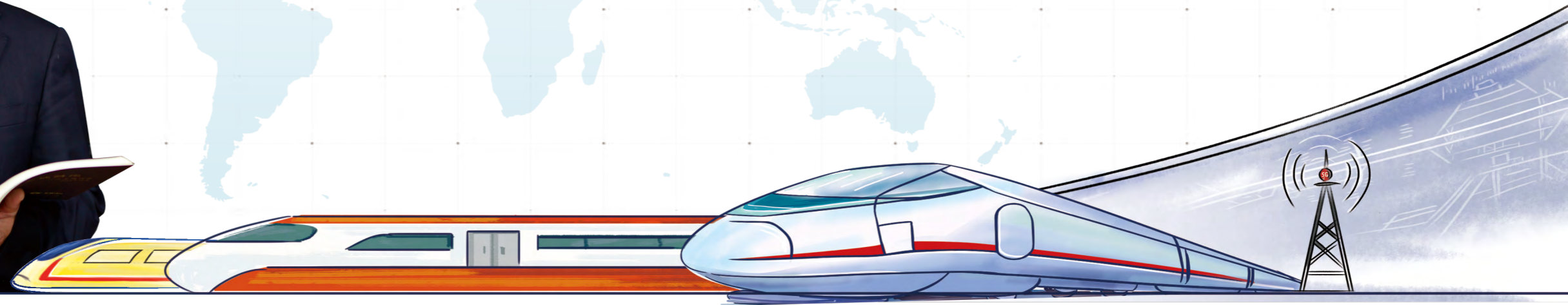
履行央企社会责任、助力脱贫攻坚

CRSC fulfilled social responsibility as a central government-governed enterprise and facilitated poverty alleviation

11月25日至26日，中国通号党委书记、董事长周志亮到河南社旗县调研定点扶贫工作，走进中国通号在社旗县产业扶贫、教育扶贫和健康扶贫项目，了解重点帮扶村扶贫项目进展情况，与南阳市、社旗县负责同志座谈，看望慰问中国通号扶贫干部，对深入贯彻落实习近平总书记关于扶贫工作的重要指示批示，坚决落实党中央和国资委党委关于扶贫工作的部署，与定点扶贫县齐心协力，狠抓脱贫攻坚工作提出要求。

From November 25 to November 26, CRSC Party Secretary and Chairman Zhou Zhiliang went to Sheqi County of Henan Province to conducted a survey on fixed poverty alleviation work, inspected CRSC's industrial, educational and health poverty alleviation projects in Sheqi County, and understood the progress of poverty alleviation projects for key poverty-stricken villages, had discussions with responsible cadres of Nanyang City and Sheqi County, visited and consoled CRSC's poverty alleviation cadres, and asked them to vigorously follow General Secretary Xi Jinping's important instructions on poverty alleviation work, to resolutely implement the deployments made by the CPC Central Committee and SASAC Party Committee, to work together with fixed poverty-stricken counties and to win the battle against poverty.





董事长致辞

2019年是新中国成立70周年，是国家“十三五”规划的冲刺之年，也是全面建成小康社会、实现第一个百年奋斗目标的关键之年。一年来，在国务院国资委的坚强领导下，中国通号全系统干部职工坚定信心、迎难而上、顽强拼搏，在企业治理、党的建设、科技创新、质量安全、环境保护、员工关怀、伙伴合作、社区发展等方面取得新进步、实现新发展。2019年，公司实现新签合同额706.1亿元人民币，同比增长3.4%；实现营业收入416.46亿元人民币，同比增长4.08%；净利润达41.77亿元人民币，同比增长12.38%。

这一年，公司科技创新收获新成果。中国通号坚决响应创新驱动国家战略，贯彻落实习近平总书记关于加快科技创新的重要指示批示精神，持续完善创新管理体系、培养科技创新人才，加速创新成果转化效率，提升企业自主创新能力。2019年，中国通号成功实现科创板首批上市，奠定企业创新发展的坚实基础；全力推进以轨道交通控制技术为代表的科技成果的研发及应用，完成了全套自主化C3列控系统、高铁自动驾驶系统C3+ATO等创新工作，提升了中国通号轨道交通领域自主创新核心竞争力。同时，中国通号凭借轨道交通产业链一体化的竞争优势，加快中国轨道交通“走出去”步伐，成功建成中国企业首个海外高铁列控核心技术综合实验室，成功中标泰国佛统-春蓬段复线铁路改造项目等，持续打造中国高铁国家名片。

这一年，公司安全质量迈上新台阶。中国通号牢固强化安全质量底线红线思维，完善安全质量制度体系，健全安全质量治理组织，强化责任落实和考核，开展安全质量综合及专项检查，质量安全管控能力稳步提升，助力中国铁路迎来“历史上最稳定的时期”。2019年，中国通号产品质量抽检、工程一次交付验收合格率达100%，杜绝铁路交通一般C类事故、生产安全责任轻伤及以上事故，荣获“全面质量管理推进40周年杰出推进单位”等荣誉。

这一年，公司责任治理实现新提升。在公司治理方面，中国通号健全合规及风险管控体系，治理能力稳步提升。在环境保护方面，中国通号建立环境管理体系，再次通过ISO14001:2015认证，持续推广节能设备及工艺，推行绿色出行方案，降低环境污染，守护生态文明。在人才培养方面，中国通号坚持“开放引进、精英集聚”的人才战略，完善员工制度管理体系，保障员工基本权益，畅通职业发展通道，与员工共同成长。在海外履责方面，中国通号积极响应国家“一带一路”倡议，密切跟踪中老铁路、中泰铁路、英国HS2、匈塞铁路匈牙利段等“一带一路”重点项目，稳步推进印尼雅万高铁、匈塞铁路贝旧段、巴基斯坦拉合尔橙线等在建项目，为全球轨道交通事业贡献“中国方案”。在社区发展方面，中国通号集团坚决响应精准脱贫发展战略，加大定点扶贫县帮扶力度，改善贫困地区经济社会发展水平，坚决助力打赢脱贫攻坚战。

2020年是全面建成小康社会和“十三五”规划的收官之年，中国通号将坚持以习近平新时代中国特色社会主义思想为指导，坚持稳中求进工作总基调，以深化供给侧结构性改革为主线，不断强化政治意识、担当意识、创新意识、危机意识、开拓意识、廉洁意识，不断增强市场竞争力、安全保障力、科技创新力、价值创造力、风险防控力、党建引领力，以信仰、信念、信心铸就精神力量，以苦干、实干、巧干彰显使命的责任，奋力开创中国通号高质量发展新局面，以实际行动满足人民对美好出行的向往，助力国家交通强国、科技强国、制造强国建设！

董事长
周志亮

Chairman's Statement

2019 marked the seventieth anniversary of the founding of New China, witnessed the sprint of the "Thirteenth-Five-Year Plan", and toned the building of a well-off society in an all-round way and the realization of the first Centenary Goal. Over the past year, under the strong leadership of the State-owned Assets Supervision and Administration Commission of the State Council, cadres and employees of CRSC have been confident, advancing, and fighting hard. New progress has been made in corporate governance, party building, technological innovation, quality and safety, environmental protection, employee care, partnership and community development. In 2019, the company achieved a new contract value of 70.61 billion yuan, with a year-on-year increase of 3.4%; realized operating income of 41.646 billion yuan, with a year-on-year increase of 4.08%; the net profit reached 4.177 billion yuan, with a year-on-year increase of 12.38%.

This year, the company's scientific and technological innovation gained new achievements. CRSC resolutely responds to the national strategy of innovation-driven development, implements the spirit of General Secretary Xi Jinping's important instructions on accelerating scientific and technological innovation, continuously improves the innovation management system, trains scientific and technological innovation talents, accelerates the transformation efficiency of innovation results, and enhances the independent innovation capability of enterprises. In 2019, CRSC successfully achieved the first batch of listing of the STAR Market, laying a solid foundation for the innovation and development of enterprises; fully promoting the research and development and application of scientific and technological achievements represented by rail transit control technology, and completing a complete set of independent C3 train control systems, the high-speed rail autonomous driving system C3 + ATO and other innovative works etc., which have enhanced the core competitiveness of independent innovation in CRSC's rail transit field. At the same time, CRSC has accelerated the "going out" step of China's rail transit. With the competitive advantages of the integration of the rail transportation industry chain, China's first overseas high-speed railway core control comprehensive technology laboratory was successfully built, and it successfully won the bid for Thailand's Nakhon Pathom-Chumphon reconstruction project of the double-track railway, etc., creating a national high-speed rail business card.

This year, the company's safety and quality reached a new level. CRSC has firmly strengthened the red-line thinking on the bottom line of safety and quality, improved the safety and quality system, strengthened the safety and quality governance organization, strengthened the implementation and assessment of responsibilities, carried out comprehensive and special safety and quality inspections, and steadily improved the quality and safety management and control capabilities, helping China Railways to usher in "The Most Stable Period in History." In 2019, CRSC's product quality random inspection and one-time delivery acceptance rate reached 100%, eliminating Class C accidents in railway transportation and minor and more serious injury accidents over production safety responsibility. CRSC was awarded the "Outstanding Promoting Unit for the 40th Anniversary of Comprehensive Quality Management Promotion", etc.

This year, corporate responsibility governance achieved new improvements. In terms of corporate governance, CRSC has a sound compliance and risk management and control system, and its governance capabilities have steadily improved. In terms of environmental protection, CRSC established an environmental management system, passed the ISO14001: 2015 certification again, continued to promote energy-saving equipment and processes, promoted green travel solutions, reduced environmental pollution, and protected ecological civilization. In terms of talent cultivation, CRSC adheres to the talent strategy of "Open Introduction and Gathering of Elites", perfects the employee system management system, protects employees' basic rights and interests, unblocks career development channels, and grows together with employees. In terms of overseas responsibilities, CRSC actively responded to the national "Belt and Road" initiative, closely tracked key projects such as China-Laos Railway, China-Thailand Railway, British HS2, Hungarian section of Hungary-Serbia Railway, and steadily promoted projects under construction such as the Indonesia's Jakarta-Bandung high-speed railway, Beijing section of the Hungary-Serbia railway and the Lahore Orange Line in Pakistan, contributing the "China Scheme" to the global rail transit industry.

2020 is the year when a well-off society will be fully established and the "Thirteenth Five-Year Plan" ends. CRSC will continue to be guided by Xi Jinping's new era of socialist ideas with Chinese characteristics and adhere to the general tone of progress in stability while with the main line of deepening the supply side structural reform, continuously strengthen political awareness, responsibility awareness, innovation awareness, crisis awareness, pioneering awareness, and integrity awareness, and constantly enhance market competitiveness, capability of security, technological innovation, value creation, risk prevention and control, party building leadership, forging spiritual strength with faith, conviction, and confidence, highlighting the glory of the mission with hard work solid and skillful work, and striving to create a new situation of high-quality development of CRSC, with practical actions to meet the people's needs for a better life, and to meet the need to build a strong country in transportation, science and technology and manufacturing!

Chairman
Zhou Zhiliang

关于我们

About Us

公司简介 Company Profile

中国铁路通信信号股份有限公司是以轨道交通控制技术为特色的高科技产业服务商，是中国轨道交通控制系统行业的领导者、全球领先的轨道交通控制系统提供商。公司拥有集轨道交通控制系统设计研发、设备制造及工程服务于一体的完整产业链，是中国轨道交通控制系统设备制式、技术标准及产品标准的归口单位，是唯一获国家铁路局授权的铁路控制系统和通信信号产品的标准化技术审核单位。

2015年8月7日，公司成功登陆香港联合交易所。2019年7月22日，公司在上海证券交易所科创板上市，成为登陆科创板的首家大型央企和A+H股的科创板上市公司（股票代码：688009.SH, 03969.HK）。

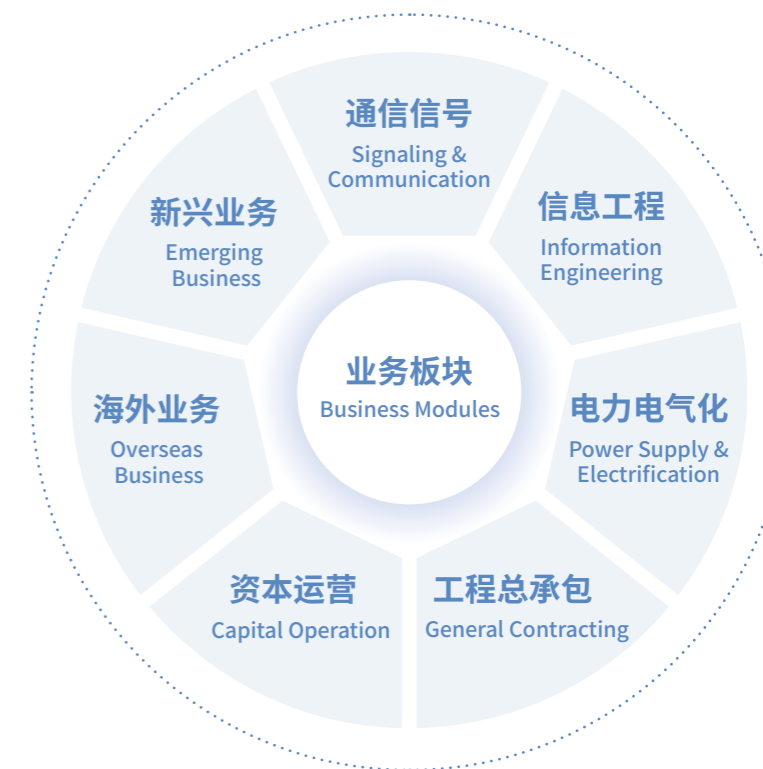
China Railway Signal & Communication Corporation Co., Ltd. (hereinafter referred to as CRSC) is a hi-tech service provider featured by railway signal and communication technology, the leader in China rail transit control industry, and an internationally leading rail transit system provider. We provide specialized one-stop solution of design and integration, equipment manufacturing and system implementation services for rail transportation control systems to our clients, and serve as the responsible department of rail transit control system equipment modes, technology standards and product standards in the PRC, as well as the only authorized reviewer of rail control systems and communication signal product standards by National Railway Administration of the People's Republic of China.

On August 7, 2015, CRSC was successfully listed on HKEX. On July 22, 2019, CRSC was listed on STAR Market of Shanghai Stock Exchange (SSE), and became the first state-owned enterprise and the first A+H company on SSE STAR Market (stock code: 688009.SH, 03969.HK).

业务板块 Business Modules

中国通号坚持“一业为主、相关多元”，不断完善产业产品结构，打造“上下延伸、关联拓展、产业协同”的产业板块体系，推进产业转型升级，实现可持续发展。

CRSC sticks to the idea of "Giving Priority to One Major Industry While Developing Other Relevant Ones", constantly improves industrial products structure, creates a business module system of "Extension between upstream and downstream, Development within related areas, Collaboration among industries", accelerates the transformation and upgrade of industries and pushes forward a sustainable development of CRSC.



2019

年度关键绩效
Performance and Achievements



营业收入
Revenue

416.46 亿元人民币

同比增长 4.08%
A year-on-year growth



资产总额
Total Assets

975.13 亿元人民币

同比增长 22.38%
A year-on-year growth



净利润
Net profit

41.77 亿元人民币

同比增长 12.38%
A year-on-year growth



全年实现新签合同额
Overall new contract amount in the year

706.1 亿元人民币

同比增长 3.4%
A year-on-year growth

八大核心技术 Eight core technologies

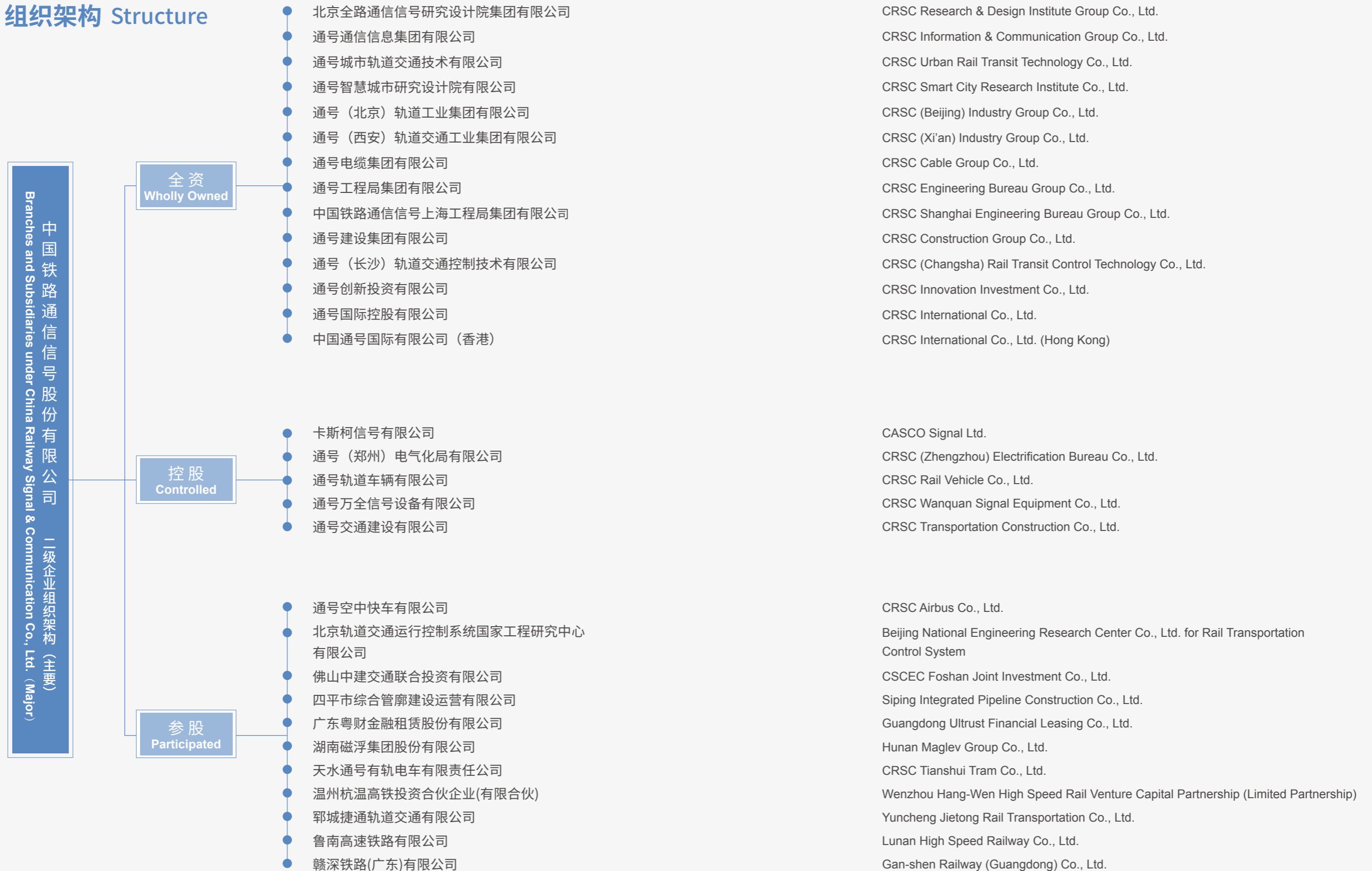
 <p>中国高铁列控系统 (CTCS-3) China's Train Control System for HSRs (CTCS-3)</p>	 <p>中国高铁自动驾驶系统 (CTCS-3+ATO) China's Automatic Train Operation System for HSRs (CTCS-3 + ATO)</p>	 <p>城市轨道交通列控系统 (CBTC) Train Control System for Urban Transit (CBTC)</p>	 <p>城际铁路自动驾驶系统 (CTCS-2+ATO) Train Automatic Train Operation System for ICRs (CTCS-2 + ATO)</p>
 <p>中低速磁悬浮控制系统 (MATC) Train Control System for Medium and Low Speed Maglev (MATC)</p>	 <p>货运编组站自动化系统 (CIPS) Automation System for Freight Marshalling Yards (CIPS)</p>	 <p>铁路综合智能运行维护管理系统 Integrated Intelligent Railway Operation Maintenance Management System</p>	 <p>综合运输调度指挥系统 Integrated Transportation Dispatching & Commanding System</p>

发展战略 Development Strategies

中国通号坚持“质量是生命、安全大于天”的理念，肩负国家铁路通信信号民族产业走向世界的使命，加快科技创新步伐，加快转型升级进程，发挥产业链一体化优势，重点实现产业结构调整的战略突破、关键核心技术的历史性突破、中国高铁标准与产业输出的国际化突破，不断提升现代企业管理水平，积极融入全球化的竞争格局，致力于发展成为以轨道交通控制技术为特色的世界一流跨国产业集团。

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

组织架构 Structure



管治架构

Management

董事会

Board of Directors



周志亮
党委书记、董事长

Zhou Zhiliang
Secretary of the Party
Committee, Chairman



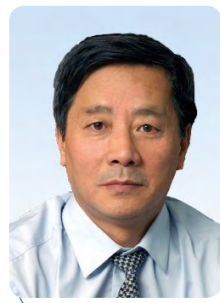
徐宗祥
总裁、执行董事、
党委副书记

Xu Zongxiang
President, Executive
Director, Deputy
Secretary of CPC



杨永胜
执行董事、
党委副书记

Yang Yongsheng
Executive Director,
Deputy Secretary of
CPC



王嘉杰
独立非执行董事

Wang Jiajie
Independent Non-
Executive Director



陈津恩
独立非执行董事

Chen Jinen
Independent Non-
Executive Director



陈嘉强
独立非执行董事

Chen Jiaqiang
Independent Non-
Executive Director



姚桂清
独立非执行董事

Yao Guiqing
Independent Non-
Executive Director

监事会

Board of Supervisors



孔宁
监事会主席

Kong Ning
President of
The Board of Supervisors



李铁南
股东代表监事

Li Tienan
Shareholder
Supervisor



陈世奎
职工代表监事

Chen Shikui
Employee Supervisor

高管团队

Top Management Team



胡少峰
总会计师

Hu Shaofeng
Chief Accountant



赵晓东
副总裁

Zhao Xiaodong
Vice President



黄卫中
副总裁

Huang Weizhong
Vice President



张志辉
副总裁、总工程师

Zhang Zhihui
Vice President, Chief
Engineer



邱巍
董事会秘书

Qiu Wei
Secretary of the Board
of Directors

企业文化 Culture Concep

使命

Mission

- 发展轨道交通民族产业
Develop National Industry of Rail Transportation
- 以安全适用的轨道交通控制系统技术服务于国内外用户
Provide Domestic and Foreign Users with Safe and Suitable Control System Technologies for Rail Transportation
- 持续实现价值创造
Achieve Continuous Value Creation

愿景

Vision

- 全球轨道交通控制技术的领导者
Global Leader in Rail Transportation Control Technology
- 轨道交通控制技术为特色的世界一流跨国企业集团
World-Class Multinational Industrial Group Featuring Rail Transportation Control Technology
- 世界知名企业
World-Famous Enterprise



企业精神

Entrepreneurial spirit

求实
Realism

创新
Innovation

拼搏
Endeavor

奉献
Dedication

作风严谨，尊重科学，遵章守纪，追求实绩。

Rigorous attitude and scientific spirit

Compliance with regulation

开放合作，勇于攀登，精益求精，追求卓越。

Pursuit of results

Openness and cooperation

泰而不骄，败而不馁，敢打硬仗，无私无畏。

Courage and efforts

Strive for perfection

Aspire for excellence

Poised but not arrogant

Failed but not discouraged

Selfless and fearless

Devoted and responsible

Ambitious and serve the country

恪尽职守，勇于担当，励精图治，产业报国。

核心价值观

Core Values

以人为本 创新求进 安全至上 共创价值

- 人是公司发展最大的资本。公司视人为企业的第一资源，坚持以人为本、共同发展的准则。公司善待员工，切实维护员工的根本利益；公司以客户为中心，始于客户需求，终于客户满意；公司尊重合作伙伴，互惠互利，合作共赢。
- 自主创新是公司发展的不竭动力。公司坚持技术创新，致力于民族产业的技术进步；公司坚持管理创新和技术创新双轮驱动，助力企业不断做强做优做大。
- 质量安全是公司发展的基石。为客户提供安全、稳定、可靠的技术和产品，进而确保轨道交通运输安全，保障人民的生命财产安全是公司最重要的政治责任、经济责任和社会责任。“质量是生命、安全大于天”始终是我们的核心价值追求。
- 创造价值是公司的矢志追求。公司在经济社会发展中担负着重要的政治责任、经济责任和社会责任。价值创造不仅表现在经济效益提高，经营风险降低，发展潜力增强，更表现为政治和社会责任的有效履行，与股东、客户、社会共同创造和分享价值。

People-Oriented, Innovation & Progress, Safety-First, and Joint Value Creation

- CRSC advocates people-first approach. Talent is the biggest capital for a company's development. Our company regards people's talents as its major resources, upholding a "people-oriented" principle and seeking common development. The company treats employees well by protecting their fundamental interests. We are also customer-centered by making every effort to fulfill their needs and to grant them satisfaction. Moreover, we respect our cooperative partners, adhering to win-win cooperation and mutual benefits.
- Innovation is the momentum for CRSC's development. We stick to technological innovation and endeavor to promote technological progress of national industries. We also continually encourage our management innovation to strive to be stronger and better. The innovation in technologies and management are the two wheels for the growth of the company. Continuous innovation serves as the inexhaustible impetus for CRSC's sustainable development.
- Quality and safety are the cornerstones for CRSC's development. The most important political, economic and social responsibility for us is to provide safe, stable and reliable technologies and products for our customers, which in turn can ensure the safety of rail transportation and the security of people's lives and properties. "Quality is Life, Safety Is Paramount" is our core value proposition.
- Value creation is the eternal pursuit of CRSC. Our company shoulders great political, economic and social responsibility in the country's social and economic development. Creating values is not only represented by increasing economic benefits, reducing operation risks, and enhancing development potential, but also by fulfilling responsibilities. Creating values also means to jointly create and share values with shareholders, customers and society.

公司治理

Corporate Governance

中国通号致力于维持高水平的企业管治，建立“一级总部、二级专业化集团或公司、三级业务实施单元”的三级组织管理体系，提升治理能力，为股东及投资者创造更多价值。

CRSC endeavors to maintain a high-level of corporate governance and establishes a “Three-Level Management System”, namely, with the headquarters as the first level, specialized groups and companies as the second level, and business and operation units as the third level, thus enhancing its governance competence and creating more values for shareholders and investors.

治理架构

Governance Framework

中国通号严格遵守《中华人民共和国公司法》《中华人民共和国证券法》《上市公司治理准则》等相关法律法规，构建了以“三会一层”为代表的现代公司治理架构，明确具体职责，制定科学有效的议事规则和工作程序，确保公司运行规范、运转协调。2019年，公司共召开治理会议17次，其中股东大会2次，董事会11次，监事会4次。

According to the requirements of *the Rules and Guidance on Listing Matters, the Company Law of the People's Republic of China, the Securities Law of the People's Republic of China* and other laws and regulations, CRSC set up modern corporate governance architecture represented by Three Committees and Boards and One Layer, specified relevant responsibilities, and formulated scientific and efficient rules of procedure and working processes to ensure legitimate and coordinated corporate operations. In 2019, CRSC convened a total of 17 governance meetings, including 2 general meetings of shareholders, 11 meetings of board of directors and 4 meetings of board of supervisors.

合规运营

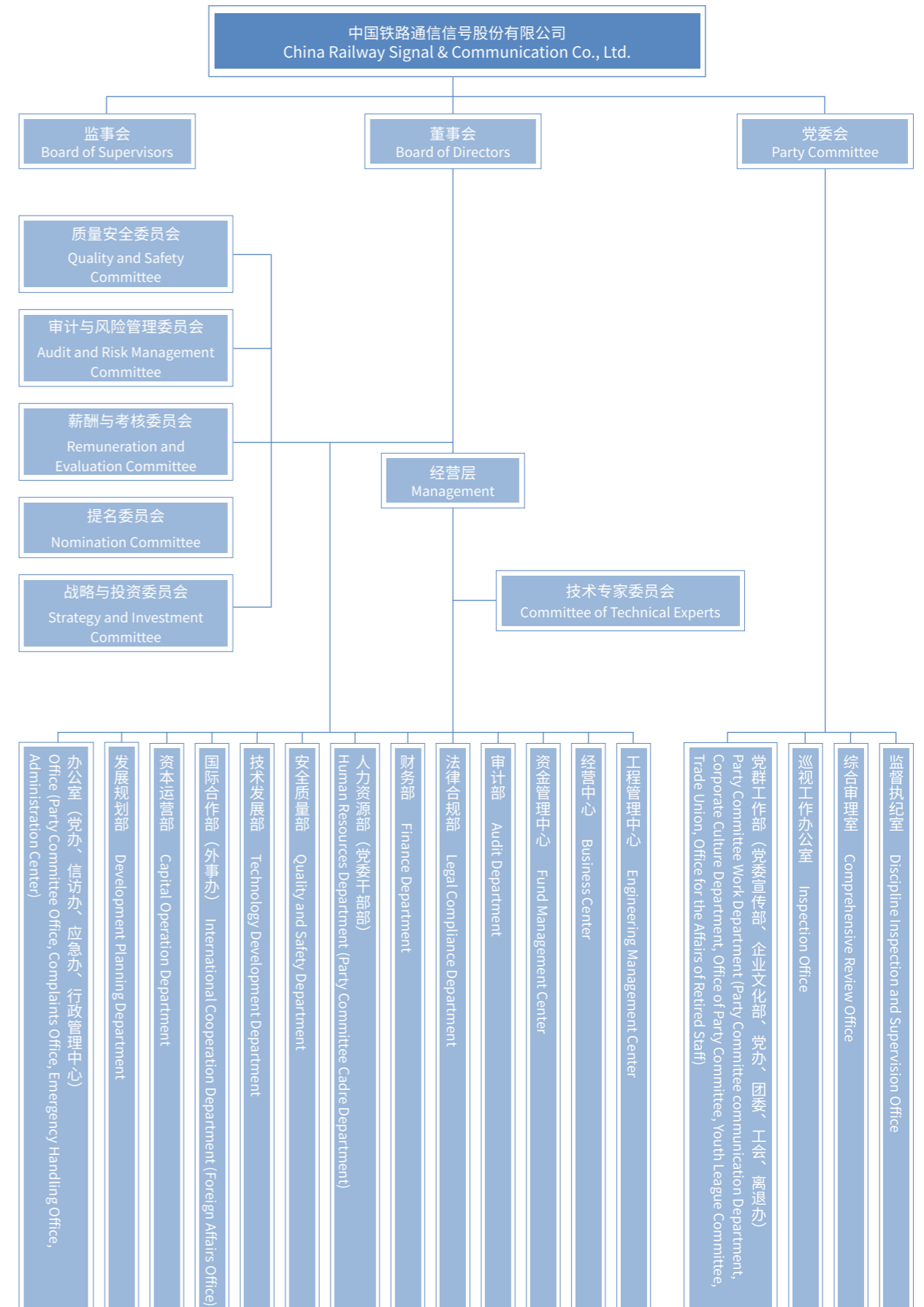
Compliant Operations

中国通号坚持“全面覆盖、全员参与、全业务融合、全面协同监督”的合规管理原则，先后制定《中国铁路通信信号股份有限公司“十三五”法治合规规划》《中国铁路通信信号股份有限公司合规管理办法》《中国铁路通信信号股份有限公司管控权力清单》等多项管理制度，建立法治合规建设领导组织机构及合规联络员机制，明确重点业务、重点人员、重点环节合规管理要求，做到事前有标准、事中有监督、事后有评价、事件有追责、持续有改善，确保企业合规运营。

为培育合规文化，中国通号组织开展合规倡议及合规承诺书签字活动，举办合规专题培训，构建法治合规学习宣传平台，每季度编制发布《法治通号简报》，增强员工合规意识。2019年，公司全系统共开展法律合规培训126场，培训人次达4,500余人次。

Upholding the compliance management principles of “Full coverage, Full participation, Full Business Integration and Comprehensive and Coordinated Supervision”, CRSC successively formulated several specialized management systems, including *the Thirteenth-Five-Year Legal Compliance Planning for CSRC, Methods on CRSC Compliance Management and CRSC Regulated Power List*, established leading organizations of legal compliance and compliance contact system, and specified the compliance management requirements of key businesses, key personnel and key links, thus achieving compliant operations through predesigned standards and sufficient and continuous supervision, assessment, accountability and enhancement.

In order to cultivate compliance culture, CRSC organized an activity of signing for compliance initiative and compliance undertaking, built a legal compliance learning and publicity platform, and quarterly prepared and published *Briefings on CRSC Compliance Matters* to enhance the compliance consciousness of employees. In 2019, CRSC carried out a total of 126 legal compliance trainings, and more than 4,500 employees participated in these trainings.



风险防控

Risk Prevention and Control

中国通号持续健全风险内控管理体系，制定专项制度，明确各级部门具体职责，全面防范经营风险。

在内控管理方面，公司制定了《中国铁路通信信号股份有限公司规章制度管理办法》《中国铁路通信信号股份有限公司新建子企业制度建设指引》等制度规范，建立规章制度审核机制，规范子企业制度制定、审核、发布及执行流程，提升内控能力。2019年，公司共排查9,833项现行有效制度，废改立制度3,711项。

在风险防控方面，公司修订《中国铁路通信信号股份有限公司风险评估管理办法》等管理办法，持续完善风险信息库、风险评估机制、“三阶段”风险提示机制，每年在全系统开展专项风险排查、重大风险评估，形成持续识别、动态跟踪、重点管控的风险管控体制。

CRSC continued to improve its risk control management system by developing specialized systems and specifying responsibilities for departments at all levels to fully prevent business risks.

In terms of inner control management, CRSC formulated *the Methods of Rules and Regulations Management, the Guidance on System Construction of Newly-built Subsidiaries* and other management systems, set up a review system of rules and regulations, standardized subsidiaries' formulation, review, releasing and executive procedures of systems, and enhanced inner control competence. In 2019, CRSC reexamined 9,833 prevailing effective systems, and abolished and modified 3,711 of them.

In terms of risk prevention and control, CRSC revised *the Methods of Risk Assessment and Management* and other management systems, constantly perfected risk repository, risk assessment system and "Three-Stage" risk prompt system, and annually carried out special risk investigation and major risk assessment, thus forming a risk control system of continuous identification, dynamic tracking and focused control.

反腐倡廉

Anti-corruption and Integrity Advocation

公司深入开展反腐倡廉建设，一体推进“不敢腐、不能腐、不想腐”体制机制建设，通过健全反腐制度，完善内部监督，开展专项治理，构建了从管理人员到一线员工的全方位、立体化反腐败管理体系，严肃处理违反法律和公司章程规定的行为。2019年，公司未发生腐败相关诉讼事件。

CRSC vigorously advocated anti-corruption and integrity, advanced the building of "No Dare, No Access and No Desire" system, enhanced internal supervision, carried out specialized governance, established an all-round anti-corruption management system from management to frontline employees, and meted out stern punishments on violations of relevant laws and regulations. In 2019, CRSC was not exposed to corruption-related suits.

制度建设

System Building

公司先后印发《中国铁路通信信号集团有限公司领导干部廉政档案管理办法（试行）》《关于规范企业领导人员配偶、子女及其配偶、特定关系人经商办企业行为的实施办法》《中国铁路通信信号集团有限公司关于规范党员干部操办婚丧喜庆事宜的暂行规定》等制度，完善反腐制度体系。

CRSC successively printed and distributed *the Methods on CRSC Cadres' Integrity Files Management (Trial Implementation), the Implementation Measures on Regulating Entrepreneurship Behaviors of Spouses, Children and Their Spouses and Special Related Persons of Enterprise Leaders, Provisional Regulations on CRSC Party Cadres' Handling of Weddings and Funerals* and other relevant systems to perfect the anti-corruption system.

宣传教育

Publicity and Education

重视廉洁文化建设，通过开展党风廉政专题讲座、观看廉政警示教育片、参观反腐倡廉教育基地等活动，辐射带动全方位、全覆盖的廉洁宣传教育工作，增强员工廉洁意识。2019年，公司人均反腐倡廉培训时长为6.4小时。

CRSC put emphasis on the construction of integrity culture, and drove all-round integrity publicity and education work by delivering party conduct and integrity-themed seminars, playing anti-corruption warn-based educational films and visiting anti-corruption and integrity advocacy education bases, thus enhance the integrity consciousness of employees. In 2019, each CRSC employee received 6.4 hours anti-corruption and integrity advocacy training averagely.

组织建设

Organization Construction

建立党风廉政建设和反腐败工作协调小组，明确协调小组的机构设置、职责任务、会议制度、协调机制等，健全治理体系。

CRSC established a party integrity and anti-corruption work coordination group, specified the institutional settings, responsibilities, tasks, conference systems and coordination systems for the coordination group, and improved the governance system.

监察执纪

Supervision and Disciplines Enforcement

明确监督执纪处理方式、适用条件及运用规则，详细规定各级纪检机构开展监督检查、线索处置、谈话询函、初步核实、立案审查、案件审理、处置执行的工作方式，严格监督执纪管理。2019年，完成5家二级企业巡视，对2家企业开展“回头看”，处理37名违法违纪干部，营造风清气正的良好环境。

CRSC specified the handling ways, application conditions and rules of usage for supervision and disciplines enforcement, detailed the working modes for discipline inspecting authorities at all levels to carry out supervisory reviews, clue processing, talks and enquiries, preliminary check, case-filing censorship, case trial and enforcement, thus strictly supervising disciplines enforcement management. In 2019, CRSC completed the inspection tour of 5 secondary enterprises, reexamined 2 enterprises, meted out punishments on 37 cadres who have violated relevant laws and regulations, and created a good integrity environment.

中国通号召开警示教育大会

CRSC convened a warning education meeting



CASE
案例

可持续发展管理 Sustainable Development Management

中国通号致力于打造具有企业自身特色的可持续发展管理体系。通过系统识别公司业务经营的影响要素，明确可持续发展理念；公司“三会一层”适时讨论有关合规治理、科技创新等可持续发展重要议题的战略规划，督促相关部门监督检查重要问题落实等，规范可持续发展治理体系，实现公司及利益相关方的可持续发展。

CRSC is committed to building a sustainable development management system with its own characteristics. By systematically identifying the influencing factors of business operations, clarifying sustainability concept; "Three Boards and Committees and One Layer" of CRSC discussed strategic plans on important sustainable development themes (such as compliant governance and S&T innovations) at the right moment, and urged relevant departments to supervise and inspect the implementation of important issues to regulate sustainable development governance system, achieving sustainable development of CRSC and stakeholders.

可持续发展理念 Sustainability Concept

- **坚持依法经营，诚实守信。**模范遵守法律法规和社会公德、商业道德以及行业规则，及时足额纳税，维护投资者和债权人权益，忠实履行合同，恪守商业信用，反对不正当竞争，杜绝商业活动中的腐败行为。

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

- **不断提高盈利能力。**完善公司治理，提高管理水平。推进实施集团发展战略，突出做强主业，突出科技创新。合理配置资源，降低经营成本，加强风险防范，提高投入产出水平，增强市场竞争能力。

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

- **切实提高产品质量和服务水平。**建立和贯彻并严格运行质量、环境、职业健康安全管理体系，从产品设计、生产制造、施工安装、用户服务等各个环节，强化全员质量意识，坚持持续不断改进，改善产品性能，提高产品可靠性、安全性，最大限度地满足铁路、轨道交通运输安全的需要。

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

- **加强资源节约和环境保护。**认真落实节能减排责任，带头完成节能减排任务。发展循环经济，提高各类资源综合利用效率。增加环保投入，改进工艺流程，降低污染物排放，改进施工工法，减少占地，保护植被，实施清洁生产。坚持走低投入、低消耗、低排放和高效率的发展道路。

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

- **推进自主创新和技术进步。**建立完善技术创新机制，加大科技投入，提升原始创新、集成创新和引进消化吸收再创新能力。以建立中国高速铁路列车控制系统和配套产品体系为重点，加快科技创新基地与基础设备研发平台建设。加快既有产品更新换代，加快技术装备改造。加强知识产权保护，健全知识产权保护体系，加快形成一批具有自主知识产权、较完整配套的核心系统技术和产品体系，发挥对行业产业的带动作用和对中国通号可持续发展的支撑作用。

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

- **保障生产安全。**严格落实安全生产责任制，加大安全生产投入，严防重、特大安全事故发生。建立健全应急管理体系，不断提高应急管理水平和应对突发事件能力。为职工提供安全、健康、卫生的工作条件和生活环境，加大劳动保护监督检查力度，保障职工职业健康，预防和减少职业病和其他疾病对职工的危害。

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

● **维护职工合法权益。** 依法与职工签订并履行劳动合同，建立企业职工收入与企业效益相适应的工资正常调整和保障机制，按时足额缴纳社会保险。尊重职工，爱护职工，公平对待职工，杜绝性别、民族、宗教、年龄等各种歧视。加强职业教育培训，创造平等发展机会。为社会创造就业机会。加强职代会制度建设，深化厂务公开，推进民主管理。关心职工生活，切实为职工排忧解难。

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

● **参与社会公益事业。** 积极承担和热心参与扶贫、助困、捐助、志愿者等社会公益事业，关心支持教育、文化、卫生等公共福利事业。在发生重大自然灾害和突发事件的情况下，自觉听从当地政府和铁路等业务主管部门指挥，积极提供人力、财力和物力等方面的支持和援助。

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

利益相关方沟通 Stakeholder Communication

中国通号主动识别各利益相关方，通过有效的沟通方式深入了解和回应利益相关方的期望与诉求，保障企业发展取得更多成果，惠及更多群体，实现多方共赢。

By actively identifying potential stakeholders, CRSC got to know and responded to the expectations and appeals of stakeholders through effective communication channels, guaranteed to make more achievements to benefit more populations and achieve win-win cooperation.





创新奠基发展

Innovation as a Foundation

抓创新就是抓发展，谋创新就是谋未来。中国通号推进实施创新驱动发展战略，完善创新管理体系，培育创新人才，加快产学研融合步伐，加速重点技术成果转化落地，提升公司自主创新核心竞争力，掌握竞争和发展的主动权，为中国轨道交通产业积累宝贵财富，打造“中国高铁”国家名片。

Innovation brings development; innovation shapes the future. CRSC advanced and implemented innovation-driven development strategies, improved the innovation management system, cultivated innovation talents, accelerated the pace of industry-university-research collaboration, quickened the transformation and landing of key technological achievements, enhanced its independent innovation competitiveness and seized the initiative of competition and development, thus accumulating wealth for China's rail transit industry and building a national name card of "China High-Speed Railway".

健全创新管理体系

Improving innovation management system

建设创新人才平台

Building platforms for innovative talents

成就科技创新成果

Facilitating technology innovation

推动行业技术进步

Promoting industrial technological progress

健全创新管理体系

Improving innovation management system

中国通号构建了“市场需求为导向、研发平台为主体、产学研用相结合”的技术创新体系，完善创新管理制度，提高科技研发投入，攻关关键核心技术，保障国家轨道交通安全。

CRSC has built a technology innovation system characterized by “Market Orientation, R&D Platform as the Center, and Integration of Production, Research and Application”, improved the innovation management system, increased scientific research inputs, developed core technologies and ensured the safety of the national rail transit.



2019年

研发投入达

16.03 亿元

○ **研发经费保障:** 制定《科研项目经费使用管理办法》，明确科研项目经费管理部门职责与权限，规范科研成本预算与核算，提高科研经费使用效益。2019年，公司科研项目经费投入约16.03亿元。

Guaranteeing R&D Fund: CRSC formulated and implemented *the Regulation on the R&D Project Fund Management*, to determine the responsibility and limit of authority of relevant departments for management of project funds and to regulate the cost estimation and accounting of scientific research. The Regulation improved the efficiency of the use of scientific research funds and guaranteed the sustained and steady development of scientific research work. In 2019, the company R&D input reached 1.603 billion RMB.

○ **知识产权保护:** 制定《中国铁路通信信号股份有限公司知识产权发展规划》《中国铁路通信信号股份有限公司知识产权管理办法》等，将知识产权纳入业务培训，增强知识产权风险防范意识。2019年，中国通号所属研究设计院集团、西安工业集团分别获得“国家知识产权优势企业”称号。

Protecting Intellectual Property Rights (IPR): CRSC has formulated *the CRSC Intellectual Property Development Plan, the Regulation on Intellectual Property Management* and other management methods, to incorporate intellectual property into business trainings and to enhance intellectual property risk prevention consciousness. In 2019, CRSC Research & Design Institute Group Co., Ltd. CRSC (Xi'an) Rail Transit Industry Group Co., Ltd. were awarded the title of "China's Enterprise with Intellectual Property Advantages".

中国通号2015-2019年度科技创新关键绩效
Key Performance of CRSC's Scientific and Technological Innovations

关键指标 Key indicators/Key Indicators	单位 Unit	2015	2016	2017	2018	2019
累计有效授权专利 Cumulative Numbers of Total Valid Patent Licenses	项 piece	728	922	1,130	1,484	1,901
累计软件著作权 Cumulative Numbers of Software Copyright	项 piece	424	541	636	810	992
研发投入 R&D Input	百万元 One million RMB	1,013.9	1,050.4	1,180.2	1,379.5	1,602.7

建设创新人才平台

Building platforms for innovative talents

中国通号将高精尖人才视为企业高质量发展的重要资源，通过建设创新平台，建立科技奖励办法等，激发创新人才的潜能。

CRSC considers top talents as the important resources for its high-quality development. By building talent innovation platforms and implementing incentive measures for scientific and technological achievements, CRSC fully mobilized the potentials of innovative talents.



建设创新平台
Establishing Innovation Platforms

公司制定《中国铁路通信信号股份有限公司国家级创新平台管理办法》，拥有多个国家和省部级创新平台、院士工作站、博士后科研工作站，为引进、培育创新人才奠定坚实基础。

CRSC formulated *the Methods on the Management of National Innovation Platforms*, and established academician workstations, postdoctoral scientific research workstations, production, education and research platforms, provincial and ministerial engineering (technical) research centers, and provincial and ministerial enterprise technology centers, thus laying a solid foundation for attracting and cultivating innovative talents.

截至2019年12月31日，公司共拥有5个国家级创新平台，7个国家级示范称号，3个博士后科研流动工作站，4个院士专家工作站，80多个实验室（含6个CMA认证实验室、20多个CNAS认可实验室）。2019年，公司所属研究设计院集团、通信信息集团成功获批国家企业技术中心；卡斯柯信号有限公司获批上海市铁路智能调度指挥工程研究中心。

As of December 31, 2019, CRSC boasted 5 national innovation centers, 7 national demonstration titles, 3 postdoctoral scientific research workstations, 4 academician expert workstations, over 80 laboratories, (including 6 CMA-certified laboratories and over 20 CNAS-certified laboratories). In 2019, CRSC Research & Design Institute Group Co., Ltd. and CRSC Communication & Information Group Co., Ltd. were successfully approved as National Enterprise Technology Centers; CASCO Signal Ltd. was approved as Intelligent Railway Scheduling and Commanding Engineering Research Center by Shanghai Municipal Development & Reform Commission.

截至2019年12月31日 As of December 31, 2019,

研究设计院集团、通信信息集团
成功获批国家企业技术中心

CRSC Research & Design Institute Group Co., Ltd. and CRSC Communication & Information Group Co., Ltd. were successfully approved as National Enterprise Technology Centers

卡斯柯信号有限公司
获批上海市铁路智能调度指挥工程研究中心

CASCO Signal Ltd. was approved as Intelligent Railway Scheduling and Commanding Engineering Research Center

2019年

优秀创新成果奖
Outstanding Innovation Achievement Award

18 项 piece

优秀标准奖
Outstanding Standard Award

5 项 piece



中国通号举办劳模创新工作室考核观摩交流现场会
CRSC Model Worker Innovation Workshop Appraisal and Exchange Meeting was held

健全激励机制
Improving Incentive Measures

公司制定《科技人才评价管理办法》《劳模先进创新工作室管理办法》，开展科技奖励评定和表彰，以吸引、培养、用好和留住科技人才。2019年，公司首次明确设立优秀创新成果奖、标准奖、优秀专利奖，开展2018年度科技奖励评定和表彰，对18项优秀创新成果奖、5项优秀标准奖获奖者给予奖励。

CRSC formulated the Methods on the Methods on Assessment and Management of Technology Talents and the Management of Advanced Innovation Work of Model Workers, and offered scientific and technological incentives to attract, cultivate, make full use of and retain technology talents. In 2019, CRSC set up Outstanding Innovation Achievement Award, Outstanding Standard Award and Outstanding Patent Award for the first time, and carried out the assessment of scientific and technological awards for the year of 2018, and granted awards to 18 winners of Outstanding Innovation Achievement Award and 5 winners of Outstanding Standard Award.

截至2019年12月31日，公司共有研发人员4,235人，其中1,070人拥有高级职称。69人获“全国技术能手”称号，52人享受政府特殊津贴，27人获“詹天佑奖”，72人获“茅以升铁道工程师奖”，98人获“中央企业技术能手”称号，3人获“全国交通技术能手”称号。

As of December 31, 2019, CRSC boasted a total of 4,235 R&D employees, and 1,070 of them had won senior titles. 69 employees were awarded as “National Technical Expert”; 52 employees obtained governmental special allowance, 27 employees won the “Zhan Tianyou Award”; 72 employees won the “Mao Yisheng Railway Engineer Award”; 98 employees were awarded as “Technical Expert of Central Government-owned Enterprises” and 3 employees won the title of “Technical Expert of National Transportation”.

产学研融合
Production, Education and Research Integration

中国通号积极与高校、科研院所开展合作，发挥各方资源优势，促进教育链、人才链与产业链的有机衔接，提升行业科技人才的创新能力。

2019年，中国通号与中国电科、中国电子组建协同创新联合团队，开展轨道交通控制领域自主创新工作。公司所属研究设计院集团与陆军工程大学、石家庄铁道大学联合发起成立“军民融合电磁环境效应研究中心”，深入研究电磁环境效应研究的基础及前沿性问题。

CRSC actively collaborated with universities and research institutes and gave full play to resources of all concerned parties to promote organic linking of education, talent and industrial chains and to enhance the innovation abilities of technology talents.

In 2019, CRSC, China Electronics Technology Group Corporation (CETC) and China Electronics Corporation (CEC) set up a collaborative innovation team which specializes in independent innovations in the rail transit control field. CRSC Research & Design Institute Group Co., Ltd. cooperated with Army Engineering University of PLA and Shijiazhuang Tiedao University to set up “Military-Civil Integrated Electromagnetic Environmental Impact Research Center”, which focuses on the in-depth study on basic and frontier issues of electromagnetic environmental impacts.

成就科技创新成果

Facilitating technology innovation

中国通号通过优化配置设计、研发、测试、集成等环节资源，加强基础性、前瞻性技术的创新能力，助力实现中国高铁、地铁全套列车控制系统完全自主化、产品完全国产化。

By optimizing the resources for design, R&D, testing and integration links, CRSC strengthened the innovations of fundamental and prospective technologies to facilitate the realization of fully independently-developed train control systems for China's high-speed rails and metros.

中国通号2019年获得的主要科技表彰情况
Major Scientific and Technological Awards Won by CRSC in 2019

国家知识产权局中国专利优秀奖银奖1项

1 silver award of China Patent Award of National Intellectual Property Administration, PRC

中国铁道学会科学技术奖12项

12 science and technology awards of China Railway Society

上海市技术发明奖一等奖1项

1 first-prize science and technology invention award of Shanghai City

中国智能交通协会科学技术奖二等奖1项

1 second-prize science and technology award of ITS China

甘肃省科技进步三等奖1项

1 third-prize science and technology progress award of Gansu Office of Science and Technology

“龙图杯”全国BIM应用大赛二等奖1项

1 second prize of “Longtu Cup” National BIM Competition of China Graphics Society

中央企业熠星创新创业大赛优秀奖1项

1 Outstanding Award of 2018 State-owned Enterprise Yixing Innovation and Creativity Competition of SASAC

中国质量协会质量技术奖-技术成果奖1项

One Technical Achievement Award: Quality and Technical Award of China Association for Quality

河南省建设工程施工技术创新成果一等奖1项

1 first prize of 2019 Henan technological innovation achievement of engineering construction



中国通号成功建成中国首个海外高铁核心技术实验室 CASE 案例

CRSC Successfully completed China's first overseas core technology laboratory for high-speed railway

2019年，中国通号为欧洲匈塞铁路量身打造的匈塞铁路ETCS-2（欧洲列车运行控制系统）系统实验室在塞尔维亚首都贝尔格莱德落成，成为中国企业海外首个高铁列车运行控制系统实验室，为匈塞铁路提供核心技术支撑，获得国家有关部委和驻在国的一致好评。

In 2019, the European Train Operation Control System (ETCS-2) laboratory tailored by CRSC for the European Hungary-Serbia Railway was completed in Belgrade, the Serbian capital, which became the first high-speed railway train operation and control system laboratory built overseas by a Chinese company. It provided core technical support for the Hungary-Serbia Railway, and have won unanimous praise from relevant national ministries and commissions and the host country.



中国通号自主研发的自动监控系统助力澳大利亚首条无人驾驶地铁运营 CASE 案例

CRSC independently developed automatic monitoring system to facilitate Australia's first driverless metro operation

2019年5月26日，中国通号所属卡斯柯信号有限公司参与建设的澳大利亚首条无人驾驶地铁线路——悉尼西北线项目正式开通载客试运营。该线路搭载中国通号自主研发的、安全等级达到SIL2级、自动化程度达GoA4级的全自动无人驾驶列车自动监控系统FAOTS，可实现对列车自动唤醒、自检、自动出库回库、正线运行、自动洗车以及存车休眠等各种工况的全自动化管理，还可实现对线路故障情况下的降级运营支持。



On May 26, 2019, Australia's first driverless metro line, the Sydney Northwest Line project, which Casco of CRSC participated in the construction, officially opened for passenger trial operation. This line is equipped with FAOTS, a fully-automated unmanned train automatic monitoring system independently developed by CRSC, with a safety level of SIL2 and an automation level of GoA4, which can be put into fully automated management of various operating conditions, such as line operation, automatic car washing, and car storage and sleep, also can achieve degraded operation support in the event of line failure.

中国通号“全自动运行2.0系统”助力轨道交通智能化发展 CASE 案例

CRSC's Automatic Operation 2.0 System boosted intelligent development of rail transit

2019年6月28日，在上海召开的“2019全自动无人驾驶技术创新专家研讨会”上，中国通号所属卡斯柯信号有限公司重磅推出自主研发的“面向智慧地铁的全自动运行2.0系统”。



该系统为全球首创，以服务乘客出行为核心，面向智慧地铁的多重需求，在既有的全自动运行系统（列车自动运行）的基础上，覆盖无人驾驶列车、智能调度、智能车场、智能车站、智能运维五个部分，实现了城轨交通全程、全范围的智能化控制。

On June 28, 2019, at the "2019 Full-Automated Self-Driving Technology Innovation Expert Seminar" held in Shanghai, Casco of CRSC launched its self-developed "Automated Operation 2.0 System for Smart Metro".

This system debuted to set serving passengers as the core goal and to meet the multiple needs of smart subways. Based on the existing fully automatic operation system (automatic train operation), it covers five parts, including unmanned trains, intelligent dispatching, intelligent parking lots, intelligent operation and maintenance which have realized the full-range and full-range intelligent control of urban rail transit.

推动行业技术进步

Promoting industrial technological progress

作为国家铁路局技术标准的归口单位，中国通号主导编制多项中国铁路通信信号行业标准和规范，并积极与政府、科研院所、行业协会等开展技术交流，共同推动中国轨道交通产业以及延伸行业的可持续发展。

As the responsible department of technical standards for National Railway Administration of the People's Republic of China, CRSC participated in the formulation of standards and specifications for China's railway communication signal industry, and actively cooperated with the government, research institutes, and industry associations to conduct technical exchanges, thus jointly promoting sustainable developments of China's rail transport industry and other related industries.

行业标准制定

Formulating Industry Standards

截至2019年底，中国通号共主导参与制定了行业系统、产品、建设标准250项，其中国家级标准26项、行业级标准224项。

其中，在占据领先地位的轨道交通信号技术领域，公司共主编国家级标准12项，主编行业级标准157项。公司还主导了CTCS、CBTC等中国最主要和最前沿的铁路与城市轨道交通控制系统技术标准的建立。

By the end of 2019, CRSC led and participated in the formulation of 250 standards on systems, products and construction, including 26 national standards and 224 industry standards.

CRSC was compiled as chief editor of 12 national standards and 150 industry standards in the field of rail transit signal technology where it occupies a leading position. Moreover, CRSC also led in the formulation of the most important and most advanced technical standards for railway and urban rail transport control systems in China, including CTCS and CBTC.

2019年底

制定国家级标准

led and participated in the national standards

26 项 piece

制定行业级标准

led and participated in the formulation and revision

224 项 piece



中国通号主导、主编的铁路行业技术标准

Technical Standards for Railway Led or Compiled by CRSC as Chief Editor

中国铁路列车运行控制系统（CTCS）——最顶层的控制技术方案

Chinese Train Control System (CTCS) - the top-level control technology solution

- 《铁路列控系统（CTCS）总体技术要求》
General Technical Requirements of Railway Train Control System (CTCS)
- 《CTCS-3级列控系统总体技术方案》
Overall Technical Scheme of CTCS-3 Train Control System
- 《铁路数字移动通信系统（GSM-R）总体技术要求》
General Technical Requirements of Railway Digital Mobile Communication System (GSM-R)
- 《CTCS-3级列车运行控制系统与铁路数字移动通信系统（GSM-R）接口规范》
Interface Specification between CTCS-3 Train Control System and Railway Digital Mobile Communication System (GSM-R)

CTCS-3级列控系统——最核心的技术装备

CTCS-3 Train Control System - the core technical equipment

- 《调整集中系统技术条件》（CTC）
Technical Conditions of Centralized Traffic Control (CTC)
- 《无线闭塞中心技术规范》（RBC）
Technical Specifications of Radio Block Center (RBC)
- 《铁路车站计算机联锁安全原则》（CBI）
Safety Principles of Computer Based Interlocking (CBI) in Railway Stations
- 《CTCS-3级列控系统车载设备技术条件》（ATP）
Technical Conditions of CTCS-3 Onboard Equipment (ATP)
- 《临时限速服务器技术条件》（TSRS）
Technical Conditions of Temporary Speed Restriction Server (TSRS)
- 《铁路信号系统内部接口》
Internal Interfaces of Railway Signal System
- 《列控中心技术条件》（TCC）
Technical Conditions of Train Control Center (TCC)

中国铁路信号——最基础的安全设备

China Railway Signal - the most fundamental safety equipment

- 《ZPW-2000轨道电路技术条件》
Technical Conditions of ZPW-2000 Track Circuit
- 《铁路道岔转辙机》系列规范
Series of Specifications of Railway Switch Machines
- 《列控系统应答器应用原则》
Application Principles of Transponders for Train Control Systems

行业技术交流 Exchanging Industry Technologies

中国通号积极参与行业技术交流。2019年，公司牵头组织“高铁运营十周年--通信信号技术发展交流会”“行业首次城市轨道交通信号系统技术交流会”“第六届全路ZPW-2000轨道电路维修交流”“铁路道岔转换设备”“宽带移动通信及智能通信技术交流研讨会”“联锁设备维修交流会”等行业品牌会议和特色研讨会，为行业发展搭建交流平台。

高铁运营十周年--通信信号 技术发展交流会

the Tenth Anniversary of High-speed Rail Operation-Communication Signal Technology Development Exchange Conference

行业首次城市轨道交通 信号系统技术交流会

the First Technical Seminar on Urban Rail Transport Signal System

第六届全路ZPW-2000轨道 电路维修交流

the Sixth Full-circuit ZPW-2000 Track Circuit Repair Exchange

铁路道岔转换设备

Railway Turnout Switching Equipment Seminar

宽带移动通信及智能通信 技术交流研讨会

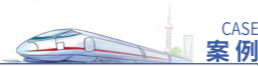
Broadband Mobile Communications and Intelligent Communication Technology Exchange Seminar

联锁设备维修交流会

Interlocking Device Repair Exchange

CRSC took an active part in the exchanges of industry technologies. In 2019, CRSC organized and attended "the Tenth Anniversary of High-speed Rail Operation-Communication Signal Technology Development Exchange Conference", "the First Technical Seminar on Urban Rail Transport Signal System", "the Sixth Full-circuit ZPW-2000 Track Circuit Repair Exchange", "Railway Turnout Switching Equipment Seminar", "Broadband Mobile Communications and Intelligent Communication Technology Exchange Seminar", "Interlocking Device Repair Exchange" and other industry conferences and featured seminars to build exchange platforms for better industrial development.

中国通号举办高铁运营十周年—通信信号技术发展交流会



CASE
案例

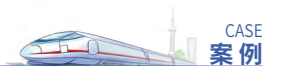
CRSC held the Tenth Anniversary of High-speed Rail Operation-Communication Signal Technology Development Exchange Conference

2019年10月10日，中国通号与国铁集团工电部、中国铁道学会自动化委员会联合策划，牵头组织召开“高铁运营十周年--通信信号技术发展交流会”，来自高校、设计院、相关企业的7位专家分别从产品研发集成、工程设计、联调联试、运营维护、装备制造、互联互通测试、下一代通信信号技术展望等不同视角交流分享相关技术。

On October 10, 2019, CRSC jointly planned with the Ministry of Industry and Power of the China Railway Group and the Automation Committee of the China Railway Society to lead the organization of the "Tenth Anniversary of High-speed Railway Operation-Communication Signal Technology Development Exchange Conference" from who seven experts from universities, design institutes and related companies exchanged and shared related technologies from different perspectives, such as product development integration, engineering design, joint debugging and joint testing, operation and maintenance, equipment manufacturing, interconnection and interoperability testing, and the prospect of next-generation communication signal technology.



中国通号举办“全国铁路道岔转换设备维修交流会”



CASE
案例

CRSC convened "National Railway Turnout Switching Equipment Maintenance Exchange Conference"

2019年6月11日至12日，由中国铁道学会通信信号分会主办，中国通号研究设计院集团承办，中国通号西安工业集团协办的“全国铁路道岔转换设备维修交流会”在中国通号大厦召开，为全路道岔转换设备维修交流搭建了平台，为各铁路局用户提供了精准的技术服务。

From June 11 to 12, 2019, "China National Railway Turnout Switching Equipment Maintenance Exchange Conference", sponsored by the Communications Signal Branch of China Railway Society, hosted by China Communications Research and Design Institute Group, and co-sponsored by Xi'an Industry Group of CRSC held in CRSC Building, establishing a platform for the maintenance and exchange of turnout conversion equipment throughout the road, and providing accurate technical services for users of various railway bureaus.





服务创造价值

Service Creates Value

中国通号作为全球最大的轨道交通控制系统解决方案提供商，牢固树立“质量是生命，安全大于天”的理念，强化质量底线红线思维，完善安全生产管理，推进全面质量建设，完善全方位服务体系，为客户创造更大价值。

As the largest rail transport control solution provider in the world, CRSC firmly upholds the concept of "Quality is Life, Safety Is Paramount". By strengthening the red-line thinking of quality bottom-line and improving safe production management, CRSC advances comprehensive quality construction and perfects all-round service system to create greater values for our clients.

落实安全生产保障

Putting production safety into action

打造应急管理防线

Creating an emergency management line of defense

确保产品服务质量

Guaranting product and service quality

落实安全生产保障

Putting production safety into action

中国通号严格遵守《中华人民共和国安全生产法》等法律法规，积极推进安全生产制度体系、安全责任管理体系、应急防控体系建设，夯实安全生产基础。2019年，公司累计投入安全生产资金3.84亿元，杜绝铁路交通一般C类事故、生产安全责任轻伤及以上事故。

In accordance with *the Production Safety Law of the People's Republic of China* and other relevant laws and regulations, CRSC actively promoted the construction of safe production system, safety liability management system and emergency control system, and consolidated the basis of safe production. In 2019, CRSC cumulatively invested 384 million RMB as safe production fund, and prevented the occurrence of general Class-C accidents, production injuries and accidents of railway transport.

安全制度建设

Establishing safety regulations

公司制定《中国铁路通信信号股份有限公司安全生产检查制度》等，对安全生产工作内容、考核机制作出具体规定。2019年，公司修订安全质量管理体系1,611份。

CRSC formulated *the Production Safety Inspection System* and other systems to clarify the contents and appraisal requirements of safe production. In 2019, CRSC revised a total of 1,611 safety and quality management systems.

安全组织体系完善

Improving security organization system

公司坚持“管生产经营必须管安全、管业务必须管安全”的原则，成立以董事长为主任的安全生产管理委员会，制定安全生产决策，负责安全生产工作。2019年，公司对全系统安全职责层层分解、逐级落实，累计签订安全质量责任书15,313份，安全生产协议书1,611份。

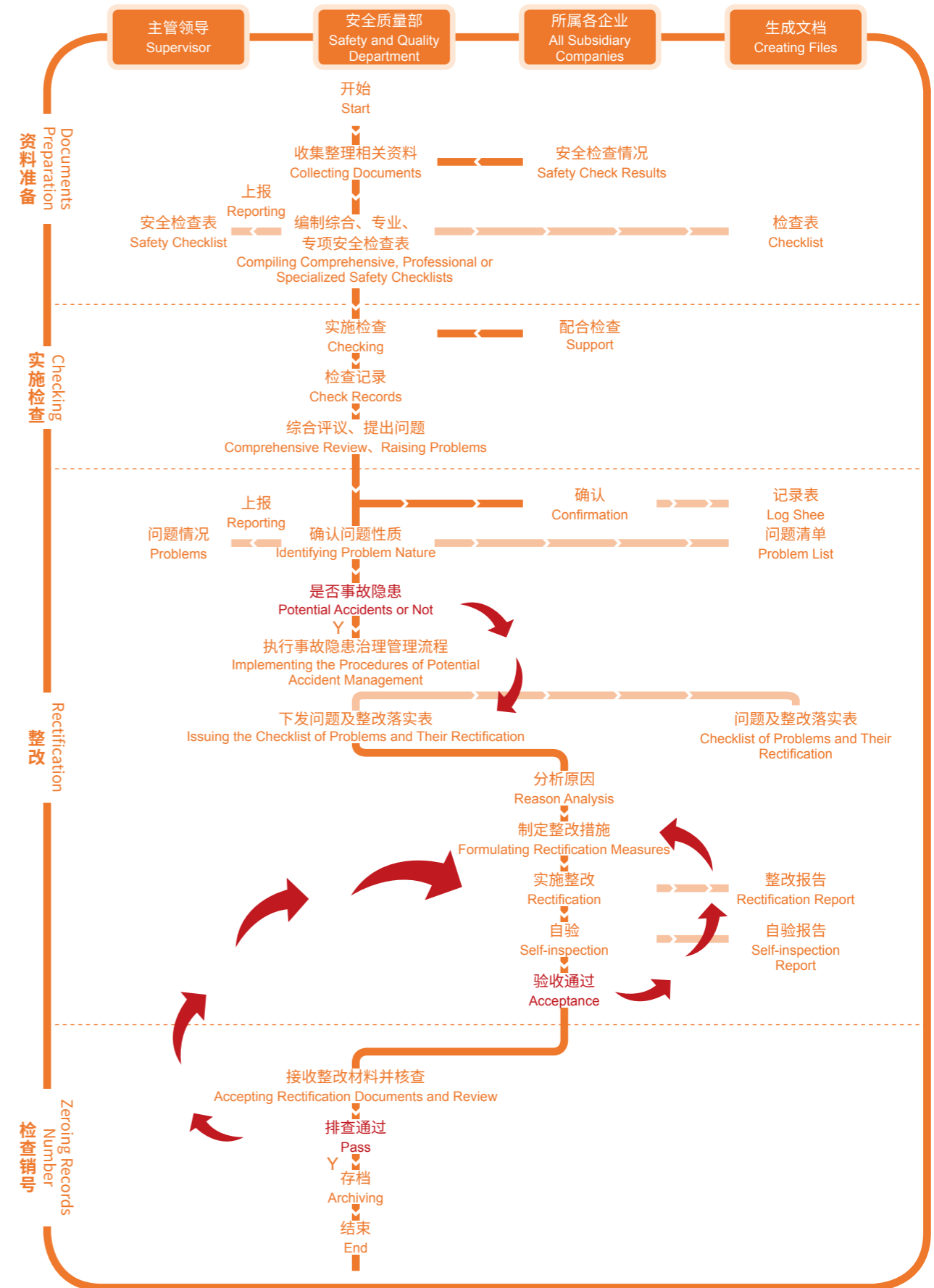
Upholding the principles of “Taking Safety and Security into Account While Engaging in Production and Business Operations”, CRSC established a safe production management committee with the Chairman of the Board as the director, made safe production decisions and took charge of safe production work. In 2019, CRSC delegated safety and security responsibilities to all levels, and cumulatively signed 15,313 letters of responsibility for safety and quality and 1,611 safety production agreements.

安全隐患防控

Preventing and controlling potential safety hazards

公司定期开展安全生产检查及隐患排查，及时发现不安全因素，对于有可能造成事故隐患的要求立即下令整改。2019年，公司对涉及建筑施工、市政公用和铁路工程的5个项目进行综合安全生产检查，对有毒有害作业分布及达标情况进行专项检查，对建筑施工企业进行安全生产条件动态核查，对事故隐患重点区域和重点项目进行全方位排查，并对海外项目开展安全生产监督抽查，已发现安全问题及事故隐患全部整改完毕。

CRSC regularly conducted production safety inspections and potential safety hazard examinations to identify risky factors in a timely manner, and problems prone to resulting in accidents were instructed to be addressed immediately. In 2019, CRSC carried out comprehensive production safety checks on 5 projects involving design, construction, municipal engineering and railway engineering, organized special checks on the distribution and compliance of toxic and hazardous work, implemented dynamic inspections of safe production conditions of construction enterprises, conducted all-round detections on key areas and key projects prone to potential accidents, and organized supervisory spot checks on production safety of overseas projects. All safety issues and accident threats have all be rectified.



安全文化塑造**Shaping safety culture**

公司坚持“安全第一、预防为主、综合治理”的方针，将安全教育培训纳入员工职业培训体系，建立员工安全培训教育档案，并监督培训落实情况，增强员工安全意识。2019年，公司人均安全生产培训12小时，全系统从业人员重、轻伤事故及职业病和职业中毒事故数均为0。

CRSC insisted on the policy of “Safety first, Prevention Upfront, Comprehensive Management”, incorporated safety education trainings into the occupational training system for employees, established employees’ safety education training files and supervised the implementation of these trainings to enhance their safety consciousness. In 2019, each CRSC employee averagely received 12 hours production safety training, and no CRSC employee suffered severe and minor accidents, occupational disease or occupational poisoning.

中国通号举办安全生产月教育培训活动CASE
案例**CRSC held Education and Training Activities on Production Safety Month**

2019年6月13日至14日，中国通号举办以“防风险、除隐患、遏事故”为主题的安全生产月教育培训活动，特别邀请中国安全生产科学研究院、中海油安全技术服务有限公司和北京市火灾防治中心安全生产专家，讲解生产经营单位安全生产主体责任、解读《生产安全事故应急条例》与应急能力建设和企业消防安全管理等内容，增强各级企业的责任感、使命感。

From June 13 to 14, 2019, CRSC held a series of education and training activities on the theme of “Prevention of Risks, Removal of Hidden Dangers, and Containment of Accidents” from whom China Academy of Safety Science and Technology, CNOOC Safety Technology Services Limited, and Beijing Fire Prevention Center safety production experts are invited in particular, explaining the responsibilities of the production safety entities of the production and operation units, interpreting *the Regulations on Production Safety Accidents*, emergency capacity building, and corporate fire safety management etc. to enhance the sense of responsibility and mission of enterprises at all levels.

打造应急管理防线**Creating an emergency management line of defense**

中国通号制定《中国铁路通信信号股份有限公司应急管理暂行办法》《中国铁路通信信号股份有限公司安全生产应急管理办法》《中国铁路通信信号股份有限公司生产安全事故报告和调查处理管理办法》等制度规范，明确应急管理工作原则、责任要求、应对机制等，建立科学高效的应急管理机制。

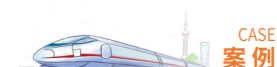
CRSC formulated *the Interim Measures for Emergency Management, Emergency Management Measures for Accidents and Disasters, the Measures for Production Safety Emergency Management, the Measures for Reporting, Investigation and Processing Management of Production Safety Accidents* and other regulations to clarify the principles, responsibilities, requirements and countermeasures and to establish scientific and efficient emergency management systems.

公司成立应急管理领导小组，下设4个工作组，领导各职能部门、所属企业积极应对自然灾害、事故灾难、公共卫生事件、社会安全事件等突发事件。

CRSC set up an emergency management leadership group with four working groups to lead various functional departments and subordinate enterprises to actively respond to natural disasters, accidents, public health events, social security events and other emergencies.

公司逐步完善应急预案体系，明确综合应急预案、专项应急预案、现场处置应急预案等要求，编制重点岗位应急处置卡，通过开展应急演练活动及效果评价，提高应急预案科学性、实用性。截至2019年12月31日，公司累计拥有综合应急预案、专项应急预案、现场处置方案等1,689个应急预案。

The company gradually improved the emergency plan system, clarified the requirements for comprehensive emergency plans, special emergency plans, and on-site emergency plans, prepared emergency response cards for key positions, and carried out emergency drill activities and effect evaluations to improve the scientific and practical nature of emergency plans. As of December 31, 2019, the company had a total of 1,689 emergency plans.

中国通号建立境外安全事件应急预案CASE
案例**CRSC established emergency response plan for overseas security incidents**

中国通号针对海外在建项目，组织建立包括国别或办事处综合预案、风险事件专项预案、多种突发事件现场处置方案的三级预案体系，规范应急管理和处置工作。同时，公司主动开展境外员工应急演练和人员避险自救培训，做到应知应会、熟练掌握、反应迅速、处置正确，保证境外安全生产工作安全有序。2019年，公司境外人员安全事故数为0。

For China's overseas projects under construction, CRSC organizes the establishment of a three-level plan system including country or office comprehensive plans, special plans for risk events, and various on-site emergency treatment plans to standardize emergency management and disposal. At the same time, the company actively carried out emergency drills and self-rescue training for overseas employees to ensure that they should know, be proficient, respond quickly, and handle correctly to guarantee the safety and orderliness of overseas production. In 2019, no safety accident was reported for overseas personnel.

确保产品服务质量

Guaranteeing product and service quality

中国通号严格遵循产品质量管理规定，制定《质量管控规则（试行）》《质量管理监督办法（试行）》《产品质量安全事故（故障）管理办法》《安全质量约谈办法》等制度规范，组织开展质量安全约谈、产品质量抽检，降低产品运营安全质量事故风险，有效预防、控制和消除潜在的质量安全隐患，为用户提供包括产品研发、设备制造、工程安装、集成调试、运营维护的全方位优质服务。2019年，公司产品质量抽检合格率、工程一次交付验收合格率均为100%，全系统较大及以上质量事故数为0。

CRSC strictly conformed to product quality management rules, and formulated *Quality Control Rules (Pilot)*, *Quality Management and Supervision Methods (Pilot)*, *Methods on Management of Product Safety and Quality Accidents (Failures)*, *Safety and Quality Interviewing Methods* and other regulations, and organized product safety and quality interviews and product quality spot checks to reducing risks in product operation, safety and quality, and to effectively prevent, control and eliminate potential safety and quality risks, thus providing all-round quality services (product research, equipment manufacturing, engineering installation, integrated commissioning, operation and maintenance) for our clients. In 2019, the pass rate of product quality spot check and the acceptance rate of delivered projects both reached 100%, and no major quality accidents occurred in CRSC.

中国通号全方位质量管理体系 CRSC's All-round Quality Management System

产品研发 Product Development

明确关键质量控制点及控制要求，进行可靠性、安全性计算与分析，保证产品满足相应等级安全标准。

The key quality control points and control requirements were defined, and reliability and safety calculations and analysis were performed to ensure that safety standards of the corresponding grades were met.

设备制造 Device Manufacturing

出台《产品质量检验工作管理办法》，设立产品质量检验部门，完成产品入场、生产、出厂全流程的严格检验，建立产品质量检验档案，禁止不合格产品流出。

CRSC issued the Measures for *the Management of Product Quality Inspection* and set up a product quality inspection department to complete strict whole-process inspections from entry inspection, process inspection to ex-factory inspection; product quality inspection files were established to completely prohibit the outflow of unqualified products.

运营维护 Operation & Maintenance

细化产品使用说明书及培训教材，制定安全管控措施。

All kinds of product manuals and training materials were detailed and safety control measures established.

工程安装 Engineering Installation

严格按照施工安装标准，加强施工安装过程安全分析和质量控制。

The construction and installation standards were strictly followed to strengthen the safety analysis and quality and safety control during the process.

集成调试 Integrated Commissioning

提供产品检验、测试工作，识别并有效应对集成调试存在的管理与技术问题。

Product quality inspection and testing was carried out to effectively identify and eliminate management and technical safety issues.

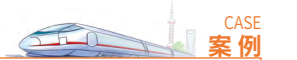
2019年，公司所属企业开展了安全产品数据配置失效模式分析、提升产品可靠性技术和管理工作、明确产品重大变更管控要求、发布产品安全特性清单、开展产品测试案例库建设等多项质量管理行动，全力保障产品质量安全。

In 2019, CRSC's subsidiaries carried out a number of quality management actions including safety product data configuration failure mode analysis, improving product reliability technologies and management methods, clarifying management requirements for major product changes, publishing product safety feature lists, and conducting product test case library construction etc., to fully guarantee product quality and safety.

同时，公司所属设计研发、生产制造、工程建设企业均构建了涵盖客户隐私保护、客户投诉处理机制、创新服务方式等全生命周期的客户服务体系，让客户享受最贴心、最优质的服务。

At the same time, CRSC's subordinate system integration, R&D design, manufacturing, and construction companies have established a customer service system covering the entire life cycle of customer privacy protection, including customer complaint handling mechanism, and innovative service methods etc., so that customers enjoy the most intimate and best quality services.

中国通号荣获“全面质量管理推进40周年杰出推进单位”



CASE
案例

CRSC won the "Outstanding Promotion Unit for 40th Anniversary of Total Quality Management Promotion"



2019年8月28日，全面质量管理推进暨中国质量协会成立40周年纪念大会在京举办，中国通号凭借在产品质量领域的突出贡献，被授予“全面质量管理推进40周年杰出推进单位”。

On August 28, 2019, the 40th Anniversary Conference of the Promotion of Total Quality Management and the founding of the 40th anniversary of China Quality Association was held

in Beijing. With its outstanding contribution in the field of product quality, CRSC was awarded the "Outstanding Unit for 40th Anniversary of Total Quality Management Promotion".

中国通号组织开展质量管理小组活动



CASE
案例

CRSC organized quality management team activities



2019年，中国通号组织开展2019年度质量管理小组、质量信得过班组评比，增强各项优秀质量成果的交流与沟通。3个质量小组荣获国家级优秀称号，5个班组荣获全国质量信得过班组称号，77个质量管理小组分获全国工程、全国铁道行业级优秀称号。

In 2019, CRSC organized the 2019 annual quality management team and quality trustworthy team evaluation to

enhance the exchange and communication of various excellent quality results. Three quality teams won the title of National Excellent, five teams won the title of National Trustworthy Team, and 77 small quality management teams won the National Engineering and National Railway industry excellent titles.



绿色驱动未来

Green Creates Bright Future

中国通号牢固树立“绿水青山就是金山银山”的环保理念，严格遵守《中华人民共和国环境保护法》等相关法律法规，坚持节约资源和保护环境的基本国策，持续推进环境保护工作。

CRSC firmly upholds the environmental idea of “Green Mountains and Clear Water Are as Valuable as Mountains of Gold and Silver”, strictly obeys *Environmental Protection Law of the People's Republic of China* and other relevant regulations, insists on basic national policies of saving resources and protecting environment, and continuously advances environmental protection work.

节约能源资源

Saving energy resources

减少“三废”排放

Reducing emissions of “three wastes”

提供绿色解决方案

Providing green solutions

节约能源资源 Saving energy resources

公司建立环境保护管理体系，制定《中国铁路通信信号股份有限公司能源节约与生态环境保护管理办法》，明确各部门、各企业环境保护职责，设立年度重点节能减排目标项目，监督所属企业节能减排工作，倡导应用节能减排新技术、新产品，将节能意识融入设计研发、生产制造、工程建设等全流程。

CRSC has established environmental protection management system, formulated the Interim Measures for *the Management of Energy conservation and Ecological Environment Protection*, clarified the environmental protection responsibilities of various departments and enterprises, set up annual key projects with energy conservation and emission reduction goals, conducted spot checks on energy conservation and emission reduction work of all subordinate enterprises, advocated the application of new technologies and new products for energy conservation and emission reduction, and incorporated the energy-saving consciousness into design, research, development, process manufacturing, engineering construction and other processes.

2019年，公司监督检查所属企业节能减排管理制度建设及执行情况、能源消耗台账，大气排放口、污水处理站设备运行情况、第三方抽检结果等，敦促所属企业实现资源利用效率最大化。

In 2019, the company will supervise and inspect the construction and implementation of energy conservation and emission reduction management system, energy consumption account, air discharge outlet, sewage treatment station equipment operation, third-party spot check results, etc., and urge the affiliated enterprises to maximize resource utilization efficiency.

中国通号2017-2019年度能源资源消耗情况
CRSC Energy Consumption in 2017-2019

能源类型 Energy types		电力消耗量 Electricity	液化气使用量 Liquefied gas	汽油使用量 Gasoline	柴油使用量 Diesel	热力消耗量 Heating power	天然气用量 Natural gas
		兆瓦时 (MWH)	立方米 (m ³)	吨 (tons)	吨 (tons)	百万千焦 (million KJ)	立方米 (m ³)
工程建设 Construction	2017	38,541.4	0	5,594.8	8,973.7	10,239.8	82,400.0
	2018	19,236.9	83,174.0	3,147.5	2,476.7	14,989.9	130,365.0
	2019	19,078.4	89,775.6	2,819.0	2,738.3	16,898.0	153,522.9
生产制造 Manufacturing	2017	30,787.1	0	177.4	52.7	65,634.0	1,704,800.0
	2018	32,707.3	0	158.3	47.2	70,157.0	1,183,900.0
	2019	41,350.0	0	118.1	38.1	63,593.0	1,504,000.0
办公场所 Administration	2017	48,301.8	20,335.0	790.4	0	0	1,898,378.9
	2018	36,663.0	33,366.9	1,097.4	12.5	2,134.9	1,873,107.3
	2019	31,788.4	59,516.5	1,060.0	10.2	4,711.6	1,336,783.3
合计 Total	2017	117,640.3	20,335.0	5,772.2	9,026.4	75,873.8	3,685,578.9
	2018	88,607.0	116,541.0	4,403.3	2,536.4	87,281.7	3,187,372.3
	2019	92,216.8	149,292.1	3,997.1	2,786.6	85,202.6	2,994,306.2

所属企业节能举措

Energy Conservation Initiatives of Subordinate Entities

设计研发类 R&D Entities

推广节能环保设计思路和集成理念，优先选用节能环保技术方案、电子设备，把控源头。

Promote the design ideas and integration concepts of energy conservation and environmental protection, and prefer to the adoption of energy-saving and environmental protection technologies and electronic devices to control the sources.

推行绿色办公，倡导节水节电、节约纸张等，增强员工节约意识。

Promote green office, advocate water, electricity and paper conservation, and enhance employees' conservation awareness.

生产制造类企业 Manufacturing Entities

采购环保设备及原料，改进工艺技术，优化生产流程，淘汰落后产能。

Purchase environmental devices and materials, improve process technologies, optimize production processes, and eliminate outdated production facilities.

工程建设类企业 Engineering Entities

建立工程建设项目环保管理制度，规范能源资源使用。

Establish environmental management system for engineering construction projects, and regulate the use of energy resources.

中国通号2017-2019年度能源资源消耗情况

CRSC Energy Consumption in 2017-2019

能源类型 Energy types	用水量 Total water consumption	用水强度 Water consumption intensity	综合能源消耗量 Comprehensive energy consumption	综合能源消耗强度 Comprehensive energy consumption intensity
	吨 (tons)	吨/万元 (tons/10,000 RMB)	吨 (tons)	吨/万元 (tons/10,000 RMB)
2017	949,091.6	0.3	43,681.9	0.01
2018	1,691,950.8	0.4	28,896.3	0.01
2019	1,449,785.8	0.3	28,848.3	0.01

中国通号2017-2019年度制成品包装消耗量

CRSC Packing Material Consumption for Finished Products in 2017-2019

包装材料类型 Packing material types	生产制造包装用料 Manufacturing packing material			建筑工程包装用料 Construction packing material	
	纸箱 Carton	木材 Timber	塑料 Plastics	塑料 Plastics	金属 Metal
	吨 (tons)	吨 (tons)	吨 (tons)	吨 (tons)	吨 (tons)
2017	532.1	2,580.7	118.4	42.7	599.6
2018	238.6	3,055.2	41.4	68.0	114.0
2019	321.5	3,849.1	37.3	8.2	109.8

减少“三废”排放

Reducing emissions of "three wastes"

中国通号严格遵守《中华人民共和国大气污染防治法》《中华人民共和国水污染防治法》《中华人民共和国固体废物污染环境防治法》等相关法律法规，管控“三废”排放。

CRSC has strictly complied with relevant laws and regulations such as *the Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution, the Law of the People's Republic of China on Water Pollution Prevention and Control and the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste* to control the emissions of "Three Wastes".

废气治理

Exhaust gas treatment

通过安装、改造废气处理装置，严格管控二氧化硫、氮氧化物等排放，确保排放浓度、排放速率符合国家及地区各类大气污染物排放标准。

Strictly control the emissions of sulfur dioxide and nitrogen oxides through the installation and modification of exhaust gas treatment devices to ensure that the concentration and rate of emissions meet the national and regional standards for the discharge of various air pollutants.

废水治理

Wastewater treatment

生产及生活废水排放方式以循环利用为主，经设备处理达标后统一排放。

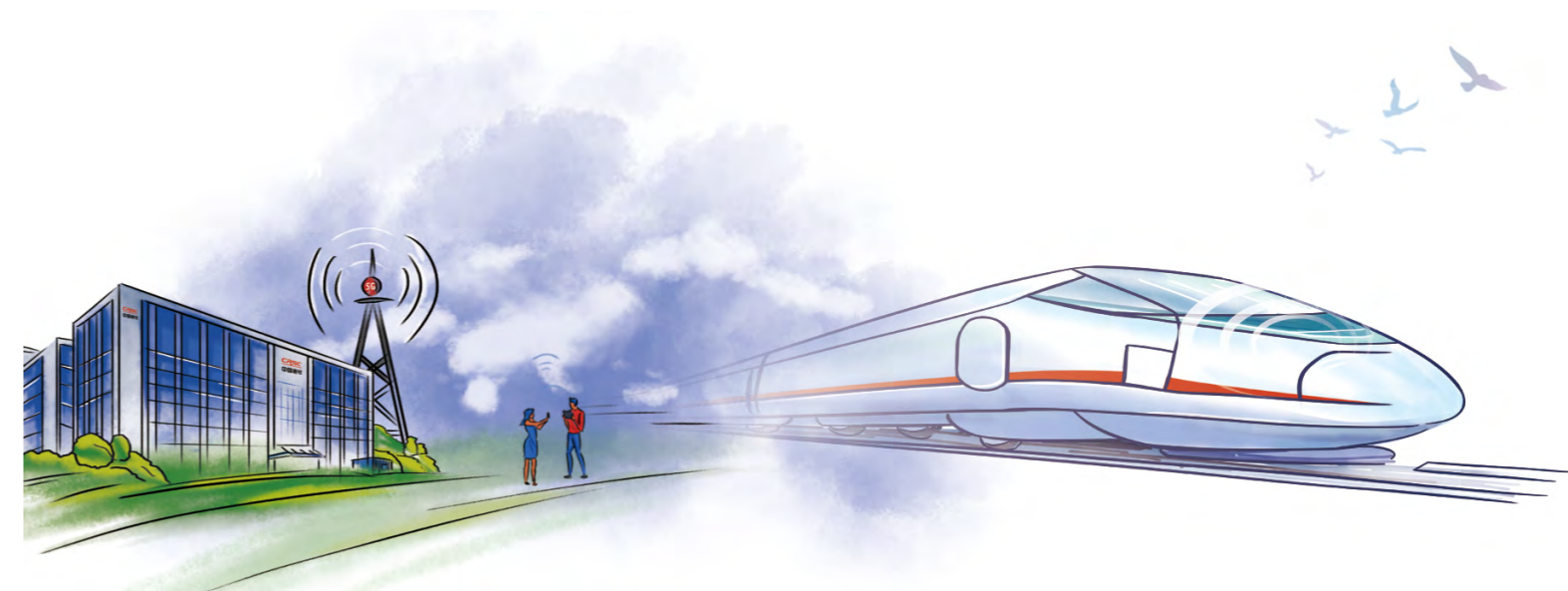
The method of production and domestic wastewater discharge is mainly recycling, and it will be discharged uniformly after the equipment treatment reaches the standard.

固体废弃物

Solid waste

定期收集并规范处理办公垃圾、建筑垃圾、包装材料等一般废弃物；分区存放，并由有资质的第三方处理危险废弃物（包括生产制造产生的危险化学品、电镀污泥、有机溶剂、乳化液等）。

Regular collection and standard treatment of general waste such as office waste, construction waste, packaging materials; storage by area, and hazardous waste (including hazardous chemicals produced by manufacturing, electroplating sludge, organic solvents, emulsions, etc.) treated by the qualified third party.



中国通号2017-2019年度排放物情况

CRSC Emissions in 2017-2019

排放物类别 Emission type	2017	2018	2019
二氧化硫 (吨) Sulfur dioxide (tons)	17.2	0.2	0.02
氮氧化物 (吨) Nitrogen oxides (tons)	0.7	0.5	1.0
化学需氧量 (吨) Chemical oxygen demand (tons)	2.1	2.2	2.6
氨氮 (吨) Ammoniacal nitrogen (tons)	0.4	0.6	0.4
有害废弃物 (吨) Hazardous wastes (tons)	124.3	167.7	168.5
温室气体排放总量 (吨) Total greenhouse gas emissions (tons)	185,653.4	104,744.4	113,283.7
温室气体排放强度 (吨/人民币万元) Greenhouse gas emission intensity (tons/10,000 RMB)	0.05	0.03	0.03
范畴一：温室气体排放量 (吨) Category I: Greenhouse gas emissions (tons)	54,119.1	29,067.2	28,433.6
范畴二：温室气体排放量 (吨) Category II: Greenhouse gas emissions (tons)	131,534.3	75,677.2	84,850.1

注：本公司温室气体排放参考《2006年IPCC国家温室气体清单指南》《2017年度减排项目中国区域电网基准线排放因子》等文件的排放因子，进行统计核算。

For CRSC's greenhouse gas emissions, please refer to 2006 IPCC Guidelines for National Greenhouse Gas Inventories and Baseline Emission Factors of China Regional Power Grid in 2017 Emission Reduction Projects for statistical calculations.

中国通号2017-2019年度一般废弃物排放情况

CRSC Emissions of General Wastes in 2017-2019

一般废弃物类型 General waste type	生产制造 Manufacturing					工程建设 Construction	办公场所 Administration				
	木材 Timber	塑料 Plastics	金属 Metal	纸箱 Carton	其他 Others	建筑垃圾处理量 Construction waste disposal amount	废纸 Waste paper	废旧灯管 Waste lamps	电子垃圾 Electronics waste	硒鼓等打印耗材 Toner cartridge and other printing consumables	灯泡 Bulbs
	吨 (tons)	吨 (tons)	吨 (tons)	吨 (tons)	吨 (tons)	吨 (tons)	千克 (kg)	台 (piece)	台 (piece)	个 (piece)	个 (piece)
2017	274.0	532.7	1,830.3	84.6	-	6,776.1	50,126.2	2,565	215	1,943	-
2018	215.3	246.5	1506.2	95.5	93.9	48,929.0	17,810.9	2,454	628	5,926	60
2019	118.8	344.1	1425.1	72.5	138.5	51,528.9	24,054.7	3,166	1,146	7,325	1,460

提供绿色解决方案

Providing Green Solutions

中国通号将绿色低碳理念融入产品设计、研发、生产、应用全过程，发挥轨道交通核心技术优势，通过改变工艺技术、开发节能高效产品，延伸节能环保新产业，引导轨道交通装备行业向绿色、智能方向发展。

CRSC integrates green low-carbon concept into product design, research, development, production and application process, and gives full play to its own core technological advantages of rail transit industry by modifying process technologies, developing efficient and energy-saving products and incubating new environmentally-friendly industries, thus leading the rail transit equipment industry to develop in a green and intelligent direction.

公司持续整合绿色出行解决方案，在能源分级利用、工业园区改造升级、信息化监控智能管理、在线仿真控制技术、绿色建筑智能楼宇等方面不断进行技术优化，推出海绵城市、地下综合管理综合监控与报警系统、智慧建筑综合应用系统、智能建筑解决方案和电源及环境集中监控系统、铁路基础设施如屏蔽门、PM2.5空气净化器（装置）、高速铁路道岔转换设备数字化仿真平台等成果。

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



乐业汇聚英才

Good Environment for Talents

立己达人，温暖万家。中国通号将员工视为企业进步的重要力量和企业成果的共享主体，坚持“开放引进、精英集聚”的人才战略，保障员工基本权益，助力员工职业发展，关心员工生活，努力把握员工所思所想所盼，增强员工归属感、幸福感。

Enabling others by strengthening oneself and bringing warmth to families. CRSC has been facilitating the employees to achieve success in all aspects. It considers employees as the important driving force for enterprise progress, and agrees that the employees are qualified to share enterprise achievements. By implementing the talent strategy of “open access and elite concentration”, CRSC guarantees basic rights and interests of employees, facilitates their development, care for their livings, strives to meet their needs, and enhances their belongingness and well-being.

员工权益保障

Protecting employees' rights and interests

员工培训发展

Assisting in talent development

员工生活关怀

Caring for employees' health and living

员工权益保障

Protecting employees' rights and interests

中国通号严格遵守《劳动法》《劳动合同法》《工会法》等相关法律法规，制定《中国铁路通信信号股份有限公司招聘管理制度》《中国铁路通信信号股份有限公司劳动保护管理办法》等制度规范，坚持平等与多元化雇佣原则，严禁雇佣童工和强制劳工，杜绝一切性别、民族、宗教、年龄等歧视现象。2019年，公司在职工20,175人。

In strict accordance with the relevant laws and regulations such as *the Labor Law of the People's Republic of China, Labor Contract Law, and Trade Union Law*, CRSC formulated the *Recruitment Management System and Measures for the Management of Labor Protection*, and insisted on the principle of "fair and diversified employment", strictly prohibited employment of child labor and forced labor and eliminated all discriminations including gender, ethnicity, religion and age. In 2019, CRSC boasted 20,175 employees on labor contract.



薪酬福利

Remuneration and benefits

制定《中国铁路通信信号股份有限公司总部员工薪酬管理办法》《中国铁路通信信号股份有限公司员工考勤与休假管理暂行办法》等，依法为员工缴纳充足的五险一金和补充医疗保险，规范员工薪酬管理制度，保障员工休息休假等基本权益。

Formulate management measures such as *the Administrative Measures for Salaries of CRSC Headquarters and Interim Measures for the Administration of Attendance and Vacation of CRSC Employees*, and provide employees with sufficient five insurances and one fund and supplements according to law. Medical insurance, standardize employee salary management system, and protect employees' basic rights such as rest and vacation.



民主沟通

Democratic communication

制定《中国铁路通信信号股份有限公司职工代表大会实施办法》《中国铁路通信信号股份有限公司职工代表大会表决办法》等制度文件，设立职工代表大会，审议企业改革发展的重大事项及与员工利益密切相关的事项，规范民主管理。

Formulate institutional documents such as *the Implementation Measures for CRSC Workers' Congress and the Voting Measures for CRSC Workers' Congress*, establish workers' congresses, consider major issues of corporate reform and development and matters closely related to the interests of employees, and standardize democratic management.

中国通号企业年金业务培训

CRSC organized a business training on enterprise annuity



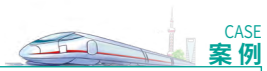
中国通号将企业年金作为一项人才激励的手段，激发职工干事创业的主动性和创造性。2019年，中国通号在京举办企业年金业务培训，来自中国通号所属企业的50名企业年金管理人员通过参加培训和考试，了解企业年金的相关政策。

CRSC considered enterprise annuity as a means of talent motivation to stimulate the employees' entrepreneurship initiative and creativity. In 2019, CRSC held a business training on enterprise annuity, and 50 enterprise annuity management staffs attended the training and relevant examination to study enterprise annuity policies.

中国通号2019年度员工构成情况

CRSC Employee Mix in 2019

类别 Types	员工人数 Numbers	
按性别结构划分的员工人数 By gender	男性 Male	15,238
	女性 Female	4,937
按专业构成划分的员工人数 By employee type	管理人才 Management employees	3,963
	研发人员 R&D employees	4,235
	生产人员 Production employees	10,202
	销售人员 Sales employees	1,208
	辅助人员 Supporting employees	413
	其他 Others	154
按教育程度划分的员工人数 By educational background	研究生 Postgraduate	2,528
	大学本科 Bachelor	10,628
	大学专科及以下 Associate degree or below	7,019



员工培训发展

Assisting in talent development

中国通号重视人才培养，制定《中国铁路通信信号股份有限公司培训管理办法》等管理办法，制定年度培训工作计划，并持续升级培训方案，助力员工成长。

Paying attention to talent cultivation, CRSC formulated *the Training Management Method*, developed annual training plans, and constantly upgraded training schemes to facilitate the employees' growth and development.

2019年，公司共举办培训项目4,599班次、培训62,646人次，其中，管理人员培训11,848人次，专业技术人员培训37,634人次，技能人员培训13,164人次。通过加强培训力度，提升人才素质，构建符合公司发展的人才队伍。

In 2019, CRSC held 4,599 trainings and benefited 62,646 participants, including 11,848 management trainees, 37,634 professional technician trainees, and 13,164 skilled personnel trainees. By strengthening trainings and enhancing talent quality, CRSC cultivated excellent talent teams to facilitate its development.

中国通号2019年度员工培训情况

Staff training of China Unicom in 2019

类别 Types		受训人员百分比 (%) Training Rate (%)	平均培训小时数 (小时) Average Training Hours (h)
按性别划分的员工 培训情况 By gender	男性 Male	86.0	39.3
	女性 Female	85.0	36.9
按雇员层级划分的 员工 培训情况 By employee type	高级管理层 Senior Management	100.0	38.1
	中级管理层 Middle-level Management	80.0	45.7
	基层员工 Staff	86.0	38.0



CASE
案例

中国通号举办注册质量工程师继续再教育培训

CRSC held Further Education Training on Certified Quality Engineer



2019年9月18日，中国通号在京举办注册质量工程师继续再教育培训，助力员工更新、拓展质量专业知识，为企业高质量发展贡献力量。

On September 18, 2019, CRSC held Further Education Training on Certified Quality Engineer in Beijing to help employees update and expand quality expertise, thus allowing them to contribute to CRSC's high-quality development.

公司制定《中国铁路通信信号股份有限公司工程系列专业技术职务评聘管理办法》《中国铁路通信信号股份有限公司科技人才评价管理办法》等制度文件，明确管理人才、科技人才、技术人才的选拔、考核、晋升办法，并为员工提供内部轮岗等职业支持，畅通员工职业发展通道。

2019年

组织劳动竞赛

organized labor competitions

24场

参与人数约

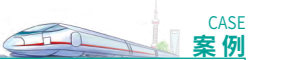
total of participants

1.2 万人次

CRSC formulated *the Methods on the Assessment and Appointment Management of Professional and Technical Posts*, *the Methods on the Assessment Management of Technology Talents* and other documents to clarify the selection, appraisal and promotion of management, technology and technical talents, providing internal rotation and other career support for our employees and creating a smooth career development path for them.

公司还号召各基层单位围绕企业中心工作和重点任务，积极开展“当好主人翁、建功新时代”劳动和技能竞赛。2019年，全系统共组织劳动竞赛24场次，参与人数约1.2万人次。

Based on central work and key missions, CRSC also advocated its branches and subsidiaries to vigorously organize a series of labor and skill competitions with the theme of "Contributing to the New Era with a Sense of Ownership". In 2019, CRSC organized 24 labor competitions, with a total of about 12,000 participants.



CASE
案例

中国通号首次实现总部全体员工现场述职全覆盖

CRSC achieved all headquarters staffs' onsite reporting of their work for the first time



2019年2月23日，中国通号开展总部员工现场述职评价，总部全体106名员工逐一走上述职席，接受组织考核评价，展示了总部员工干事创业、奋勇争先的良好精神风貌，助力提升总部决策力、战斗力。

On February 23, CRSC organized all headquarters staffs to report their work. 106 staffs at the headquarters went to the Reporting Platform to receive appraisals and comments one by one, displaying their good spirits of forging ahead and enhancing the headquarters' decisiveness and strength.

员工生活关怀

Caring for employees' health and living

中国通号主动关怀困难员工、女性员工、一线生产员工等特殊员工群体，举办各类文体活动，平衡员工工作与生活。

CRSC took the initiative to care for needy employees, female employees, front-line workers and other special employees, and held various sports and cultural activities to help them achieve a balance between work and life.

困难员工关怀

Caring for Needy Employees

公司修订《中国铁路通信信号股份有限公司工会帮扶救助实施办法》，建立“基层-集团级-股份级”三级帮扶救助体系，持续扩大患病职工救助病种，提高助学补贴力度，新增定额定期困难补助，根据企业工资情况分层设定救助比例，帮扶困难员工渡过难关。2019年，各企业工会为303名在职职工提供医疗救助、困难救助共计145.25万元。

CRSC formulated *the Measures for Implementation of Assistance and Relief of CRSC Labor Union* and initially established a three-tier assistance system based on "the grassroots level, the Group level and the Company level". It continued to expand the relief disease types for diseased employees, increased the school subsidies and newly added fixed and regular hardship allowance. Based on their salaries, CRSC set up the relief ratios based on needy levels and helped the needy employees to get over it. In 2019, CRSC Labor Union provided 1.4525 million RMB medical assistance and hardship allowance to 303 employees on labor contract.

女性员工关怀

Caring for Female Employees

公司依据铁路总工会女职工委员会关于推广应用《促进工作场所性别平等指导手册》的通知要求，发动各级工会通过张贴宣传海报、开展专项讨论、举办在线答题等方式宣传性别平等的重要性和必要性，增强全体员工性别平等意识。同时，通过执行女职工“四期保护”、组织开展女性员工卫生健康知识讲座等，维护女性员工合法权益。

In response to Railway Trade Union Female Employees Committee's request of promoting and applying *the Guidance Manual for Promotion of Gender Equality in the Workplace*, CRSC called labor unions at all levels to publicize the importance of necessity of gender equality by posting propaganda posters, organizing special discussions and delivering online questionnaire etc., to enhance gender equality consciousness of all employees. At the same time, by implementing "Four-Phase" protection for female employees and organizing lectures on health knowledge for female employees, CRSC maintained legal rights and interests of female employees.

一线员工关怀

Caring for Front-line Workers

公司通过举办“职工之家”“职工小家”创建活动，推进重点工程项目“三工建设”活动，改善一线员工生产生活条件，为一线员工送温暖。

CRSC continuously carried out activities to build "Home of Staff" and "Small House of Staff", advanced the "Three-Kinds-of-Employee Constructions" of key projects to improve the working and living conditions of front-line workers and to bring warmth to them.

丰富文体生活

Abundant Sports and Cultural Activities

公司组织开展形式多样的文体活动，2019年，先后开展“三八”节“书香通号·巾帼芳华”主题读书征文、“中国梦·通号情·劳动美”职工才艺集中展示、“中国通号第一届‘行健杯’乒乓球比赛”等活动，丰富员工精神世界。

CRSC organized different kinds of sports and cultural activities. In 2019, CRSC successively organized "March 8" essay competition with the theme of "Literate CRSC: Charm of Heroines" and the employee talent show themed as "Chinese Dream, CRSC Bond, and Beauty of Work", the first "Xingjian Cup" Table Tennis Competition and other activities to nourish the employees' mental health.

中国通号举办《我和我的祖国》集体快闪活动

CRSC held a collective flash performance with the theme of My Motherland and I



2019年9月27日，中国通号在京举办《我和我的祖国》集体快闪活动，来自园区各个工作岗位的700名通号员工组成数字“70”，以饱满的热情和深情的歌声向祖国母亲献礼。

On September 27, CRSC held a collective flash performance themed as My Motherland and I in Beijing. 700 CRSC staffs made the number "70" in celebration of the seventieth anniversary of the establishment of New China with full passion and soulful singing.

中国通号员工关怀活动

CRSC Employee Caring Activities



元宵节猜灯谜活动
Guessing Lantern Riddles on the Lantern Festival



国际妇女节活动
Women's Day Activity on March 8



偕行共促发展

Cooperation Promotes Development

中国通号主动践行“一带一路”倡议，发挥产业链一体化优势，加速中国轨道交通业务“走出去”步伐，为全球轨道交通事业发展贡献“中国方案”。公司不断健全供应链管理体系，与各地方政府、企业、学术机构积极开展合作，助力构建更负责、更公平、更开放的行业生态。同时，中国通号积极响应国家号召，助力贫困地区经济发展，在发展中保障民生、改善民生，与社会共同发展。

CRSC took the initiative to practice the Belt and Road Initiative (BRI), gave full play to the advantages of integrated industrial chain, and accelerated the “going globally” pace of China’s rail transport, contributing “Chinese Scheme” to global rail transport industry. CRSC improved the supply chain management system, cooperated with local governments, enterprises and academic institutions to facilitate a more responsible, fair and open ecosystem and to achieve common development. Meanwhile, CRSC actively responded to the CPC Central Committee’s call for winning the battle against poverty, help poor masses increase income and enhance economic and social development foundations.

打造责任供应链

Creation of responsible supply chain

开展战略合作

Engagement in strategic cooperation

响应“一带一路”

Response to the BRI

助力社会和谐

Promoting social harmony

打造责任供应链

Creation of responsible supply chain

公司制定《中国铁路通信信号股份有限公司供应商管理办法》《中国铁路通信信号股份有限公司工程劳务分包管理办法》《中国铁路通信信号股份有限公司供应商信用评价管理办法》《中国铁路通信信号股份有限公司供应商黑名单管理办法》等专项管理制度，坚持“统一领导、分级管理、资格审查、动态监控”的管理原则，完善供应商信息，定期开展单一采购专项纠察工作，加强供应商不良行为监管，打造阳光供应链、绿色供应链、责任供应链。

CRSC formulated specialized supplier management systems such as *Supplier Management Measures*, *Labor Subcontracting Management Methods and Measures for the Management of Supplier Credit Evaluation*, insisted on the management principles of “Unified Leadership, Graded Management, Qualification Review and Dynamic Monitoring”, perfected supplier information, regularly conducted special investigation into single-source procurement, enhanced the supervision over suppliers' misconduct, and built a transparent, green and responsible supply chain.



开展战略合作 Engagement in strategic cooperation

中国通号构建战略共享机制及平台，通过与地方政府高层互访交流，对接双方诉求，达成战略合作发展协议，落实重大项目，加深友好关系，实现发展共赢；通过与优秀企业、科研院所战略合作，发挥多方优势，实现强强联合，价值共创。

By constructing strategic sharing mechanisms and platforms, CRSC and high-level leaders of local governments paid mutual visits and communicated to convey both sides' appeals and conclude strategic cooperation development agreements, thus implementing key projects, deepening friendly relations and achieving win-win cooperation. Through strategic collaborations with outstanding enterprises and research institutes, CRSC gave play to the advantages of all concerned parties, achieved powerful combination and commonly created values.

政企合作

Government-enterprise cooperation

中国通号参加2019湖南与央企对接合作大会

CRSC participates in the 2019 Hunan and Central Enterprise Docking Cooperation Conference

2019年6月27日至28日，中国通号出席在长沙举行的2019湖南与央企对接合作大会，与长沙市人民政府签约战略合作协议，继续围绕“一二三”的总体思路，做到实现“一个目标”，推进“两个项目”，聚焦“三个板块”，加大合作，携手共进。

From June 27 to June 28, 2019, CRSC attended the 2019 Hunan and Central Enterprise Docking Cooperation Conference held in Changsha, signed a strategic cooperation agreement with the Changsha Municipal People's Government, and continued to focus on the general idea of "One Two Three" to achieve "One Goal", Advancing "Two Projects", focusing on "Three Sectors" and increasing cooperation and work together.



校企合作

University-enterprise cooperation

中国通号智慧城市研究设计院与清华大学建筑设计研究院签署战略合作协议

CRSC and Tsinghua University Architectural Design and Research Institute signed strategic cooperation agreement

2019年12月3日，中国通号智慧城市研究设计院与清华大学建筑设计院举办战略合作签约仪式，发挥各自专业能力及市场资源优势，相互协作，共同发展。

On December 3, 2019, the subordinate signal and communication Smart City's Research and Design Institute of CRSC and the Tsinghua University Architectural Design Institute held a strategic cooperation signing ceremony to give play to their respective professional capabilities and market resource advantages, collaborate with each other and develop together.



企业合作

Enterprise-enterprise cooperation

中国通号智慧城市研究设计院助力兰州智慧城市建设

CRSC Smart City Research Institute helped Lanzhou build a smart city

2019年，中国通号智慧城市研究设计院与兰州黄河生态旅游开发有限责任公司签订智慧城市信息化建设战略合作协议，在兰州市智慧城市旅游、智慧交通等信息化领域开展全方位合作，促进大数据在兰州旅游、交通等领域的推广应用，实现互利共赢。

In 2019, the Smart City Research and Design Institute affiliated to CRSC and Lanzhou Yellow River Ecotourism Development Co., Ltd. signed a strategic cooperation agreement on smart city informatization construction to carry out all-round cooperation in the informatization fields of smart city tourism and smart transportation etc. in Lanzhou, encouraging the promotion and application of big data in the fields of tourism and transportation in Lanzhou and achieving mutual benefit and win-win cooperation.



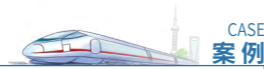
响应“一带一路”

Response to the BRI

中国通号秉承在开放中做大共同利益，在包容中谋求机遇共存的理念，坚持做践行“一带一路”倡议的领先者，助力全球轨道交通事业高质量发展。

公司密切跟踪中老铁路、中泰铁路、英国HS2、匈塞铁路匈牙利段等“一带一路”重点项目，稳步推进印尼雅万高铁、匈塞铁路贝旧段、巴基斯坦拉合尔橙线等在建项目，成功签订埃及斋月十日城铁路通信信号系统集成和泰国复线改造项目，持续与德铁集团、南部非洲铁路联盟、泰国国家铁路局等开展国际交流合作，参与第二届中国国际进口博览会、第四届中国-中东欧国际创新合作大会等国际会议，进一步提升全球配置资源能力和国际影响力，推进中国高铁技术和标准走向世界。

中国通号中标斋月十日城项目通信信号系统采购及维保

CASE
案例

CRSC won the bid for the procurement and maintenance of the communication signal system of the Ramadan 10 City Project

2019年8月23日，中国通号所属企业卡斯柯信号有限公司与中国华信与埃及项目总包方联合体共同签署“埃及斋月十日城铁路项目通信信号系统采购及维保合同”项目商务合同，标志着中国轨道交通信号系统走进“一带一路”沿线国家取得又一突破。

埃及斋月十日城铁路是连接开罗市区、斋月十日城和新行政首都的轻轨线，线路全长约74公里。中国通号所属企业卡斯柯信号有限公司将为该项目提供完全国产化的Urbalis 888 CBTC信号系统解决方案，为埃及用户提供技术领先、安全可靠的城轨信号系统支持。

On August 23, 2019, CRSC Casco, CEFC China and the Egyptian Project General Contractor Consortium jointly signed a business contract for the "Purchasing and Maintenance Contract for the Communication Signal System of the Ramadan tenth City Railway Project in Egypt", marking another breakthrough was made, that China's rail transit signal system entered the countries along the "Belt and Road".

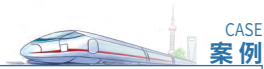
The Ramadan Tenth City Railway in Egypt is a light rail line connecting the city of Cairo, Ramadan tenth city and the new administrative capital, with a total length of about 74 kilometers. Casco of CRSC corporation will provide a fully domesticated Urbalis 888 CBTC signal system solution for this project, and provide Egyptian users with technologically advanced, safe and reliable urban rail signal system support.



Upholding the concept of opening to greater common interests and seeking for opportunity sharing, CRSC took the lead to practice BRI and facilitate high-quality development of global rail transport industry.

CRSC closely followed the progress of key Belt and Road projects like China-Laos Railway, Sino-Thai Railway, British HS2 and Hungry-Serbia Railway, and steadily advanced work-in-progress projects such as Indonesian Jakarta-Bandung high-speed rail, Beijing section of the Hungary-Serbia railway, and Pakistan's Orange Line Metro Train, successfully signed the project contracts such as the integration of the railway signal system of the Ramadan tenth City Railway Project in Egypt, successfully completed the bidding for the Thai double-track reconstruction project, continued to carry out international exchanges and cooperation with the German Railway Group, the Southern African Railway Association, and the National Railway Bureau of Thailand, and participated in the second China International Import Expo and the fourth China-Central and Eastern European International Conference on Innovation Cooperation, further enhancing the global ability to allocate resources and international influence, and promoting China's high-speed rail to the world.

中国通号亮相第四届中国-中东欧国际创新合作大会

CASE
案例

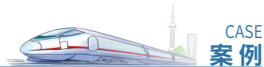
CRSC showcased at the Fourth China-CEE International Innovation Cooperation Conference

2019年10月，中国通号亮相在塞尔维亚举行的第四届中国-中东欧国际创新合作大会，通过演示大屏和实物设备直观地展示中国通号自主研发、制造的先进控制系统技术和装备，突出展现了中国通号轨道交通控制领域设计研发、装备制造和工程服务“三位一体”的综合竞争优势和世界领先的科技研发水平，吸引了中东欧各国的高度关注。



In October 2019, CRSC appeared at the Fourth China-CEE International Innovation Cooperation Conference in Serbia, and demonstrated the advanced control system technology and physical equipment independently developed and manufactured by CRSC through a large screen. It highlights the comprehensive competitive advantages of the "Trinity" of design and development, equipment manufacturing and engineering services in CRSC's rail transit control field and the world's leading level of scientific and technological research and development, which has attracted high attention from Central and Eastern European countries.

中国通号精心筹划全力备战进博会

CASE
案例

CRSC made full preparations for the Second China International Import Expo

2019年，中国通号参加第二届中国国际进口博览会，凭借轨道交通控制系统设计研发、装备制造及工程服务一体化的产业链优势，在智能及高端装备列控系统车载设备部件、计算机联锁控制板卡、电子元器件、司机显示单元等方面与来自欧洲多国的外商签订采购合同/协议。

In 2019, CRSC participated in the Second China International Import Expo. Based on its full industrial chain advantages of design and research, equipment manufacturing and engineering service of rail transit control system, CRSC signed purchase contracts and agreements with European merchants in terms of intelligent and high-end train-borne devices and parts for train control systems, computer interlocking control boards, electronic components and driver display units.

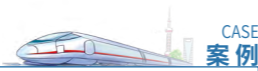
助力社会和谐

Promoting social harmony

中国通号及控股股东通号集团积极响应党中央打赢脱贫攻坚战的号召，坚持精准扶贫精准脱贫基本方略，多措并举开展产业、教育、健康等帮扶，全力帮助贫困群众提高收入水平和完善经济社会发展基础，以实际行动助力定点扶贫县——河南省社旗县打赢打好脱贫攻坚战。

CRSC and its shareholder CRSC Group actively responded to the CPC Central Committee's call for winning the battle against poverty, insisted on basic policies of precision poverty alleviation, took multiple measures simultaneously to fight against poverty through industries, education, education, etc., exerted themselves to help poor masses increase income and enhance economic and social development foundations, and went to Sheqi County of Henan Province to engage in poverty alleviation through practical actions.

中国通号董事长赴河南社旗调研定点扶贫工作



CASE
案例

CRSC Chairman went to Sheqi County of Henan Province to investigate and engage in targeted poverty alleviation work

2019年11月25日至26日，中国通号党委书记、董事长周志亮到河南社旗县调研定点扶贫工作，了解重点帮扶村产业扶贫、教育扶贫、健康扶贫等扶贫项目进展情况，督促扶贫干部与定点扶贫县齐心协力，打赢脱贫攻坚战。

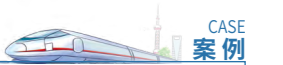
From November 25 to November 26, 2019, Zhou Zhiliang, General Secretary and Chairman of CRSC, headed for Sheqi County of Henan Province to investigate targeted poverty alleviation work and gain insights into the progress of industrial, educational, health and other poverty alleviation projects for key poverty-stricken villages, and encouraged poverty alleviation cadres and targeted poverty alleviation counties to work together to win the battle against poverty.



此外，中国通号组建青年志愿服务团，积极开展公益志愿服务活动，用爱心服务社会，用行动回报社会，贡献社区发展。

Meanwhile, CRSC organized a youth volunteer service team to vigorously engage in public welfare volunteer activities, to serve the society with compassion and actions, and to contribute to community development.

中国通号开展“消防知识进校园”志愿活动



CASE
案例

CRSC organized the volunteer activity of "Publicizing Fire Control Knowledge in Campus"

2019年，中国通号团员青年志愿者走进所在地中小学校，义务讲解消防知识和消防器材规范使用方法，提高学生的消防安全意识，增强火灾现场应急处置和逃生能力。

In 2019, youth volunteers from CRSC entered local primary and middle schools to voluntarily explain how to conduct fire control and how to use fire-fighting devices. Through this voluntary activity, the students enhanced their fire safety awareness and abilities to escape from emergency fires.



ESG指标索引

HKEX ESG Reporting Guide

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意见反馈

Feedback

尊敬的读者，您好：

Distinguished readers:



非常感谢您在百忙之中阅读《中国铁路通信信号股份有限公司2019年度环境、社会及管治报告》。为持续改进中国通号环境、社会及管治工作，我们希望聆听您的意见和建议，请您在百忙之中扫描下方二维码，对我们的报告提出宝贵意见。

Thank you for reading China Railway Signal & Communication Co., Ltd. ESG Report 2019. In order to constantly improve CRSC's environmental, social and governance work, we sincerely hope to get your comments and suggestions regarding this report and our work as well. Please scan the QR code below to offer your constructive comments and suggestions. Thanks for your time and patience!

