



中国五矿

CMT 中钨高新

China Tungsten and Hightech Materials Co., Ltd.

# Environmental, Social and Governance Report

## 2023



Stock abbreviation: CMT    Stock code: 000657

# About This Report

This report is the second ESG report released by China Tungsten and Hightech Materials Co., Ltd. (CMT). It details the company's ESG values and policies, and its efforts made in 2023 in business operation, environmental protection, social responsibility and corporate governance. The aim is to make effective communications with stakeholders and give a systematic response to stakeholders' expectations and requirements.

## Reporting Period

This report presents the company's ESG performance in 2023 (from January 1, 2023 to December 31, 2023). To make data more comparable, some contents go beyond this period.

## Report Scope

The report covers CMT and its subsidiaries. For the convenience of presentation and reading, abbreviations are used in this report. They are as follows:

Abbreviation	Full name
CMT, the Company or We	Refers to China Tungsten and Hightech Materials Co., Ltd.
ZCC	Refers to Zhuzhou Cemented Carbide Group Co., Ltd.
ZCC CT	Refers to Zhuzhou Cemented Carbide Cutting Tools Co., Ltd.
Jinzhou	Refers to Shenzhen Jinzhou Precision Technology Co., Ltd.
ZGCC	Refers to Zigong Cemented Carbide Co., Ltd.
NCC	Refers to Nanchang Cemented Carbide Co., Ltd.
Changcheng Equipment	Refers to Zigong Changcheng Equipment Technology Co., Ltd.
CMTRM	Refers to CMT Rare Metal Advanced Materials (Hunan) Co., Ltd.
Shared Services	Refers to Shared Services (Hunan) Co., Ltd.
Changcheng Surface	Refers to Zigong Changcheng Surface Engineering Technology Co., Ltd., a subsidiary of ZGCC

## Preparation Basis

- The United Nations Sustainable Development Goals (SDG)
- Reference Index System for ESG Reporting of Centrally-Administered Listed Companies
- GRI Sustainability Reporting Standards (GRI Standards) issued by the Global Sustainability Standards Board (GSSB)
- Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-ESG5.0) issued by Chinese Academy of Social Sciences (CASS)
- ISO 26000: 2010 Guidance on Social Responsibility issued by International Organization for Standardization (ISO)
- Chinese national standard Guidance on Social Responsibility Reporting (GB/T36001-2015)
- Guidelines of Shenzhen Stock Exchange on Self-regulatory Supervision of Listed Companies No.1 - Standardized Operation of Listed Companies on the Main Board

## Report Information

Information contained in this report comes from the company's internal data, submissions from its subsidiaries and publicly available information. In specific, information includes original data on the company's operation, public data from government departments, annual financial statements, internal statistical statements, administrative documents and reports as well as third-party evaluations. The financial data in this report is denominated in the Chinese yuan and is subject to the financial report.

## Report Availability

This report can be downloaded from the official website of CMT ([www.minmetalstungsten.com](http://www.minmetalstungsten.com)) and [www.cninfo.com.cn/new/index](http://www.cninfo.com.cn/new/index). For a print copy, please contact the company.



## Contact Information

- 📍 Address: 10-12/F, Diamond Building, No. 288 Diamond Street, Hetang District, Zhuzhou City, Hunan Province
- 📠 Zip code: 412000
- ☎ Fax: 0731-28265500
- 📞 Tel: +86-731-28265977/28265979
- 🌐 Website: <https://www.minmetalstungsten.com/>
- ✉ Email: [zwgx000657@126.com](mailto:zwgx000657@126.com)

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## Message from the Chairman



China Tungsten and Hightech Materials Co., Ltd.  
Chairman Lizhongze

Dear friends,  
Welcome to read this report. On behalf of the Board of Directors, I would like to express my sincere gratitude to friends from various sectors of society for your caring for and support to CMT.

In 2023, facing slowing world economic growth, climate change and increasingly severe ecological challenges, it has become crucial for the cemented carbide industry to implement the new philosophy of pursuing innovation-driven, coordinated, green and inclusive development for shared benefits, develop new quality productive forces at a faster pace, and promote high-quality development. Continuing upholding the corporate philosophy of "with persistence and dedication, we can cut through any metal," CMT focused on its main lines of business, scientific research and innovation, management efficiency, intelligent manufacturing and green development, sharpened its edges for corporate growth and fostered new momentum for transformation and upgrading in 2023. We continuously optimized the top-level design of ESG, led the enterprise to develop in a green, safe and harmonious manner, promoted the overall improvement of key ESG performance, and strived to create values for sustainable development together with stakeholders.

**Coexisting with the environment, we accelerated the pace of green transformation.** Responding to the trend of green and low-carbon transformation of the economy and society, we acted upon the national goals of carbon peaking and carbon neutrality, improved the green manufacturing system, and fostered new momentum for green and low-carbon development.

We guided our subsidiaries in building green factories and promoting green industrial transformation and upgrading. Thanks to the efforts, all subsidiaries have engaged in the initiative and accreditation of environmental management system certificates. Four subsidiaries were recognized as national green factories, and three as provincial green factories. We increased investment in energy conservation and environmental protection, introduced green and low-carbon technologies, carried out clean production audits and strived to contribute cleaner, greener, and higher-quality cemented carbide products to society. In 2023, we completed carbon footprint analysis on multiple products. A model of YK05 cemented carbide ball tooth was recognized as a national-level green design product.

**Taking society as the foundation, we worked together to create a better life.** We fully embraced our responsibilities toward customers, employees, partners and the community, and shared the fruits of our business development with all stakeholders. Regarding production safety as the foundation for safeguarding employees' lives and the enterprise's assets, we continuously enhanced the management of production safety, effectively preventing, controlling and eliminating occupational hazards and protecting employees' health and lives. Our investment in production safety and occupational health exceeded 50 million yuan during the year. Using the "Progress Index" as a benchmark, we focused on operational indicators, lean management, technological innovation, project construction and market development, guided subsidiaries in improving their mechanism for lean production management, continuously improved product quality, and elevated them to a new stage of high-tech, high-level and high-quality development. Regarding the industrial chain, we upheld the principle of "responsible procurement." We kept ourselves strictly away from conflict minerals, and encouraged suppliers to follow ESG-related principles to jointly promote green, low-carbon and circular development of the entire supply chain. Regarding community, we created benefits by providing job opportunities, expanding investment projects and paying taxes in accordance with the law, thus making contributions to local economic and social development. We sent our managers to Yiliang County, Zhaotong City, Yunnan Province, to work there and help local farmers to increase incomes by introducing a *Ganoderma lucidum* planting project.

**Consolidating the foundation for governance, we made solid steps toward a future of excellence.** Guided by the shared values of honest, professional, innovative, highly-efficient, we further optimized our corporate governance system, strengthened internal control and compliance management system, built the system for risk management and cemented the foundation for high-quality development. In 2023, we changed the strategic committee under our board of directors to the strategic and sustainable development committee, further enhancing the board of directors' participation in and supervision on ESG work and promoting in-depth integration of ESG with the Company's strategic planning, production and operation. Making technological innovation the key driving force for business development, we continued to expand platforms for technological innovation, introduced a new mechanism for spurring innovation, and put in place a talent management system in which leading tech talent took a guiding role, young tech professionals worked as the main force, and excellent engineers and high-caliber skilled personnel gave fundamental support. In 2023, the Company invested 516.96 million yuan in R&D, up 24.57% year on year. Following the principle of open cooperation for a win-win outcome, we actively communicated with trade and industry associations, compiled or participated in the compiling of national and industry standards, contributing suggestions and ideas for exploring frontier technologies and common development of the industry.

Forge ahead with hard work, and live up to our responsibilities. Looking into 2024, CMT will revolve around the goal of building itself into a world competitive and first-class corporation in the tungsten industry, and integrate itself into the big picture of national development. We will focus on exploring frontier materials, fostering new quality productive forces, enhancing ESG management system and working together with stakeholders to write new chapters of development. We will contribute our strengths to realizing high-quality economic, social and environmental development and the building of a better life.



## About CMT

China Tungsten and High-tech Materials Co., Ltd. (CMT for short, stock code: 00657) is a publicly listed company dedicated to tungsten development. It is a subsidiary of China Minmetals Corporation, one of the Fortune Global 500 companies. CMT manages and operates a complete tungsten industrial chain integrating mining, smelting, processing and trading.

CMT has six subsidiaries specializing in deep processing of acemented carbide and one equipment company. It has five mining and two smelting companies under trusteeship. The Company

produces the world's most cemented carbide and more than 25% of the total in the Chinese domestic market. It boasts a wide range of competitive products. Among them, cutting tools, IT tools, cemented carbide rods, ball teeth, roll products and powder products are both competitive in the domestic market, and well-known and influential in the international market. Managing assets totaling 19 billion yuan, the Company has offices in the United States, Germany, India and South Korea, and sells products to more than 70 countries and regions worldwide.

### Total assets

100 mln yuan



### Total earnings

100 mln yuan



### Net profits attributable to shareholders of listed companies

100 mln yuan



### Weighted return on average equity

%



## Products Coverage



The Company continues to build on its complete tungsten industrial chain covering tungsten resources, smelting, cemented carbide and its deep processing, and work to build itself into a world-class corporation in the tungsten industry.



## Awards and Honors

In 2023, CMT and its subsidiaries won the following awards and recognitions:



Award	Recipient	Presenter
List of 100 subsidiaries of centrally-administered enterprises and 100 leading local state-owned enterprises (SOEs) pioneering SOE reform	CMT	State-owned Assets Supervision and Administration Commission of the State Council
ESG Golden Bull Award - Top 20 Emerging Enterprises	CMT	China Securities Journal
2022 Hainan Excellent ESG Cases among Listed Companies	CMT	Hainan Association for Public Companies
The 18th China Public Companies Board of Directors Golden Roundtable Awards - Award of Value Creating Board of Directors	CMT	Directors & Boards Magazine
2022 Outstanding Chairman Office of Public Companies	CMT	China Association for Public Companies
Outstanding case at the annual performance introduction meeting of the China Association for Public Companies	CMT	China Association for Public Companies
P5w.net Golden Award of Investor Relations	CMT	P5w.net
The 25th Public Company Golden Award of Information Disclosure (2022)	CMT	China Securities Journal
Exemplary Company for Building World-Class Leading Enterprise	ZCC	State-owned Assets Supervision and Administration Commission of the State Council
The Fifth Made in China Invisible Champions	ZCC	Sino-Foreign Management
Nomination for the Fifth China Quality Award	ZCC	State Administration for Market Regulation
Tungsten carbide-based alloy and its preparation won China Patent Award	ZCC	China National Intellectual Property Administration
National Demonstration Enterprise for Intellectual Property	ZCC	China National Intellectual Property Administration
2023 Outstanding Organizations for Excellence in Performance Evaluation	ZCC	China Association for Quality
2023 State-Level Green Supply Chain Management Enterprise	ZCC	China's Ministry of Industry and Information Technology
Recognized as an enterprise of integrity in environmental protection for nine consecutive years	ZCC	Ecology and Environment Department of Hunan

Award	Recipient	Presenter
State-Level Green Design Product	ZCC	China's Ministry of Industry and Information Technology
National Leading Enterprise in Intellectual Property	ZCC CT	China National Intellectual Property Administration
National High-Tech Enterprise	ZCC CT	Ministry of Science and Technology, Ministry of Finance and State Taxation Administration
Hunan Provincial Champion Manufacturing Enterprise for Single Product	ZCC CT	Department of Industry and Information Technology of Hunan
Hunan Provincial Green Factory	ZCC CT	China's Ministry of Industry and Information Technology
2023 Demonstration Factory for Intelligent Manufacturing	Jinzhou	China's Ministry of Industry and Information Technology, National Development and Reform Commission, Ministry of Finance, State-owned Assets Supervision and Administration Commission of the State Council and State Administration for Market Regulation
State-Level Green Factory	Jinzhou	China's Ministry of Industry and Information Technology
Enterprise of Integrity in Environmental Protection in Shenzhen	Jinzhou	Shenzhen Municipal Bureau of Ecology and Environment
Ankang Cup Award	ZGCC	All-China Federation of Trade Unions, Ministry of Emergency Management and National Health Commission
Second-Level Enterprise for Work Safety Standardization	ZGCC	Ministry of Emergency Management and Sichuan Safety Technology Center
State-Level Green Factory	NCC	China's Ministry of Industry and Information Technology
2021-2022 Enterprises Excelling in Green Development in Nanchang Economic Development Zone	NCC	Green Partnership of Industrial Parks and Administrative Committee for the Nanchang Economic and Technological Development Area
National High-Tech Enterprise	CMTRM	China's Ministry of Science and Technology, China's Ministry of Finance and State Taxation Administration
Second-Level Enterprise for Work Safety Standardization	CMTRM	China's Ministry of Emergency Management and Hunan Safety Technology Center
Hunan Provincial Green Factory	CMTRM	Department of Industry and Information Technology of Hunan

## Strategy and Management



## ESG Governance

CMT has been incorporating the philosophy of innovation-driven, coordinated, green, and inclusive development for shared benefits into its development strategy. It has been improving its ESG governance structure and supporting policies, promoting its economic, environmental and social performance in a holistic manner, pursuing sustainable high-quality development and working with stakeholders to create sustainable development values.

## ESG Governance Structure

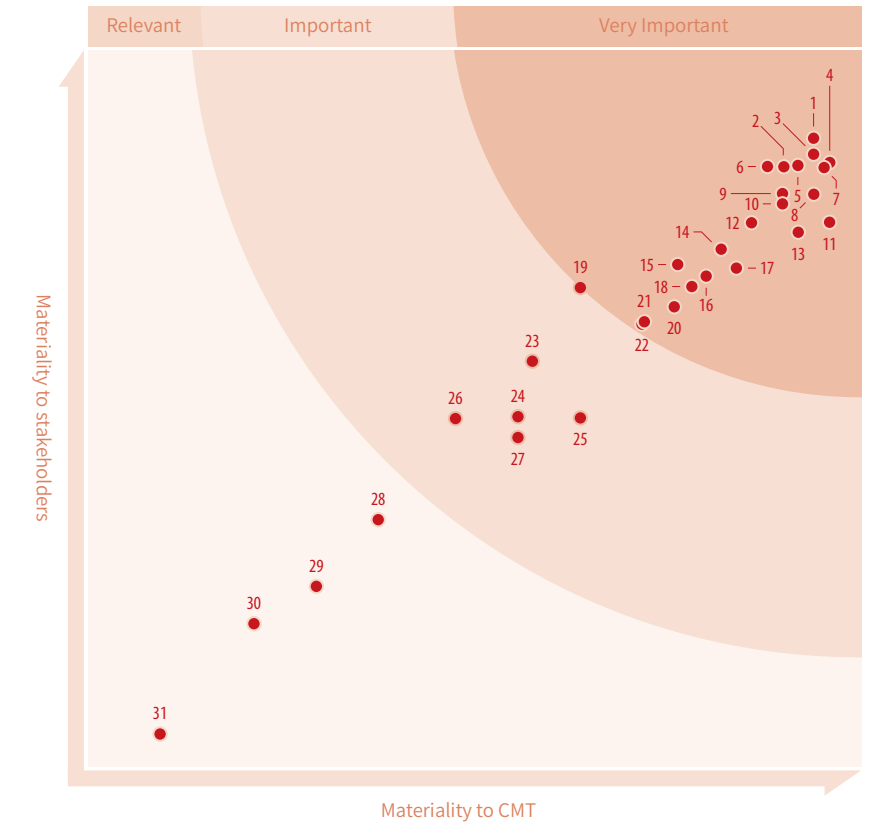
The Company actively integrates ESG into its corporate governance system. It has made ESG management an organic part of its management system by improving the ESG governance structure and clarifying hierarchical and management responsibilities, thereby laying a solid foundation for the company's sustainable development.

In 2023, the Company renamed the Strategic Committee under the Board of Directors as the Strategic and Sustainable Development Committee, whose main responsibilities are to research and make recommendations on the company's strategy for long-term development, major investment decisions, sustainable development, and ESG issues.

- Coordinate and advance the building of a ESG system, identify and assess ESG risks;
- Plan and decide on matters regarding sustainable development and ESG issues, guide the implementation of ESG measures, and provide corresponding suggestions;
- Supervise and evaluate the implementation of ESG measures, review ESG information disclosure and report to the board of directors;
- Research on other significant matters affecting the company's strategy or sustainable development and provide suggestions accordingly.

## Material Issues Analysis

The Company identified key issues that significantly affected its ESG management and were widely concerned by stakeholders from two metrics of materiality to CMT and materiality to stakeholders. A materiality matrix was then formed. Based on the results of the materiality analysis, the Company made strategy on ESG management and disclosure. It collected and systematically organized information company-wide and then prepared this report. After internal and external reviews, the Company released the report.



### Materiality matrix

- |  |   |
|--|---|
| 1 Compliance                                     | 17 Digital and intelligent transformation |
| 2 Business ethics                                | 18 Employee training and development      |
| 3 Toxic emissions and waste management           | 19 Responsible supply chain               |
| 4 Occupational health and safety                 | 20 Labor management                       |
| 5 R&D and innovation                             | 21 Energy management                      |
| 6 Anti-corruption                                | 22 Recycling and use of resources         |
| 7 Product quality                                | 23 Biodiversity and land protection       |
| 8 Tax compliance                                 | 24 ESG governance                         |
| 9 Risk management                                | 25 R&D of green products                  |
| 10 Information security                          | 26 Management of conflict minerals        |
| 11 Employee compensation and benefits            | 27 Carbon emissions                       |
| 12 Leading industry development                  | 28 Community relations                    |
| 13 Intellectual property rights protection       | 29 Board independence                     |
| 14 Protection of customers' rights and interests | 30 Climate change                         |
| 15 Corporate governance                          | 31 Board diversity                        |
| 16 Environmental compliance                      |   |



## Communication with Stakeholders

Based on its actual situation and industry characteristics, CMT has identified the demands and expectations of various stakeholders, including government and regulators, shareholders and investors, employees, customers, suppliers, partners, the environment, and community. We have actively communicated and responded to these demands and expectations through various channels and measures.

employees, customers, suppliers, partners, the environment, and community. We have actively communicated and responded to these demands and expectations through various channels and measures.

Stakeholders	Concerns	Communication methods	Our response
 Government and regulators	<ul style="list-style-type: none"> <li>Business compliance</li> <li>Business ethics</li> <li>Anti-corruption</li> <li>Tax compliance</li> </ul>	<ul style="list-style-type: none"> <li>Compliance training by stock exchange</li> <li>Government meetings</li> <li>Information disclosure platform</li> <li>Government visits</li> </ul>	<ul style="list-style-type: none"> <li>Compliant operation</li> <li>Anti-corruption and integrity</li> <li>Corporate governance</li> <li>Rural revitalization</li> </ul>
 Shareholders and investors	<ul style="list-style-type: none"> <li>Risk management</li> <li>Corporate governance</li> <li>Board independence</li> <li>Board diversity</li> <li>ESG governance</li> <li>R&amp;D and innovation</li> <li>R&amp;D of green products</li> </ul>	<ul style="list-style-type: none"> <li>Shareholders' meetings</li> <li>Result briefings</li> <li>Information disclosure</li> <li>Platform for investors communication</li> <li>Survey of investors</li> </ul>	<ul style="list-style-type: none"> <li>Information disclosure</li> <li>Management of relations with investors</li> <li>Comprehensive risk management</li> <li>IT application</li> <li>Intelligent manufacturing</li> </ul>
 Employees	<ul style="list-style-type: none"> <li>Occupational health and safety</li> <li>Employee compensation and benefits</li> <li>Employee training and development</li> </ul>	<ul style="list-style-type: none"> <li>Report box, telephone, and e-mail</li> <li>Employee satisfaction survey</li> <li>Staff congress</li> <li>Conferences and training</li> </ul>	<ul style="list-style-type: none"> <li>Protection of employees' rights and interests</li> <li>Management of employees' benefits</li> <li>Care for employees</li> <li>Employee training and development</li> <li>Occupational health and safety management</li> </ul>
 Customers	<ul style="list-style-type: none"> <li>Product quality</li> <li>Information security</li> <li>Protection of customers' rights and interests</li> <li>R&amp;D and innovation</li> <li>Digital and intelligent transformation</li> </ul>	<ul style="list-style-type: none"> <li>Quality assessment, spot check</li> <li>Customer satisfaction survey</li> <li>Research program cooperation</li> <li>Feedback to customer complaints</li> </ul>	<ul style="list-style-type: none"> <li>Quality management</li> <li>Customer satisfaction survey</li> <li>Joint research and development</li> <li>Management of after-sales services</li> </ul>
 Suppliers and partners	<ul style="list-style-type: none"> <li>Leading industry development</li> <li>Intellectual property rights protection</li> <li>Responsible supply chain</li> <li>Management of conflict minerals</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating suppliers</li> <li>Joining in trade association</li> <li>Meeting of suppliers</li> </ul>	<ul style="list-style-type: none"> <li>Management of suppliers</li> <li>Making of industry standards</li> <li>Industry exchanges</li> </ul>
 Environment and community	<ul style="list-style-type: none"> <li>Toxic emissions and waste management</li> <li>Environmental compliance</li> <li>Energy management</li> <li>Recycling and use of resources</li> <li>Biodiversity and land protection</li> <li>Carbon emissions</li> <li>Community relations</li> <li>Climate change</li> </ul>	<ul style="list-style-type: none"> <li>Communication with the media</li> <li>Regular ESG report to disclose environmental information</li> <li>Evaluation on environmental impacts</li> </ul>	<ul style="list-style-type: none"> <li>Rural revitalization</li> <li>Support to earthquake rescue</li> <li>Building green factory</li> <li>"Dual carbon" actions</li> <li>Sewage recycling</li> </ul>

## Supporting SDGs

The Company has been actively responding to the United Nations Sustainable Development Goals (SDGs). Based on a comprehensive evaluation on its business operation, the Company identified its connections with the 17 SDGs. Revolving around three core areas of the environment,

society and governance, the Company took actions around 13 goals including industry, innovation and infrastructure, reducing inequality, responsible consumption and production and climate mitigation, and worked with stakeholders to contribute to the achievements of SDGs.

Metrics	SDGs	Our actions
<b>Environment</b>	   	<ul style="list-style-type: none"> <li>Firmly held to the red line for ecological protection, bottom line for environmental quality and ceiling for resource use, faithfully implemented the requirements specified in the list of access to ecological environment, and formulated the CMT 14th Five-Year Plan for Environmental Protection, which includes emission targets;</li> <li>All listed subsidiaries were accredited by the system of environmental management. Jinzhou Company, Zigong Cemented Carbide and Nanchang Cemented Carbide gained accreditation of energy management system;</li> <li>All listed subsidiaries did reviews on clean production;</li> <li>All directly-administered businesses worked to build green factories;</li> <li>CMT Guidelines for Energy Saving and Carbon Reduction was formulated, forming a management system.</li> </ul>
<b>Social aspects</b>	      	<ul style="list-style-type: none"> <li>The Company improved its system for product quality management, standardized related practices, and implemented strict procedure for quality inspection and spot check system, realizing effective management of product quality throughout the entire product life cycle;</li> <li>The Company had its all subsidiaries put in place second-level safety production standardization system and occupational health and safety system (ISO45001);</li> <li>The Company promoted the construction and optimization of "Safe House" education and training system, and organized safety education and training and emergency drills;</li> <li>The Company listened to employees' suggestions, incentivized talents, organized various activities for employees, and facilitated employees' growth via the China Tungsten School;</li> <li>Adhering to the philosophy of "responsible procurement", and principles of fairness, transparency, cooperation and win-win outcome, the Company contributed its part to building a green, low-carbon and circular supply chain;</li> <li>The Company continued its assistance to poor areas under the pairing-up program for poverty reduction;</li> <li>The Company was active in giving back to society and contributing to charitable undertakings.</li> </ul>
<b>Governance</b>	  	<ul style="list-style-type: none"> <li>The Company continued to optimize its governance structure, ensured highly-efficient running of the Board of Directors, and incorporated Party building into every link of its business operation, reform and development;</li> <li>The Company put in place a system for business compliance, enhanced its risk management capabilities, maintained good relations with investors and increased business transparency;</li> <li>The Company held a zero-tolerant attitude toward commercial bribery and corruption, and attached importance to business integrity in pursuing high-quality development;</li> <li>Following the strategy of pursuing innovation-driven, technology-leading sustainable development, the Company worked to build a highly efficient system for technological innovation;</li> <li>The Company has been advancing IT application, planning a CMT digital brain and advancing intelligent manufacturing.</li> </ul>

# Feature 01

## Low-Carbon Innovation, Fostering Sustainable Momentum

Currently, in the face of climate change and ecological challenges, it has become a consensus in the international community that efforts should be made to rebuild a harmonious relationship between man and nature and pursue green development. In the report to the 20th National Congress of the Communist Party of China, it is underlined that it is a key path to high-quality development to advance green and low-carbon economic and social development. This charts the course for businesses to transition to green development. For the country's carbon peaking and carbon neutrality goals, CMT has been improving its system for green manufacturing, advancing transition to green manufacturing, and building up new competitiveness and gathering new momentum for green and low-carbon development in realizing the goals.

### Building Green Factory

Green factory is a production unit in the manufacturing industry and the subject to implement green manufacturing. The Company has been responding to the trend of green and low-carbon transformation in manufacturing, and has aligned itself with the Guidelines for the Evaluation of Green Factories. The Company has guided its subsidiaries to actively build green factories, promoted green transformation of the industry, and worked to achieve green development. As of the end of 2023, the Company had seen all of its directly-administered subsidiaries have built green factories. Of them, four subsidiaries had been recognized as state-level green factories, and three as provincial-level green factories.



▲ Jinzhou was honored as a national "Green Factory" in 2022

ZCC

Recognized as state-level green factory and national demonstration enterprise for green design of industrial products in 2019 and 2021, respectively. In 2023, ZCC advanced the whole-chain and integrated "dual carbon" actions, worked to create a new type of business ecosystem through a green, low-carbon, ecologically friendly and circular development model. In the year, ZCC was recognized as the enterprise of the year in green supply chain management. One model of YK05 product developed by ZCC won the award of national green design product. This means that ZCC claimed all honors in China's green manufacturing sector in the year.

▲ ZCC was honored as Hunan Province Green Supply Chain Management Demonstration Enterprise

ZCC CT

ZCC CT has been making continuous efforts in adopting new technologies and recycling resources to minimize energy consumption and pollutant emissions. For the purpose, it improved management systems for safety and environmental protection, put in place a metering system for energy monitoring, introduced solar power, and recovered waste heat. In 2023, ZCC CT was recognized as a Hunan provincial green factory.

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CMTRM

CMTRM has been accelerating green development while enhancing its automation levels. In achieving this, CMTRM has been implementing the philosophy of green and sustainable development, following the principles of using factory floor in an intensive manner, adopting harmless raw materials and clean production, recycling waste and consuming low-carbon energy. It also phased out obsolete production capacity, optimized production processes and gradually adopted automated assembly line. In 2023, CMTRM was recognized as a Hunan provincial green factory.



▲ ZCC CT is located by the beautiful Xiangjiang River

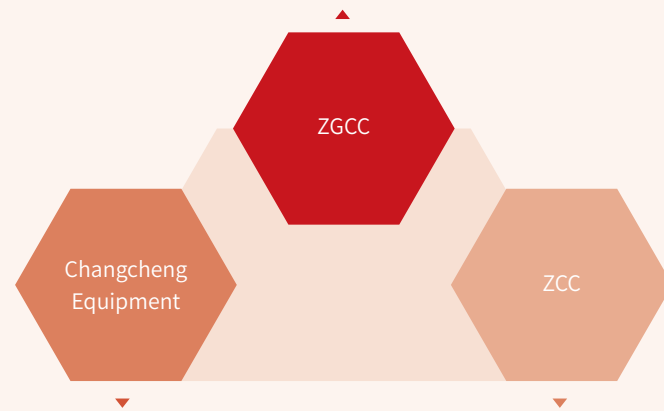




## Early Planning in Green Technology

Acting upon guidelines for green development of the manufacturing sector, the Company has been making green innovation in key areas, such as clean production, clean energy, pollution mitigation and carbon reduction. It made early planning and introduced green and low-carbon technologies to lead the Company toward green, low-carbon high-quality development.

ZGCC: carried out a project to upgrade high-quality tungsten carbide production line into an automated line; planned to invest around 95 million yuan in 2023 and 2024 to replace the existing natural-gas-powered reduction furnace with fully automated electric reduction system. This is expected to reduce natural gas consumption by 1.55 million cubic meters per year and carbon dioxide emissions by 1,300 tons per year.



By comprehensively upgrading the lighting system in the production area, phasing out outdated high energy-consuming equipment and facilities, such as lathes and milling machines, in an orderly manner, upgrading the environmental protection equipment in the painting room, and promoting the use of water-based paints. Changcheng Equipment finished the construction of a gas station to supply gas in a centralized manner in the Zigong production area. By reducing the power of compressor and the consumption of electricity, the subsidiary is expected to save approximately 21.56 tons of standard coal and reduce carbon dioxide emissions by 92.2 tons annually.

ZCC has been devoting great energy in recycling waste heat. In 2023, it invested 8.484 million yuan to upgrade and retrofit the spray drying tower, the main energy-consuming equipment in the mixing plant. With the retrofitting, boilers were no longer heated by fuels, but rather electricity, which improved heat exchange efficiency. New devices for recovering waste heat were installed. With these efforts, the unit electricity consumption for mixed material products reduced by approximately 30%.

## Diversifying Green Products

The Company is committed to developing and providing cleaner, greener, and higher-quality cemented carbide products. It takes into full consideration the impact on the environment throughout various stages in product design and manufacturing, from the selection of raw materials to production, sales, product use, recycling, and disposal.

The Company has been expanding the range of products with green design. It strives to minimize energy and resource consumption, lower the impact on the ecological environment, and recycle resources to the utmost extent, thus leading and promoting the green and high-quality development of the cemented carbide industry.

### Energy saving and carbon emissions reduction from the source

For newly-built, rebuilt and expanded projects, the Company strictly implements the energy conservation assessment and review system for fixed asset investment projects so as to promote green and low-carbon development from the source.

- NCC: finished the report on energy saving in the quality improvement and capacity expansion project for high-quality cemented carbide rods, and that for 800,000 cemented carbide solid cutting tools.
- ZCC: passed the evaluation on energy saving performance in key energy consuming enterprises and industries in Hunan, and evaluation on the implementation of review guidelines by Zhuzhou City on the fixed asset investment project – retrofitting production line for 2,000-ton high-end cemented carbide rods.



### Analysis of products' carbon footprints

The Company has actively taken a stock of its greenhouse gas emissions and its carbon footprints. Based on this, it identified its prominent problems and weak links, reviewed and elevated its management of carbon emissions.

- ZCC CT: compiled a report on the footprint of GM milling cutters, making a thorough analysis of carbon emissions through the entire life cycle of the product.
- ZGCC: carried carbon footprint certification for 40mm tungsten carbide roll rings and 26-30 stand 62 tungsten carbide roll rings.

### Case: Product by ZCC Recognized as State-Level Green Design Product

In recent years, ZCC has been devoting great energy into developing products with green design. As the leading organization, it formulated the *Technical Specification for Green Design Product Evaluation – Cemented Carbide Products (T/CNIA 0095-2021)* in 2021, providing standard evaluation methods for cemented carbide products with green design. In line with the standard, ZCC designed and developed a model of cemented carbide YK05 ball tooth in 2022, featuring stable quality, low energy consumption, low pollution, and efficient utilization of resources. The design is ecologically friendly, and in production, it adopted advanced equipment and production processes. Throughout its life cycle, the product has insignificant impact on global warming, or causes little eutrophication or ozone layer destruction.

In March 2023, China's Ministry of Industry and Information Technology released the 2022 list of green manufacturing. A model of cemented carbide YK05 ball tooth developed by ZCC was awarded the title of National Green Design Product.





# Feature 02

## Talent-Driven High-Quality Development

CMT understands the inherent logic of judgement that science and technology constitute the primary production force, talent the primary resources, and innovation the primary driving force. It regards talent as a key factor for technological innovation and high-quality development of its business. It has been pursuing the strategy of driving business growth with a strong and highly-skilled workforce, and working to put in place a talent management system in which leading tech talent takes a guiding role, young tech professionals work as the main force, and excellent engineers and high-caliber skilled personnel give fundamental support. The Company has been selecting and fostering skilled technicians throughout programs like Selection of CMT Craftsmen and high-quality vocational training. It has created an enabling corporate environment where learning skills is highly encouraged. These efforts provide strong talent and skill support for the company's high-quality development.

### Fostering Science and Technology Talent

Following the principle that enables leading tech talents to take a guiding role, the Company has been devoting great energy to fostering high-caliber talents and supporting tech talents to delve into basic research and pose their innovation potential. It also encourages leading young talents to participate in scientific and technology research programs. The Company

also attaches great importance to talent exchange and talent cultivation in a comprehensive manner. It has been actively working with research institutes and prestigious universities to jointly cultivate talents and advance development, aiming to cultivate future-oriented talent for the industry.

In 2023, the Company had three more employees entitled to the government special allowance from the State Council, and six certified as technicians of excellence by Hunan provincial department of human resources and social security.



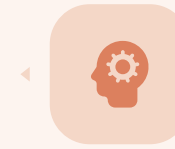
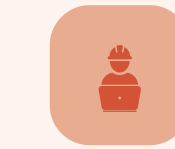
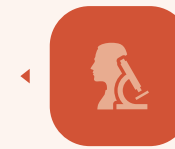
▲ "National May 1st Labor Medal" winner from ZGCC process equipment expert Pan Deng

### Cultivating research-oriented talents

In cooperation with Beijing University of Science and Technology, Central South University, and Zhejiang University, the Company has established laboratories for tungsten studies and implemented programs for cultivating top-notch innovation and research-oriented talents. Ten postgraduates and doctoral candidates of years 2022 and 2023 participated in the joint cultivation program between CMT and these universities. The number is expected to reach 20 for students of year 2024.

### Training skilled workers

CMT has been improving the building of skill grading accreditation station. It carried out skill grading accreditation at a regular basis. The Company strengthened the building of "master workshops" to train skilled workers by means of apprenticeship. It launched training programs in partnership with Hunan Nonferrous Metals Vocational and Technical College, Meizhou Technician College and Hengyang Technician College among other schools. The Company also improved payments and benefits for skilled workers, paved their way for career growth and created an enabling environment for them to improve their skills.



### Cultivating engineers

CMT has been leading its subsidiaries in carrying out joint training programs for on-site engineers and engineers of excellence. Through its directly-administered enterprises, it has been cultivating "engineers of excellence" in partnership with Lanzhou University of Technology, Qinghai University and Xiangnan University, cultivating "on-site engineers" in partnership with Hunan Railway Professional Technology College, Hunan Nonferrous Metals Vocational and Technical College and Sichuan Polytechnic University.

### Recipients of government special allowance in CMT



Zhang Hao

**Chief technician for drilling products and deputy head of the Hard Materials R&D Center, ZCC**

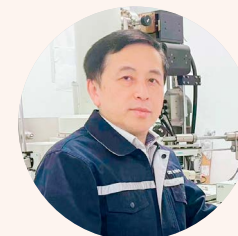
Zhang has dedicated his life to the R&D of cemented carbide for drilling products. His team has developed high-end products, including reticulated cemented carbide, double-layer cemented carbide, PDC matrix, and ultra-coarse grain engineering teeth. These products are widely used in major national engineering projects, representing China is capable of independently producing cemented carbide and supporting tools.



Zhang Yaxiong

**Chief for grinding process, ZCC CT**

He invented and optimized multiple grinding technologies for cemented carbide, provided technical support for the introduction of the first gantry-type CNC double-face grinding machine in the industry, and played a leading part in independently developing China's first super-large diameter and super-hard grinding wheels, filling a gap in the country.



Fu Lianyu

**Director of intelligent equipment department and head of technology center, Jinzhou**

He has been dedicated himself to the R&D of advanced manufacturing and new materials for more than 20 years. Over the years, he made continuous innovation in micro cemented carbide drills, precision processing equipment and precision microfabrication of high-end printed circuit boards. The technology of highly-efficient and high-reliable microfabrication for high-end printed circuit boards and its application, developed by Fu, won the second prize of the 2019 National Award for Progress in Science and Technology.

## Carrying Forward Craftsmanship

Great craftsmanship is essential to development. As we have embarked on a new journey to build a modern socialist country in all respects, it is necessary to promote craftsmanship. CMT has been regarding craftsmen as an important driving force for industrial development, and craftsmanship as an important source of innovation and entrepreneurship. The Company values craftsmanship. In 2023, it formulated and released *Guidelines for the Management of CMT Craftsmen*, and accredited the honor of CMT Craftsmen for the first time.

In the year, 13 outstanding technicians from the front-line was accredited as CMT Craftsmen and they were offered four-year-term positions. CMT encourages these craftsmen to play an exemplary role, and lead technicians in improving their skills so as to make greater contributions to the innovation of technology and skills, application of innovation results, and growth of a skilled workforce.

The Company formulated *Interim Provisions on Building and Management of Technician Master Studios*. Nine such studios have been established. The company has been leveraging the leading role of such studios, as well as role model workers and other highly competent skilled technicians in cultivating young personnel.



### Li Zhijun

Pressing shift manager, Drill Alloy Division, ZCC



### Li Xiaobing

Mechanical Specialist, Motorized Department, ZCC CT



### Huang Fangyue

Specialized technician for the preparation of hardfacing materials in ZGCC



### Zhou ting

Carbide molding technician extraordinaire in ZGCC



## Improving Vocational Skills

With building a highly-skilled workforce being the focus of efforts, the Company has been pursuing talent-driven business growth. It certifies its technicians with vocational qualifications revolving around the company's goal of building a world-class enterprise in the tungsten industry. In 2023, 188 employees applied for professional titles, and 132 were granted with a professional title. Of them, three won senior professional titles and 12 won associate senior titles. In the meantime, 901 applied for professional qualification, and 548 passed, of whom 55 were certified as senior technicians.

The Company has been optimizing its corporate system for the cultivation, evaluation, appointment and incentivizing of skilled talent. It has been working to foster a highly skilled workforce that is dedicated to their work, boasts superb skills, demonstrates outstanding capabilities for technological innovation, and is adept at solving complicated technological problems. These skilled workers will play an exemplary role, encouraging more employees to pursue career growth by improving their skills. Since 2022, the Company has held vocational skill competitions for two consecutive years, providing a platform for employees to showcase their skills. This further aroused employees' willingness and enthusiasm to participate in skill training and improve their vocational skills.

### Case: The Second CMT Vocational Skills Competition

In April 2023, the Company held the second CMT Vocational Skills Competition in the Precision Tool Industrial Park of ZCC CT. Eleven contestants from six enterprises competed for the top prize. In the final, they demonstrated their superb skills in wiring and debugging for electrical equipment, troubleshooting and PLC equipment programming. After fierce competition, three contestants won the ultimate awards.

#### The second CMT Vocational Skills Competition



#### Zhang Youliang claimed gold in the second CMT Vocational Skills Competition







Environmental

# Green Development for a Better Future

Green manufacturing is the inevitable path to industrial restructuring and the achievement of the "dual carbon" goals. It is also an inevitable choice for enterprises to realize high-quality development. In recent years, CMT has been giving play to the exemplary role of its "green factories" and implementing strategies for green and sustainable development. It has been carrying out clean production audits, increasing investment in energy conservation and environmental protection, and promoting management of energy saving and carbon emissions reduction, thus contributing to the country's green manufacturing endeavor and high-quality industrial development.

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CMT's subsidiaries all acquired EMC (Environmental Management System Certificate)

Its seven directly-administered enterprises, ZCC, ZCC CT, Jinzhou, ZGCC, NCC, Changcheng Equipment, CMTRM all have got Environment Management System Certificate.

In 2023, CMT invested  
**4,0145,900**  
 yuan in energy conservation and emission reduction,

**6.32**  
 % year on year.



CMT achieved all environmental targets in 2023 (comprehensive energy consumption per 10,000 yuan of output, carbon dioxide emissions per 10,000 yuan of output, exhaust emissions and wastewater discharge).



# Improving Environment Management System

CMT has been faithfully implementing laws and regulations on environmental protection, strengthening its environmental policies and management system. It incorporates environmental management into all aspects of daily business operation, ensuring that the red line for ecological protection, the bottom line for environmental quality and the ceiling for resource use are observed and that the requirements specified in the list of access to ecological environment are met. In 2021, the Company formulated the *CMT 14th Five-Year Plan for Environmental Protection*, as well as a supporting feasibility report. It has been strengthening efforts to build a system and enhance the capacity for environment management so as to effectively manage and reduce the environmental impacts of its business operations, and achieve harmonious coexistence with the natural environment.

**Overall Goals of CMT 14th Five-Year Plan for Environmental Preservation**

Environmental conservation will constantly be enhanced. Total emissions of major pollutants will decline steadily. Emissions and discharges will meet prevailing requirements. Serious environmental pollution incidents will be avoided. Phased progress will be made in modernizing the system and capacity for environmental governance. Efforts in environmental protection will be commensurate with CMT's goal of building a globally competitive company in the tungsten industry. Major progress will be achieved in green development.

## Environment Management System

CMT keeps improving its environment management system. It has established a special management body, and requires all departments and subsidiaries to incorporate environmental protection into their corporate development plans and take into full consideration the impact of production and operation on the environment. In addition, it requires the formulation and implementation of special plans or action programs for environmental protection, reasonable use of energy, efforts to save energy and

measures to conserve and improve the environment.

By the end of 2023, all of CMT's directly-administered enterprises (ZCC, ZCC CT, Jinzhou, ZGCC, NCC, Changcheng Equipment and CMTRM) had acquired Environment Management System Certificate (GB/T24001/ISO 140001). In the meantime, Jinzhou, ZGCC and NCC had got Energy Management System Certificate (ISO50001: 2018).



**Institutional building**

**Organizational structure**

**Supervision**

- In strict accordance with national laws, regulations and industry standards on energy saving and environmental protection, the Company has updated its list of systems for environmental protection, which now has 12 items.
- In 2023, the Company revised nine policy documents on energy saving and environmental protection, including the *CMT Guidelines for Environmental Protection* and *HSE Accountability System Management Measures*.

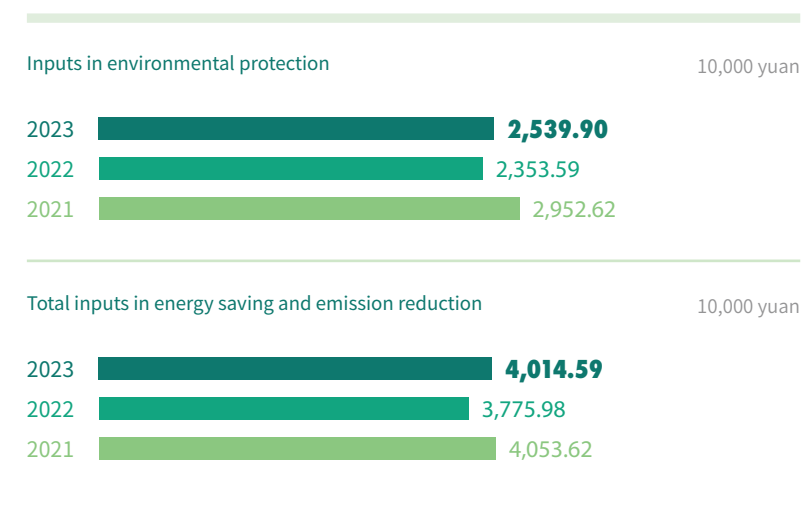
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- The Company has set up a Health, Safety and Environmental Protection Committee headed by the Chairman. General manager and deputy general manager serve as the deputy head of the committee. Members of the committee include senior executives, department heads and chiefs in charge of health, safety and environmental protection.
- The CMT Party committee holds quarterly sessions to study Xi Jinping Thought on Ecological Civilization, faithfully implements major decisions and instructions by the CPC Central Committee and the State Council on ecological and environmental protection, and includes ecological and environmental protection an important part of its agenda.
- HSE Accountability System Management Measures* sets out duties and responsibilities of the Health, Safety and Environmental Protection Committee, people on key positions and each department, ensuring the Company's organizational structure for environmental protection functions effectively.
- The CMT leadership studies and arranges ecological and environmental protection work on a monthly basis, and combines ecological and environmental protection with the Company's production and operation plans, arrangements, inspections and assessments.

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- The Company has compiled the *List for Surgical Examination of Environmental Issues*, which, combined with the Company's special inspection on safety and environmental issues, formed a continuously improving mechanism of inspecting, rectifying and improving. In 2023, all subsidiaries were inspected.
- In 2023, the Company made 73 inspection operations on environmental protection, identifying 196 potential problems, all of which were solved.
- The Company launched special operations to improve the ecology and environment of the Yangtze River and the Yellow River. In 2023, it inspected seven enterprises along the rivers and four projects funded by its subsidiaries. The Company examined its business operations in accordance with the *Checklist for Environmental Problems among Centrally-Administered Enterprises in the Yangtze River and Yellow River Regions*, and identified eight problems, all of which were solved.

The Company has been scaling up investment in energy saving and environmental protection. It works to lower environmental impacts by adopting new technologies and new materials and improving production procedure.

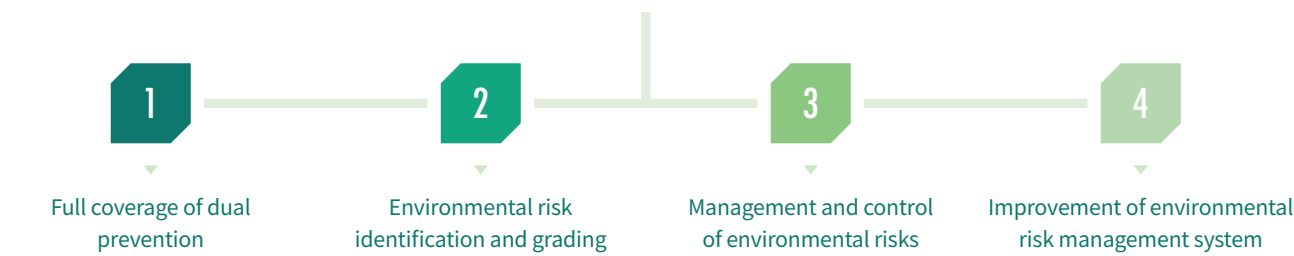


## Management and Control of Environmental Risks

CMT has incorporated environmental risk management into its comprehensive system for risk management, and made environmental risk management part of its routine management. From the source, the Company identifies and grades environmental risks, and implements grade-based management and control. It strengthens its mechanism for identifying and handling of hidden environmental hazards and improves its capacity for evaluating environmental risks as well as corresponding supervision and management.

To better handle and strengthen management of environmental emergencies, the Company released *CMT Plan for Environmental Emergency Response*. In accordance with the Plan, its directly-administered subsidiaries formulated their respective comprehensive plan for environmental emergencies response, special plan for handling environmental emergencies, and plan for on-site handling of environmental emergencies. All the plans have been reported to municipal or district-level environmental authorities.

### The Building of a Dual Prevention Mechanism for Environmental Protection



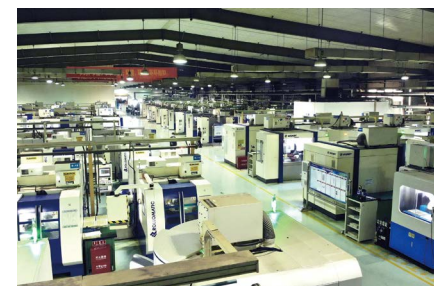
The Company requires thorough implementation of the dual prevention mechanism for environmental protection. All of its directly-administered subsidiaries are required to build a dual prevention mechanism for environmental protection following the steps of risk identification, scientific grading, measures making, grade-based management and control and locating and handling of hidden hazards.

The Company has made 69 lists of environmental risks for grade-based management and control, and identified 1,936 environmental risks throughout the entire production process. Of them, there are three very serious risks, 124 serious risks and 1,809 minor risks.

The Company puts in place measures for environmental risk management and control and assigns specific managers to hold accountability. Senior management of the Company or factory floor head are responsible for serious and very serious risks. Minor risks are checked and managed on a daily basis.

ZGCC and ZCC CT have improved their systems for grade-based management and control of environmental risks and hidden hazards identification and handling. ZCC CT has combined the dual prevention mechanism for environmental protection with the building of a visual culture identification system to promote standard management of environmental risks and enhance employees' awareness of environmental protection.

## Evaluation of Environmental Impacts



▲ ZCC CT's production line for indexable cemented carbide blades

In strict accordance with the *Law of the People's Republic of China on Environmental Impact Assessment*, the Company has been making all-out efforts to standardize the management of project construction, production processes, and business operations. It compiled reports of environmental impact assessment and made a full assessment of influence on the environment and takes targeted measures to minimize adverse impacts before planning and constructing a new project or expanding an existing project.

Projects in construction in 2023 included state-level key laboratory for cemented carbide and intelligent production line for superfine powders by ZCC, as well as CNC blade plant and intelligent equipment assembly center by ZCC CT. Reports of environmental impact assessment were compiled and obtained approval by competent environmental authorities.

### Dust prevention and control

The Company ensures that construction sites are fully-fenced, pilings are all covered, and main roads in construction sites are paved. Supplies or residuals are well covered to avoid dust pollution. When demolishing old buildings, the Company sends water spraying trucks to control dusts.

### Solid waste prevention and control

Construction waste is sorted and recycled to the utmost extent. Household waste is cleaned and treated on a regular basis so that it is harmless to the environment.

### Wastewater control

All construction water is discharged after being treated in the Company's wastewater treatment station.



### Noise control

Construction hours are arranged reasonably. Low-noise equipment is adopted. Construction procedures are well observed and colliding noises are avoided to the utmost extent.

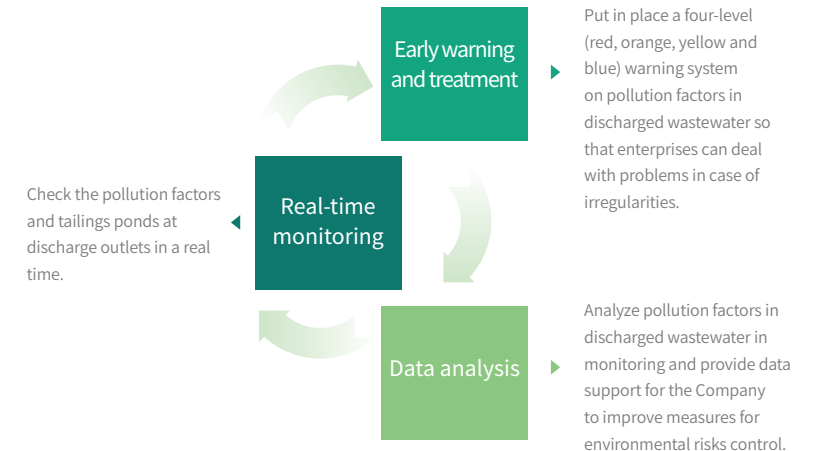
## Environmental Monitoring and Early Warning

The Company has established and is operating an online environmental monitoring and early warning platform, which monitors and collects major environmental data including energy, water use, emissions and discharges. The platform has such functions as real-time monitoring, early warning and treatment and data analysis. Now, it monitors five waste water discharge sites and sends early warnings on seven types of problems. In 2023, the Company handled 125 early warnings on the platform, guaranteeing its environmental compliance.

In the meantime, the Company's subsidiaries have made their respective plans to monitor wastewater, exhaust gas, noise and soil in accordance with *Regulations on Pollutant Discharge Permit*. They have entrusted qualified

third parties to monitor their wastewater, exhaust gas, noise and soil, and installed, used and maintained automatic pollutant monitoring devices in accordance with laws and regulations, which are connected with the monitoring system of environmental authorities. Data monitored in the Company's platform

are uploaded to the National Platform for Information Management and Sharing of Pollution Sources. By the end of 2023, the Company had released all of related information. No events of illegal discharge were reported.





## Training and Drills for Environmental Protection

The Company introduced CMT *Guidelines for Health, Safety and Environmental Protection Education and Training*. By providing training on environmental protection and environmental emergency drills, the Company has been working to enhance its employees' awareness of environmental protection and improve its management of environmental safety.

### Training sessions on energy saving and environmental protection

In 2023, the Company launched 49 training sessions on energy saving and environmental protection. A total of 2,115 person-times took part in the training.

### Key special training programs

The Company launched special training programs on the use of the online monitoring and early warning platform for environmental protection and safety. It gave training on the storage and use of chemical products.



### Environmental emergency drills

The Company conducted 38 environmental emergency drills, effectively improving its capacity for preventing and dealing with environmental emergencies.



▲ Energy conservation and environmental protection awareness promotion week

## Taking Green Action

Putting ecology first and pursuing green development, CMT has been pushing and guiding its subsidiaries to take green actions revolving around the Company's overall targets for environmental protection during the 14th Five-Year Plan period. The focus has been set on resources saving, energy consumption reduction, pollutant and emission reduction, and quality and efficiency improvement amid efforts to advance green transformation of the mode of production.

### Clean Production Audit

Clean production is being implemented across the Company. Directly-administered subsidiaries were required to carry out clean production audit. With the audit, its subsidiaries survey and diagnose the process of production and service delivery, and introduce and optimize plans for clean production, making pollution control more efficient throughout the entire process of clean production.

### Results of clean production audit in key subsidiaries

CMTRM	<ul style="list-style-type: none"> <li>Upgraded equipment into automated ones and improved production procedures: upgraded the carbide furnace and tungsten reduction furnace into automated ones. The productivity of carbide furnace was enhanced by 50%, and energy efficiency by 13%, saving 14.5 tons of standard coal every year.</li> <li>The productivity of tungsten reduction furnace was enhanced by 300%, energy efficiency by 150%, saving 183.5 tons of standard coal every year.</li> <li>Based on the results of clean production audit, targeted plans were made, the implementation of which will save 201.3 ton of standard coal annually.</li> <li>A project for purifying and recycling grinding fluid has been implemented, avoiding the production of 4 tons of hazardous solid waste every year.</li> </ul>
ZCC	<ul style="list-style-type: none"> <li>Finished the third phase of its rain-sewage diversion project, improving rain-sewage diversion rate to 70% across its factory.</li> </ul>
ZGCC	<ul style="list-style-type: none"> <li>Recycled cooling water to reduce water use.</li> <li>Optimized furnace opening time at the sintering process so as to use electricity in a staggered manner and reduce energy cost.</li> <li>ZGCC's branch in Chengdu replaced its original high energy-consuming equipment with a new automatic 15-tube furnace, which improved productivity and efficiency while reducing energy consumption.</li> <li>Some processes were switched from natural-gas heating to electric heating, shortening processing length and reducing energy consumption.</li> </ul>



## Use of Clean Energy

The Company has been promoting transition into a clean and low-carbon energy mix. The *CMT Guidelines for Environmental Protection* requires all of its subsidiaries to prioritize clean energy in energy use, make rational use of energies and save resources. The Company encourages its subsidiaries to improve the proportion of clean energies in their energy mix, and adopt solar power, wind power and other new energies based on their real conditions.

In 2023, multiple subsidiaries built solar power projects. The first phase of ZCC's solar power project was put into operation in the third quarter. By the end of the year, the project had generated 854,000 kw/h of electricity. The second phase of the project is in construction. The solar power project of ZCC CT was put into trial operation in December 2023. ZGCC has selected a bidder for its trial program of rooftop photovoltaic power generation (in Bancang). CMTRM is working on the feasibility of a solar power project.

### Case: ZCC CT Advanced the Building of a Project for Distributed Rooftop Photovoltaic Power Generation

ZCC CT built a project of distributed rooftop photovoltaic power generation in the Precision Tools Industrial Park in 2023. Distributed photovoltaic power generation stations were built on the rooftops of the precision blade factory and CNC blade factory, transforming solar power into electricity and supplying safe and stable clean electricity to the Precision Tools Industrial Park. The remaining electricity was transmitted to local power grid. In December 2023, the project was finished and put into trial operation. It was expected to generate 2,659,200 kw/h of electricity every year.

▼ ZCC CT built photovoltaic power generation facilities in its industrial park.



▲ ZCC CT's Precision Tools Industrial Park

## Phasing out Obsolete Production Capacity

In strict accordance with regulations, including the latest catalogue for industrial restructuring, the negative list for market access and the catalogue for phasing out outdated production processes, equipment and products, the Company made its annual plan for phasing out obsolete production processes, technologies and equipment.

In 2023, the Company phased out 81 sets of outdated equipment and avoided the consumption of 589.09 tons of standard coal. In specific, it invested 10,885,000 yuan in eliminating oil-fired boilers and

electricity boilers with energy efficiency below Level 3. The Company put in 11,357,000 yuan in phasing out motors, transformers, refrigeration units and lighting fixtures.

### Case: ZGCC Took Active Moves to Phase out Outdated Production Capacity and Promoted the Use of New Equipment

ZGCC makes annual plan for the elimination of outdated production capacity. Based on the master plan for upgrading the equipment in tungsten and molybdenum industry, it introduces new automatic and energy-saving equipment, and improves the efficiency of its energy use.

In 2023, it phased out 68 sets of outdated production equipment, and reduced energy consumption by 342.06 tons of standard coal. In the meantime, ZGCC replaced the existing natural gas steam boilers with new steam module machines. It installed steam use sites by the principle of proximity to reduce steam losses in the process of transmission via pipelines. ZGCC also finished the building of six sets of air-source heat pumps, replacing gas-fired water heaters for employees' daily use. This was expected to save around 200,000 yuan every year in gas cost.



▲ Steam module generators in ZCC

## Green Office

The Company pays attention to the use of energy and resources in daily operational and office activities. It encourages online meetings, paperless business operation, food conservation and garbage sorting. In the meantime, the Company actively participates in environmental campaigns and encourages its employees to get involved in environmental protection.

### Reducing printed meeting materials

In strict accordance with *CMT Guidelines for Meetings Management*, the Company requires that printed meeting materials should be minimized by the principle of efficiency, pragmatism, and energy saving.

### Managing vehicle use

The Company has enhanced management of vehicle use, and intensified approval procedure. It manages and dispatches vehicles in an integrated manner and avoids waste in vehicle use.

### Low-carbon theme campaign

The Company organized activities for the 2023 National Energy Conservation Week and the National Low-Carbon Day. On July 7, 2023, it released a special circular, requiring all of its subsidiaries to take an active part in the activities.



### Saving office supplies

The Company puts posters advocating saving office supplies in conspicuous locations, calling on all of its employees to save energy and office supply and use them in a rational manner. Paperless office has been encouraged.

### Advocating food conservation

The Company puts posters reading "No Food Waste" in conspicuous locations and places reminders on tables in its cafeterias to encourage its employees to avoid food waste.



## Managing Environmental Impacts

CMT has been managing its environmental impacts in strict accordance with national laws and regulations and industry standards regarding energy conservation and environmental protection, such as the *Environmental Protection Law of the People's Republic of China*, the *Water Pollution Prevention and Control Law of the People's Republic of China*, the *National Environmental Emergency Response Plan*, *Guidelines for Manifest-Based Management of Hazardous Waste*, *Regulations on Environmental Protection in Construction Projects*, and *Regulations on Pollutant Discharge Permits*.



## Energy Management

For the goal of controlling both total energy consumption and energy consumption intensity, the Company has been optimizing its energy mix and encouraging innovation and application of energy conservation technologies so as to enhance energy efficiency and lower energy consumption.

## Requirements of Energy Management

The Company signs letter of responsibility in health, safety and environmental protection with its subsidiaries every year. The letter makes it clear that efforts should be made to optimize management of energy consumption, reduce primary energy consumption, adjust and optimize production processes, promote engineering-based emission reduction, lower energy consumption intensity and emission intensity, and ensure that emission reduction is stable, predictable, quantifiable, verifiable, and evaluable. Meanwhile, it requires its Corporate Planning and Development Department to set targets for energy conservation and emission reduction, and the HSE Department to supervise and assess its subsidiaries' performance in meeting the targets. The results are linked to the annual evaluation of its subsidiaries' performance on health, safety and environmental protection.

Valuing fine energy management, the Company has used energy metering monitoring systems, online energy consumption monitoring systems and other tools to explore its potential for energy consumption and carbon reduction. In 2023, ZCC CT initiated the second phase of its energy metering monitoring system, adding 110 water, electricity, and gas metering points, and upgrading and expanding the original energy management system to monitor its energy consumption in real time. ZGCC completed the construction of its online energy consumption monitoring system, enabling automatic reporting and online monitoring of energy consumption. With electricity use in a staggered manner, it reduced electricity purchase costs by 510,000 yuan in 2023.

## Targets and Progresses

By the end of 2023, the Company had been using electricity mainly in production, petroleum and diesel in transportation, and natural gas in employee cafeteria. In 2023, its total energy consumption reached 76,434 tons of standard coal, down 2.07% year on year.

Target	Progress
<b>Energy saving and emission reduction targets during the 14th Five-Year Plan period:</b> By 2025, its comprehensive energy consumption per 10,000 yuan of output drop by more than 5% compared to 2020.	<b>Target reached</b> By the end of 2023, its comprehensive energy consumption per 10,000 yuan of output had dropped 12% compared to 2020.
<b>Annual target:</b> The comprehensive energy consumption per 10,000 yuan of output (comparable price) Lower than 0.082 ton of standard coal per 10,000 yuan.	<b>Target reached</b> Its actual comprehensive energy consumption per 10,000 yuan of output (comparable price) was 0.0603 tons of standard coal per 10,000 yuan.

### Energy consumption from 2021 to 2023

Comprehensive energy consumption per 10,000 yuan of output (comparable price)		Energy consumption (all types of energy)	
	Tons of standard coal / 10000 yuan		Tons of standard coal
2023	0.0603	2023	76,434.0
2022	0.0560	2022	78,046.0
2021	0.0690	2021	78,182.0

**Note:** Although the Company's energy consumption decreased in 2023 from the previous year, its comprehensive energy consumption per 10,000 yuan of output (comparable prices) edged up year on year due to decrease in total industrial output affected by industry demand and market competition among other factors.

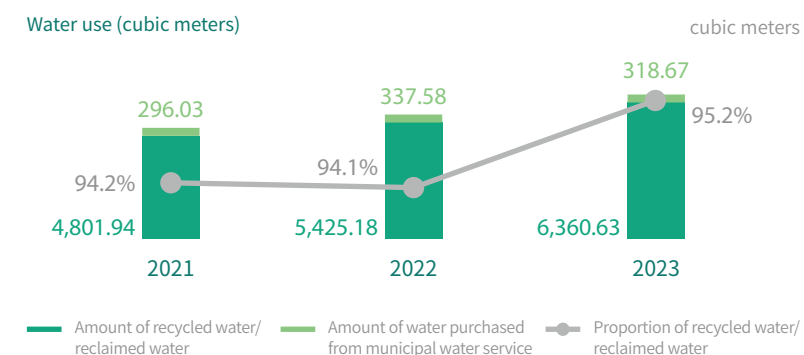
## Water Resource Management

The Company has been strictly abiding by laws and regulations on water resources, including the *Water Pollution Prevention and Control Law of the People's Republic of China* and the *Water Law of the People's Republic of China*. CMT *Guidelines for Environmental Protection* explicitly required that attention should be paid to the protection of water resources, land resources, biological resources, and climate resources that affect the production and development of humanity. The Company constantly optimized its water use structure, and promoted full recycle of wastewater. While ensuring discharged water meet related standards, the Company made continuous efforts to improve repeated recycling of wastewater and reduce the use of fresh water.

## Water Use

In 2023, the amount of fresh water fetched by the Company decreased 189,053 tons compared with 2022, down 5.60% year on year. It used 9,354,499 tons

more of recycled water, up 17.24% year on year. The proportion of recycled water went up from 94.1% to 95.2%.



## Wastewater Discharge and Management

The Company strictly implements various measures for pollution control, energy conservation and emission reduction, and ensures that environmental protection facilities are complete and reliable in operation, pollution control facilities are normal, and pollutants are discharged up to standard. In 2023, the Company's total wastewater discharged decreased by 95,533 tons, down 4.26% year on year. No environmental pollution or other law-breaking events were reported.



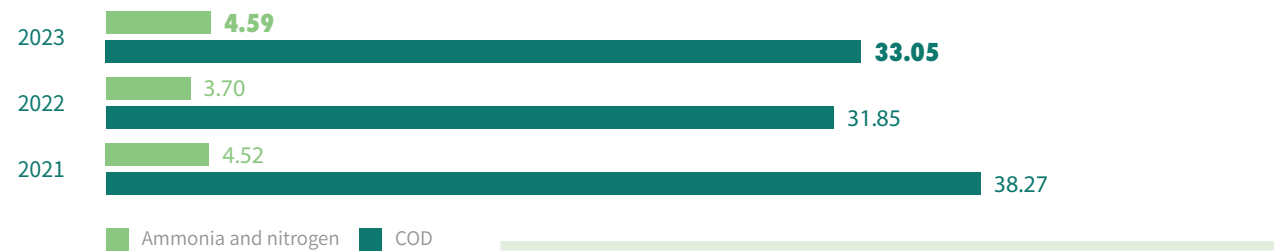
▲ Wastewater treatment facility in ZCC CT

## Target and Progress

The Company sets targets of chemical oxygen demand (COD) and ammonia and nitrogen emissions every year, and examines the achievement of these targets. In 2023, all pollutant targets were achieved, with the concentration of pollutants in discharged wastewater remaining stable and meeting all prevailing emission standards and requirements.

Target	Progress
<b>Annual target:</b> COD emissions stay lower than 134.5 tons. Ammonia and nitrogen emissions stay lower than 14.5 tons.	<b>Target reached</b> COD emissions was 70.9 tons. Ammonia and nitrogen emissions were 9.9 tons.

### Concentration of pollutants in wastewater discharged



**Note:** Among CMT subsidiaries, the strictest ammonia and nitrogen and COD emission concentrations were 15 mg/L and 100 mg/L, respectively. The actual emission concentrations were far below the standard requirements, all meeting the discharge standards. Compared with 2021 and 2022, the ammonia and nitrogen and COD concentrations in the reporting period increased by 0.89 mg/L and 1.20 mg/L, respectively, which represented normal fluctuations in data detection.

### Measures for wastewater treatment

ZCC CT	Wastewater was subject to treatment combining air floating, hydrolytic acidification and aerobic contact oxidation.	ZGCC	Pre-treatment, biochemical treatment and membrane treatment were combined in treating wastewater.
ZCC	Wastewater was treated with air floating or anaerobic-aerobic treatment, or in biological contact oxidation ponds.	NCC	Microbial electrolysis technology and ABR technology were applied in treating wastewater.
Jinzhou	Wastewater was pre-treated to remove oil, then treated with iron-carbon microbial electrolysis technology, put on biochemical reaction, and then treated in the reclaimed water system before reusing.	CMTRM	Oil floating processor, pH adjusting and flocculent settling were applied in treating wastewater.

## Air Pollutant Management

The Company has been strictly abiding by laws, regulations and standards, such as the *Environmental Protection Law of the People's Republic of China* and the *Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution*. It carries out

unified environmental monitoring and management on its subsidiaries, and examines their compliance on atmospheric pollutant emissions. The Company has been working to improve its performance in air pollution control to ensure that air pollutants are emitted up to standards.

## Emission Treatment

Highlighting unified management for energy conservation and environmental protection, the Company has been optimizing its energy mix by increasing the use of electricity and natural gas, and adopting clean production processes and advanced treatment technologies to reduce the generation of air pollutants at the source. At the same time, it urges its subsidiaries to strictly implement exhaust gas treatment measures based on their production characteristics to ensure that they meet corresponding targets.

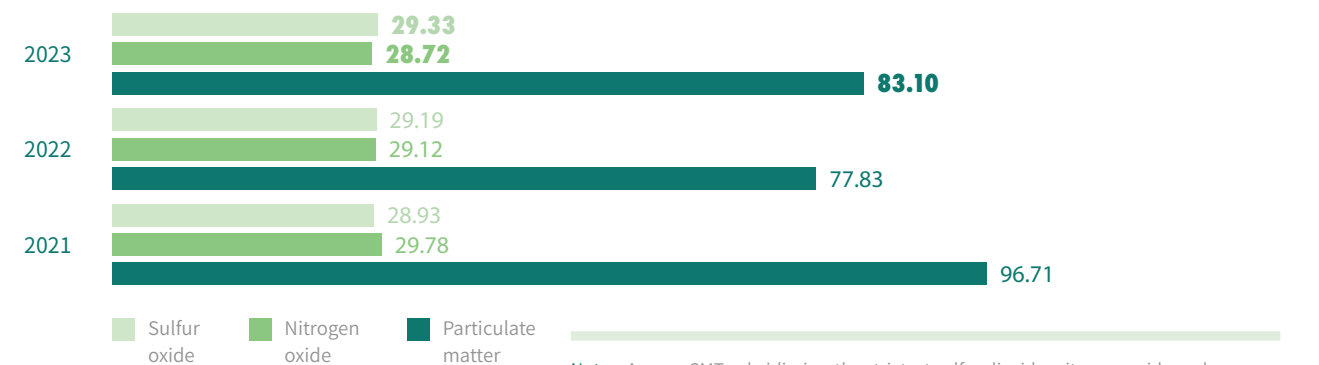
CMT subsidiaries have been treating air pollutants by means of bag dust collection, activated carbon adsorption devices, electrostatic precipitators, and oil smoke purifiers. Changcheng Equipment also uses systems, such as pump-free water curtain filters, dehumidifiers and UV ultraviolet photolysis purifiers to comprehensively treat organic exhausts.

## Targets and Progresses

Exhausts are mainly generated in production processes of sintering, pressing, mixing and deep processing. Main air pollutants include particulate matters, sulfur dioxide, nitrogen oxides and non-methane hydrocarbon.

Target	Progress
<b>Annual target:</b> Emissions of sulfur dioxide stay lower than 4.0 tons. Emissions of nitrogen oxides stay lower than 4.5 tons.	<b>Target reached</b> Emissions of sulfur dioxide were 2.7 tons. Emissions of nitrogen oxides were 2.6 tons.

### Concentration of air pollutants



**Note:** Among CMT subsidiaries, the strictest sulfur dioxide, nitrogen oxide and particulate matter emission concentrations were 100 mg/cubic meter, 100 mg/cubic meter and 120 mg/cubic meter, respectively. The actual emissions all reached standards. Compared with 2021 and 2022, the sulfur dioxide and particulate matter concentrations in the reporting period increased by 0.14 mg/cubic meter and 5.27 mg/cubic meter, respectively, which represented normal fluctuations in data detection.



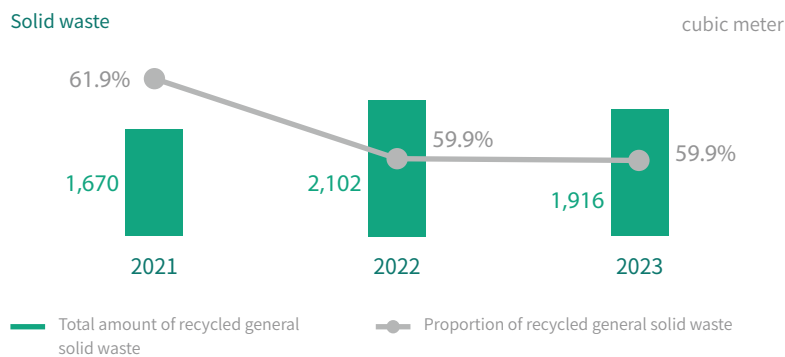
## Waste Management

The Company has been strictly abiding by the *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste and the Regulations on the Safety Management of Hazardous Chemicals* (Order No. 344 of the State Council). Adhering to the principle of "reducing and recycling solid waste and making solid waste harmless to the environment", the Company has been strengthening whole-process management of solid waste, reducing the generation of solid waste from the source, promoting the comprehensive utilization of solid waste, and making solid waste harmless to the environment after disposal.



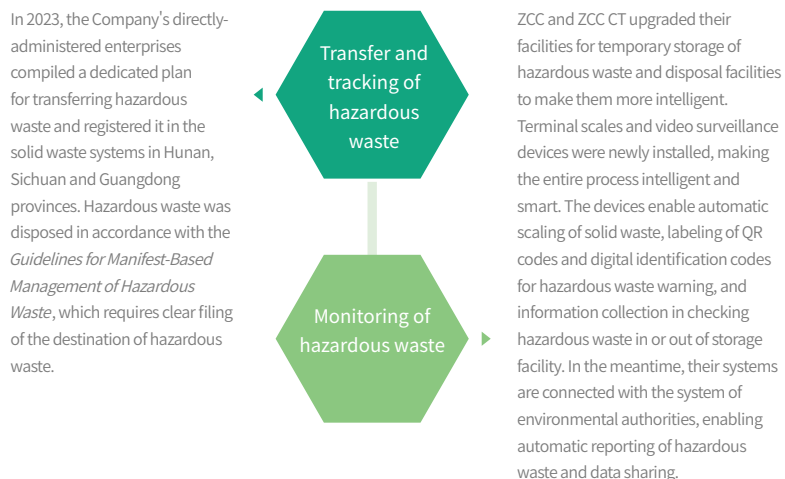
## Treatment and Use of Solid Waste

The Company categories solid waste into unrecyclable solid waste and recyclable solid waste. It requires its subsidiaries to identify such waste and manage them based on the sorting. It has put in place a list of solid waste and sorts them based on their properties for recycle or reuse so as to lower energy consumption and environmental impacts.



## Management of Hazardous Waste

Main hazardous waste the Company produces includes waste liquid and waste residue, such as waste engine oil, waste emulsion, waste paraffin, waste cutting oil and sludge. The Company collects and stores all hazardous waste in accordance with the management standards for hazardous waste, and has set up a dedicated storage facility for hazardous waste. It makes sure that the storage facility is waterproof, moisture-proof and anti-corrosion. The Company has been improving its management system for hazardous waste and put in place a sign system. It entrusts qualified third-party company to transfer and dispose hazardous waste.



## Management and Use of Chemicals

The Company has been strictly abiding by *Regulations on the Administration of Import and Export of Precursor Chemicals*, *Regulations on the Administration of Precursor Chemicals* and *Sichuan Regulations on the Flow of Explosive Hazardous Chemicals* in managing its hazardous chemicals. It requires all of its subsidiaries to put in place their respective guidelines to standardize the procurement, transportation, storage and use of hazardous chemicals.



### Procurement

- Put in place procurement procedures to ensure that chemicals purchased meet legal and regulatory requirements. Make purchase from suppliers with due permits, and register all explosives and toxics among other hazardous chemicals in public securities.
- Review and assess suppliers to make sure they are capable of delivering quality products in accordance with laws and regulations. Select suppliers with qualifications for the transportation and sales of hazardous chemicals, and confirm each loading and unloading step in delivery with signature.

### Use

- Put in place procedures for the use of chemicals, specify instructions and precautions and provide necessary personal protective equipment and training to ensure that employees use chemicals correctly and cause no accidents or hazards.
- Employees have taken professional training and acquired certifications to use chemicals. They understand the properties of the chemicals. Emergency equipment is provided to ensure prompt handling of any emergencies.

### Storage

- Designate special areas for the storage of chemicals. Take targeted storage measures. Avoid mixing hazardous chemicals with other substances in storage. The storage facilities should be dry and water-free. Moisture-proof items should be placed on wooden pallets and arranged neatly.
- Open flames, smoking, and entry of kindling materials, sparks or externally-booted motor vehicles are strictly prohibited in areas and facilities for storing hazardous chemicals. Corresponding signs and fire-fighting equipment should be put in place.
- Train staff workers managing storage of hazardous chemicals to ensure that they understand properties of hazardous chemicals. The amount of chemicals taken out from storage must stay within maximum daily usage limit. The warehouse have two separate locks taken care of by two separate staff workers. Records of checking in and out have been well kept.

### Emergency response

- Put in place plans for emergency response and organize emergency response drills, ensuring timely and effective handling of emergency situations.





The Company is dedicated to reducing the use of chemicals in its production from the source. It has been replacing such chemicals with safer and environmentally friendly alternatives to lower potential health and environmental risks.

ZGCC	<ul style="list-style-type: none"> <li>■ The ammonia compression process, a sub work flow of the powder 204 section, has been canceled, ending the use of hazardous chemical – ammonia water.</li> <li>▶ Keruide Company of ZGCC replaced some of the gasoline rubber solution used in spheroidal alloy production with SD glue, significantly reducing fire risks. It replaces previous alcohol as abrasive medium with pure water in the wet grinding and accurate grinding processes, making the processes safer and more environmentally friendly.</li> </ul>
ZCC	<ul style="list-style-type: none"> <li>■ Two sets of alcohol-based passivation drying equipment were replaced with water-based drying equipment.</li> <li>■ Traditional electricity-heated drying equipment was phased out.</li> <li>▶ The application of automatic ball tooth drying machines was constantly promoted. Alcohol-free drying process was promoted, reducing the annual alcohol consumption by 15 tons.</li> <li>■ All spray tower in the mixing plant were renovated, significantly improving alcohol recovery rate.</li> </ul>
CMTRM	<ul style="list-style-type: none"> <li>▶ The original alkaline washing device was replaced by a laser cleaning device, reducing the use of solid alkali.</li> </ul>

## Management of Packaging Materials

Actively responding to China's 14th Five-Year Plan for the Development of Circular Economy, the Company has been adopting circular mode of production and urging its subsidiaries to recycle packaging materials. Regarding the use of packaging materials, such as steel buckets, pallets, and packaging boxes during the loading and transportation, the Company recovers the used cargo pallets and encourages downstream customers to recycle packaging boxes for reuse.

Jinzhou	<ul style="list-style-type: none"> <li>■ All 2,470 cargo pallets were recycled;</li> <li>▶ A total of 8,680,707 packaging boxes with 557,677 ones recycled from customers.</li> </ul>
NCC	<ul style="list-style-type: none"> <li>▶ During the inspection process in the workshop, trays instead of packaging boxes are used to transport coatings, saving 3,000 packaging boxes.</li> </ul>
CMTRM	<ul style="list-style-type: none"> <li>▶ The packaging buckets for raw molybdenum powder have been marked with new labels and reused as product packaging buckets. Approximately 500 molybdenum powder packaging buckets were transformed.</li> </ul>
ZGCC	<ul style="list-style-type: none"> <li>▶ Recycled around 1,000 steel buckets.</li> </ul>
Changcheng Equipaent	<ul style="list-style-type: none"> <li>▶ Wooden packaging materials have been recycled.</li> </ul>

## Noise Management

The Company has been strictly abiding by the laws, regulations and industrial standards regarding the prevention and control of noise pollution, such as the *Environmental Protection Law of the People's Republic of China*, the *Law of the People's Republic of China on the Prevention and Control of Environmental Noise Pollution*, and the *Emission*

*Standards for Noise in Factories of Industrial Enterprises*. The Company has taken various measures for sound insulation and noise reduction, including the use of sound insulation hoods, sound insulation rooms, and sound insulation panels, to minimize the impact of factory noise on workers and nearby residents.



▲ Soundproof panels installed by NCC to reduce noise pollution

# Mitigating Climate Change

Climate change is a matter of the survival and development of humanity. It also poses risks and opportunities for business development. CMT has been active in advancing the "dual carbon" goals. It has been leveraging technological innovation and other means to create a green manufacturing model and produce green

## Analysis of Climate Change Risks

Climate change, on the one hand, poses physical risks to the Company through extreme weather, natural disasters and sea level rise among others. At the same time, policies and laws, technological innovations, market changes, reputation and other factors may also affect the Company's transformation. In response,

The efforts have enabled the Company to advance carbon peaking and carbon neutrality in an orderly manner, effectively respond to the risks and opportunities brought by climate change, achieve green and high-quality development, and build its edge in low-carbon technologies.

The Company has preliminarily identified climate change-related risk factors, taken actions to enhance its resilience against climate risks, and planned a three-year action plan toward the "dual carbon" goals so as to seize business opportunities in low-carbon transformation.

		Climate-related Risks
Physical risks	Acute	<ul style="list-style-type: none"> <li>Extreme weathers, such as rainstorm, flood, high temperature and cold waves might lead to production halts and reduction, disruption of the supply chain and difficulties in product transportation, which will lower business stability, rise cost and shrink production capacity. This might also trigger secondary disasters, threatening personal safety and the environment.</li> <li>Major extreme weather disasters are likely to cause damage to production equipment and employee safety.</li> </ul>
	Chronic	<ul style="list-style-type: none"> <li>Long-term climate change like persistent high temperatures might push up refrigeration demand in summer, which will increase business cost and expenditure on maintaining equipment. More need to be invested to adjust the energy mix.</li> </ul>
Transformation risks	Policy and law	<ul style="list-style-type: none"> <li>With policies improved and new ones introduced, regulators will adopt increasingly stricter measures to limit greenhouse gas emissions and enhance requirements for the disclosure of greenhouse gas emissions.</li> <li>The Company faces risks of legal liabilities, fines and financial losses as a result of failure to comply with relevant climate policies and laws.</li> </ul>
	Technology	<ul style="list-style-type: none"> <li>The revolution of production technology in response to higher environmental requirements and the R&amp;D of new products will require more investment in new technology. There might be new expenditure on applying or arranging new operation procedures.</li> </ul>
	Market	<ul style="list-style-type: none"> <li>With the guidance of policies and market as well as gradually increasing awareness of low-carbon development and environmental protection, customers are likely to change to more environmentally friendly products.</li> <li>Changes of customer behavior, like their efforts in responding to climate change, will pose new requirements on the supply chain.</li> </ul>
	Reputation	<ul style="list-style-type: none"> <li>As shareholders are paying higher attention to climate change issues, the Company may have its reputation hurt if it failed to meet shareholders' expectations or committed any illegal or unethical behavior.</li> </ul>

The Company has been carrying out monitoring and early warning of extreme weather to mitigate the negative impacts of such events. The Company takes weather into consideration when planning for business operation, and adopts effective measures in such aspects as working hours, operating conditions, logistical support and emergency preparedness to prevent and manage risks. In the meantime, the Company requires its subsidiaries to enhance training on extreme weather response and improve employees' awareness of self-protection. In 2023, the Company made early warnings of extreme weather on three occasions, requiring its subsidiaries to prepare for extreme weathers and take precautionary measures against possible disasters and protect employees' safety.



## Management of GHG Emissions

With the focus set on energy conservation and carbon reduction, the Company strives to establish a collaborative management system for energy conservation and carbon reduction. The HSE Committee, as a decision-making and coordination body for energy conservation and carbon reduction, oversees the Company's daily energy conservation and carbon reduction management. Under this committee, an energy conservation management office is established to break down and implement tasks. The office also participates in the due diligence review of energy conservation


and carbon reduction of the Company's investment and construction projects, and oversee the energy conservation and carbon reduction work of its subsidiaries. All subsidiaries have established departments for energy conservation and carbon reduction management. The departments carry out technological upgrading, and promote the application of advanced technologies, processes, and equipment. They are also responsible for statistics, metering, monitoring, analysis, and reporting work related to energy conservation and carbon reduction.

The Company makes calculations of its GHG emissions in accordance with the *Guide for the Calculation and Reporting of Greenhouse Gas Emissions by Other Nonferrous Metal Smelting and Rolling Processing Enterprises (Trial)* released by the National Development and Reform Commission. In 2023, the Company emitted 286,700 tons of carbon dioxide equivalents. The carbon dioxide emissions per 10,000 yuan of output were 0.2277 tons.

Total carbon dioxide emission		Carbon dioxide emissions per 10,000 yuan of output (comparable price)	
Total carbon dioxide emission (Unit: 10,000 tons of CO2 equivalent)		Unit: ton of CO2 Equivalent/10,000 yuan)	
2023	28.67	2023	0.2277
2022	28.04	2022	0.2242
2021	26.80	2021	0.2377

Note: In 2023, the Company built a new tungsten carbide intelligent production line in ZCC and a new tungsten wire project in ZGCC, consuming more electricity and emitting more carbon dioxide. The reasons for the increase in carbon dioxide emissions per 10,000 yuan of output (comparable prices) are as follows:  
 1. Due to weak industry demand and intensified market competition, the total industrial output value decreased from the previous year;  
 2. Carbon dioxide emissions were relatively small in scale, but edged up (some 100,000), whereas the total industrial output value was substantial (tens of billions). When dividing the two, the comprehensive energy consumption per 10,000 yuan of output value was higher from the previous year.





- Set annual quality targets, strengthened the quality management system and enhanced the lean management system, and set customer satisfaction targets

Full coverage of second-level standardization enterprises for safety production and occupational health and safety system (ISO45001)

All of the seven directly-administered enterprises have passed the accreditation

Equally recruited workers from multiple channels

hired local employees and contributed to local employment

Via China Tungsten School

- 7 types of training

involving

8,051 employees

- 791 employees took part in youth volunteer services

the average frequency

102 times / year

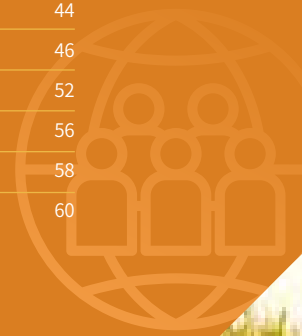


## Assuming Responsibilities for a Better Future

Social

From products and services to health and safety, employee development, supply chain management and public welfare undertakings, actions of businesses influence every aspect of social development. Following its core value of "commitment," CMT has been making sure its products are of high quality and joins hands with supplies for common growth. Putting people first, it fully respects and protects human rights, provides a complete compensation and benefits system for employees and creates a dynamic and enabling work environment. With rural revitalization and various assistance programs as the focus of efforts, the Company has been helping its paired-up regions develop and improve local people's livelihoods. It is also active in community communications and public welfare undertakings, giving back to society with concrete actions.

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# Management of Products and Services

CMT has been committed to improving the quality of its products and services, and takes customers' ever-increasing needs as its core objective. Taking a market-oriented approach, the Company has been working to improve its comprehensive competitiveness by increasing investment in technological R&D, ensuring product quality and optimizing customer service procedures. It has put in place a complete system for product quality management, strengthened operation standardization, carried out quality management measures in every link of its production and operation, and followed strict inspection and spot check systems. With the efforts, it has achieved effective quality management throughout the entire life cycle of the products. In the meantime, the Company has been deepening communication and cooperation with customers, and providing them with targeted solutions so as to satisfy their diverse needs.

In 2023, the Company withdrew or recalled no products for safety or health reasons. It received no regulatory penalties, external lawsuits or other incidents regarding its products or services.

## Quality Management

In accordance with laws and regulations on quality management, subsidiaries of the Company have formulated corporate regulations such as the *Quality Management Measures* and *Measures for Product Supervision and Random Inspection*. By strengthening the building of the quality management system and the lean management system, and implementing quality management measures, they work to ensure effective functioning of the quality management system, improve product quality, enhance the Company's capabilities for quality control and make sure that

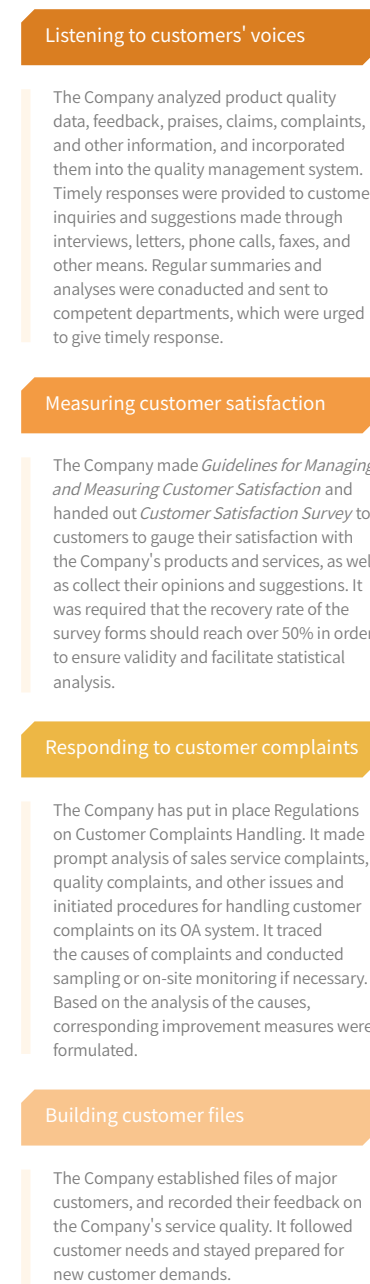
their products and services comply with domestic and international standards and industry standards.

The Company's quality management system meets international standards. All of its subsidiaries have passed the ISO90001 quality system certification. In January 2024, ZCC was awarded the Excellent Practice Award of Quality Management System by the China Quality Certification Center (CQC), becoming the only certified organization in Hunan Province to win such an honor.



## Service Improvement

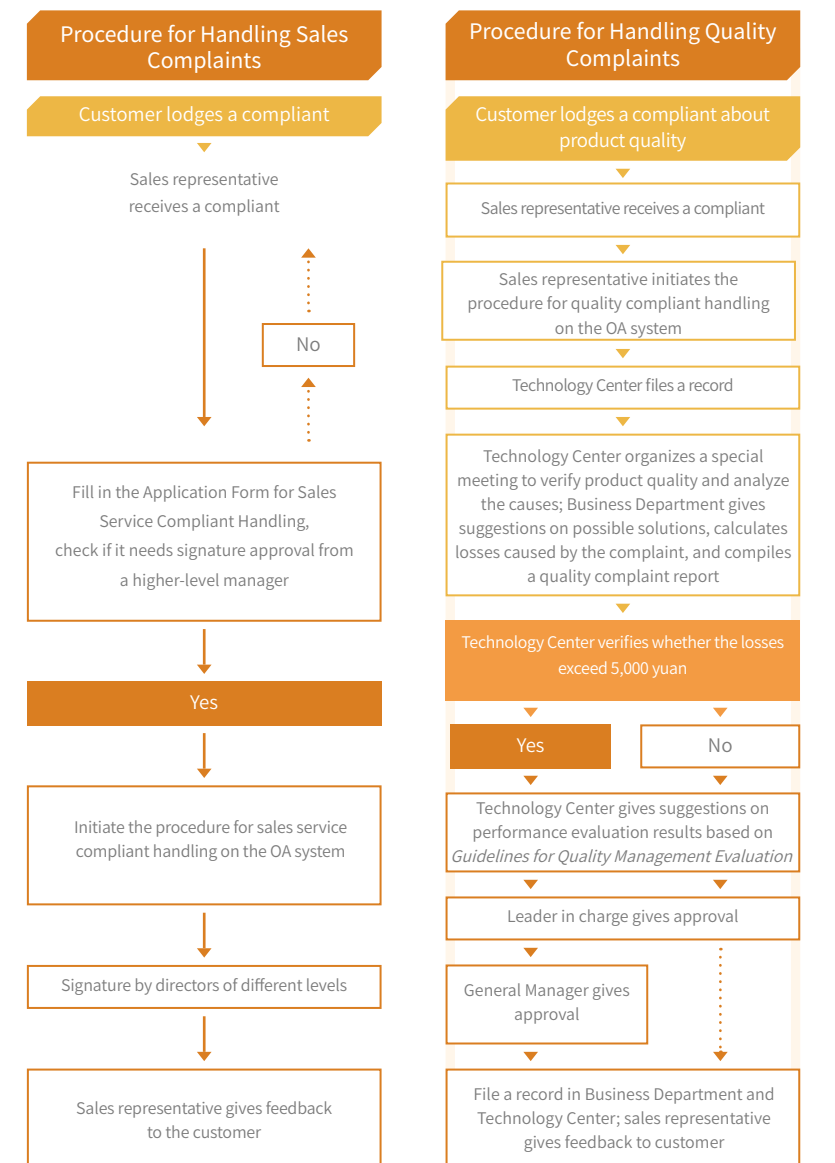
With "customer satisfaction" as the goal, the Company has been improving its customer service. It identifies customer demands and potential needs through customer satisfaction surveys, customer feedback, and handling of customer complaints.



## Customers' Rights and Interests

The Company respects and protects the rights and interests of its customers and has established various policies and systems to safeguard their rights and interests. The efforts include eliminating false advertising and unfair competition, managing after-sales service, handling customer complaints, and protecting information security. To accurately analyze customer complaints and standardize the handling procedure, the Company formulated *Guidelines for Handling*

*Customer Complaints*, which specifies responsibilities of after-sales services and work procedure and the functions and roles of different departments. This enables prompt responses to customer complaints about product and service qualities, and solutions to major quality problems. With the efforts, the Company has been constantly improving its product and service qualities and safeguarding customers' legitimate rights and interests.



## Management of Health and Safety

Putting safety first, CMT has been highlighting precautions and taking holistic approaches in this regard. It considers safety production the foundation for protecting the safety of its employees and corporate properties. The Company has been strictly abiding by laws and regulations on safety production, like the *Law of the People's Republic of China on Safety in Production*. It has been improving the long-term mechanism for safety production, and taking active actions to forestall and resolve major safety risks, and enhance safety production management. It is dedicated to preventing, controlling and eliminating occupational hazards, and protecting employees' physical health and life safety.

## Strengthening Safety Management System

The Company has made regulations, such as the *CMT Guidelines for Safety Production and CMT Guidelines for Fire Prevention and Control* for production safety management. They lay out principles for production safety management, organizational structure, working mechanism and job responsibilities. The Company urges subsidiaries to build a system for production safety and run it effectively so as to realize self-management and continuous improvement of production safety.

By the end of 2023, all of the subsidiaries of the Company had been recognized as second-level standardization enterprises for safety production and passed the Occupational Health and Safety Management System (ISO 45001). All of its seven directly-administered enterprises have passed the accreditation. In the year, the Company reported no incidents or violations regarding safety production or occupational health and safety.

## Management of Workplace Safety

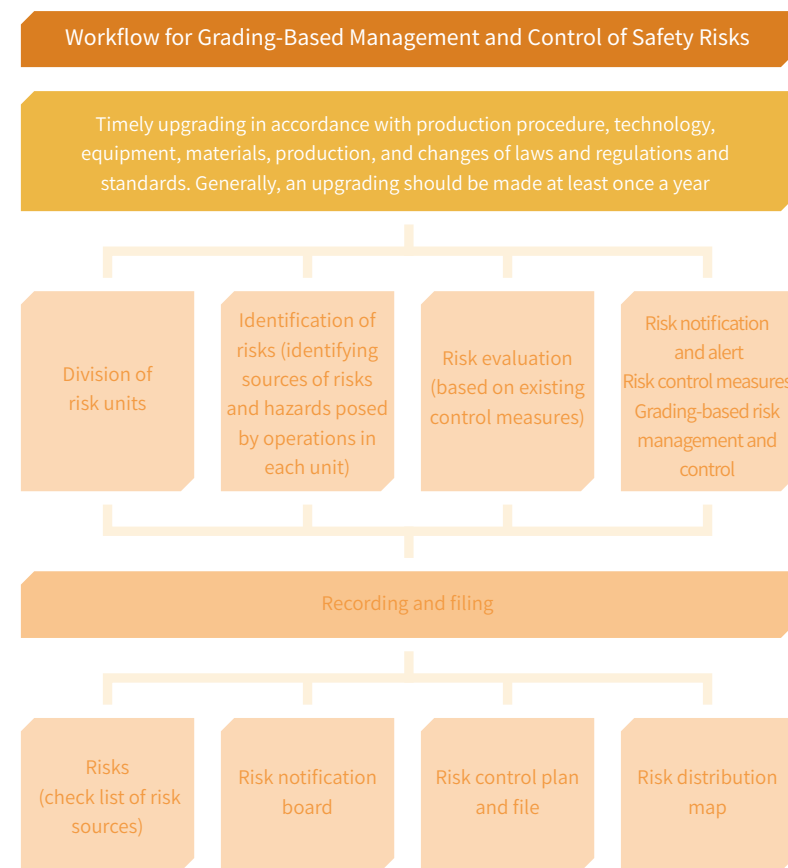
The Company has designated its chairman as the primary person responsible for production safety. The HSE Committee works as the deliberative, coordinating, decision-making and management body for production safety. Members of the committee include corporate

management and supervisors for safety and environmental protection. The Company has also introduced the List of Senior Managers' Responsibilities for Health, Safety and Environmental Protection and *List of CMT Departments' Responsibilities for Health, Safety and Environmental Protection*.



## Management and Control of Safety Risks

The Company has established grading-based system for the management and control of safety risks, as well as a system for the identification and treatment of potential hazards. Through collective discussions and detailed analysis, it identifies risks in production activities, workplaces, equipment and facilities, ensuring that the risks are fully and rationally identified. The Company has been making continuous efforts to improve its grading-based system for risk management and control, effectively manage objective risks and address potential hazards arising in production.



- Formulate procedures and methods for safety risk identification, fully identify safety risks in production processes, equipment and facilities, workplaces, employee behavior, and management systems. In 2023, a total of 39 safety risks were identified, including ten major risks, and involved in the *List of Risks Existing in CMT Directly-Administered Enterprises (2023)*.
- Employ such safety risk analysis methods as Safety Checklist (SCL), Job Hazard Analysis (JHA) and Likelihood, Exposure and Consequence (LEC) to evaluate and grade safety risk factors in production and business operation.
- Classify, sort and assess safety risks, incorporate them into the Company's health, safety and environmental risk registration form, which details the risk grading and corresponding management and control measures. Each subsidiary has such a registration form.

### Grading-Based Management and Control of Safety Risks

- Implement the system for investigating and managing potential hazards in production safety, record them faithfully and disclose them to people involved through staff meetings, staff representative meetings, information bulletin boards and other means.
- Urge subsidiaries, factories, teams and individuals to fulfill their management and control responsibilities specified on the safety risk list. Manage safety risks from organization, system, technology and emergency response.
- Closely watch high-risk processes, equipment, materials, locations, and positions, and risks posed by the changed sources of risks. Make dynamic evaluation, adjust risk grading and control measures to ensure that safety risks are always kept under control.

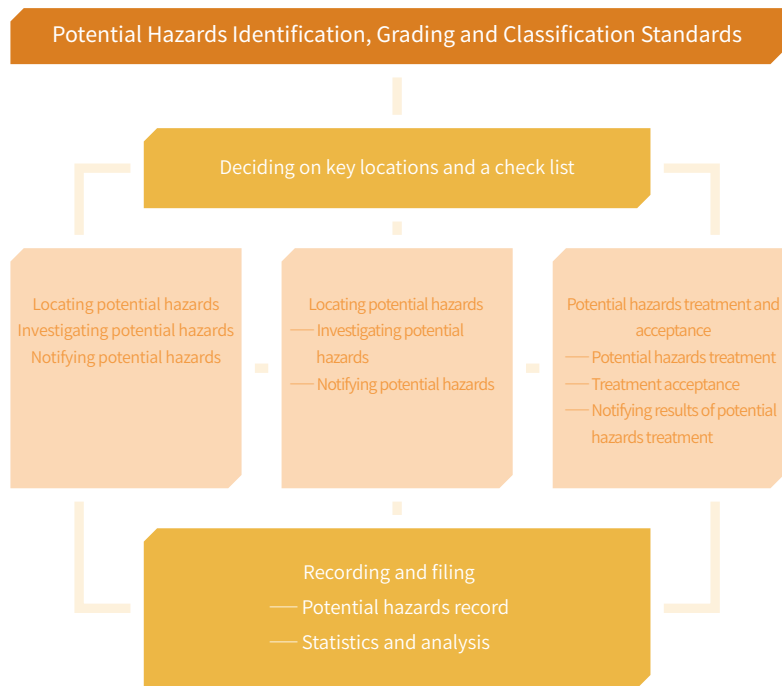
Identification and Assessment of Safety Risks



## Treatment of Potential Hazards

The Company makes risk investigation and treatment as an important link in ensuring production safety. It carries out comprehensive inspection, holiday inspection, seasonal inspection and routine inspection, and requires staff workers to check risks by themselves. Then, the risks and harmful factors are analyzed. From basic management to workplace management and capacity building, the Company ensures that potential hazards are fully identified and treated.

The Company has put in place a grading-based principle for potential hazards management. It makes treatment measures based on the type of the potential hazards and the harm extent, and specifies when the hazards should be eliminated and who should be responsible for the treatment. A schedule for the treatment of hazards is made. The Company carries out dynamic management of the treatment and works to build a safe workplace for its employees.



## Safety Emergency Response

The Company has been improving its management system for production safety and emergency response. In 2023, it revised its *Plan for Production Safety Emergency Response* (covering risk assessment report and survey report on emergency response resources). The plan was approved by the Hunan Provincial Department of Emergency Management for the first time. In the meantime, the Company has been improving its organizational system for emergency response. The command center for production safety emergency response is the top command body. Chairman serves as head of the command center, general manager and deputy general manager in charge of production safety as deputy heads of the command center and other senior management and department heads as members. The command center has emergency

response office, communication and liaison group, emergency response technology group, logistical support group and accident investigation group.

The Company makes emergency drill plans every year and organizes various training programs and emergency rescue drills. In 2023, a total of 201 emergency rescue drills were organized, with 9,665 participants. There were comprehensive emergency rescue drills, fire extinguishing drills, combustible gas leakage response drills, and electric shock treatment drills. The drills effectively enhanced the safety awareness and emergency response capabilities of all employees.

2023

▶ emergency rescue drills were organized



201

▶ participants



9,665



▲ Jinzhou carried out a fire emergency response drill.

## Safety Incentives and Obligations

The Company places great emphasis on the building of an integrity system for production safety. Committed to fulfilling corporate social responsibility of production safety, it promises to eliminate wrongdoings and law-breaking activities regarding production safety, avoid illegal commanding and operations and report all production safety accidents in a faithful, honest and timely manner. The Company sets and makes public a hotline and email

address for reporting irregularities and wrongdoings regarding health, safety and environmental protection. Individuals or organizations have the right to report to relevant government departments and the Company any illegal behaviors or potential accidents related to the production safety. After receiving a report, the Company will verify the clue and handle it within 15 work days and give a reply on the investigation and handling results within 30 work days.



## Safeguarding Employees' Occupational Health

The Company has been prioritizing employees' safety and their occupational health in its business operation. It strictly abides by laws, regulations and industry standards, such as the *Law of the People's Republic of China on Work Safety*, the *Fire Prevention and Control Law of the People's Republic of China*, and the *Law of the People's Republic of China on the Prevention and Control of Occupational Diseases*. Adhering to the principle of putting prevention first and combining prevention with treatment, the Company has been improving its corporate mechanisms, including the *Measures for Occupational Health Management*, *Guidelines for Comprehensive Evaluation and Assessment on Health, Safety and Environmental Protection and Regulations on Production Safety*. The Company has been identifying and controlling occupational health risks and improving management on occupational health to safeguard the health and safety of its employees.



▲ The Company carried out activities and training for the occupational disease prevention and control law awareness week

In 2023, the Company invested a total of 10,908,700 yuan in occupational health, mainly used for occupational protection facilities and equipment and occupational health and safety training. Within the year, the Company reported no major occupational health and safety accidents, nor new cases of occupational diseases. Only two minor injury incidents were reported. The total number of lost workdays due to work-related injuries was two.

## Identifying and Treating Occupational Hazards

The Company has conducted a comprehensive investigation of occupational disease hazards, revealing that the primary risks to occupational health and safety come from noise generated by the operation of production facilities and equipment, as well as dust and volatile organic compounds in metal processing. To strengthen management of occupational health risks, the Company has put in place various systems in its *Measures for Occupational*

*Health Management*, involving prevention and control of occupational hazards, notification of occupational hazards, reporting of occupational hazards, and detection and control of occupational hazards. Additionally, the Company requires designated personnel to conduct regular and daily monitoring of the occupational hazards in the workplace to ensure that they comply with the requirements for occupational health environment and conditions.

The Company requires its subsidiary with occupational hazard risks to entrust a qualified occupational health institution to conduct at least one detection of occupational hazards every year. Subsidiaries with grave occupational hazard risks are required to conduct a comprehensive evaluation on occupational hazards at least every three years.

### Disclosure of Occupational Hazards



The Company strictly implements the system of informing employees of occupational hazards. In the signing of employment contracts, it truthfully informs employees of the potential occupational hazards and their consequences, protective measures and compensation. The Company provides employees with work-related injury social insurance in accordance with the law, ensuring that employees enjoy the benefits of work-related injury social insurance.

The Company sets up notice boards or signboards in conspicuous locations and publicizes laws, regulations, rules, operating procedures, preventive measures for occupational hazards, emergency rescue measures for occupational hazards, and the testing results regarding occupational hazards in the workplace.



### Warning of Occupational Hazards



### Testing of Occupational Hazards



▲ ZCC CT safety management qualification training

## Health Record and Protection

The Company has established a management system of occupational health and safety records. With the system, it files the results of occupational hazard detection and evaluation and reports them to occupational health regulators and the Company's HSE Department. The files are also disclosed to the employees. The Company makes occupational health records for employees, setting focus on silicosis and noise-induced injuries among other occupational health risks that employees may face. It also ensures that employees working on specific procedures take regular occupational health check-ups and their health statuses are traced in accordance with laws and regulations.

The Company includes employees of contractors into its occupational health and safety system, signs occupational health agreements with contractors, lessees and partners, and urges and



inspects them to fulfill their occupational health management responsibilities and implement measures for the prevention and control of occupational diseases. It

prohibits contracting projects that pose occupational hazards to organizations or individuals who are unable to protect against occupational diseases.



## Respecting and Protecting Human Rights

CMT has been strictly abiding by the *Labor Law of the People's Republic of China*, the *Labor Contract Law of the People's Republic of China*, and other national laws and regulations on labor protection. It recruits employees from multiple channels, follows the basic principle of equal employment, and works to build a harmonious and stable labor relationship with employees.

## Fully Protecting Employees' Rights and Interests

In strict accordance with the national regulations on the prohibition of using child labor, the Company verifies the age and educational qualifications of recruited employees to avoid the misuse of child labor. In recruitment and hiring, the Company signs written labor contracts with employees, agreeing on labor conditions, labor benefits, working hours, vacations, and other rights in accordance with the law. It also establishes a supporting labor contract management system to regulate the conclusion, fulfillment, modification, termination or cancellation of labor contracts with employees in accordance with the law, ensuring that labor contracts are strictly fulfilled and that employees' rights and interests are fully protected.

## Diversity and Equal Opportunities

The Company has been committed to promoting gender equality. In recruitment, it values candidates' moral integrity and professional ability and firmly opposes gender discrimination in any form. It encourages the recruitment of female employees and employees from ethnic minority groups, providing them with equal employment opportunities.

The Company upholds the principles of equal employment and equal pay for equal work, ensuring that female and male employees enjoy equal labor rights and social security. It protects the safety and health of female employees in the workplace in accordance with the law. The principle of gender equality has been observed in job promotion and assessment of professional qualifications and titles. Gender-based discrimination is prohibited.

The Company places great emphasis on the protection of female employees. It has set up a female employee committee under its labor union. During the staff congress, the Company launched a special collective contract for the protection of female employees' special rights and interests, aiming to safeguard the safety and health of female employees in the workplace. In strict accordance with laws and regulations, the Company ensures employees enjoy their due maternity leave among other benefits.

The Company has been providing job opportunities to local residents in its overseas operation, striving to establish a positive employer image. ZCC CT's Germany-based European branch and HPTec GmbH have a total of 182 employees, among which 181 are local nationals, registering a localization rate of 99.45%.

## Recruitment and Talent Attraction

The Company has been bringing in outstanding talents through campus recruitment and social recruitment. In 2023, It released recruitment notices on the employment websites of 48 universities, and its own WeChat account and official website. The Company also encouraged its employees to share recruitment notice with family and friends. In addition, it went to universities and held recruitment promotion events. By offering promotional brochures and presenting gifts, it worked to enhance

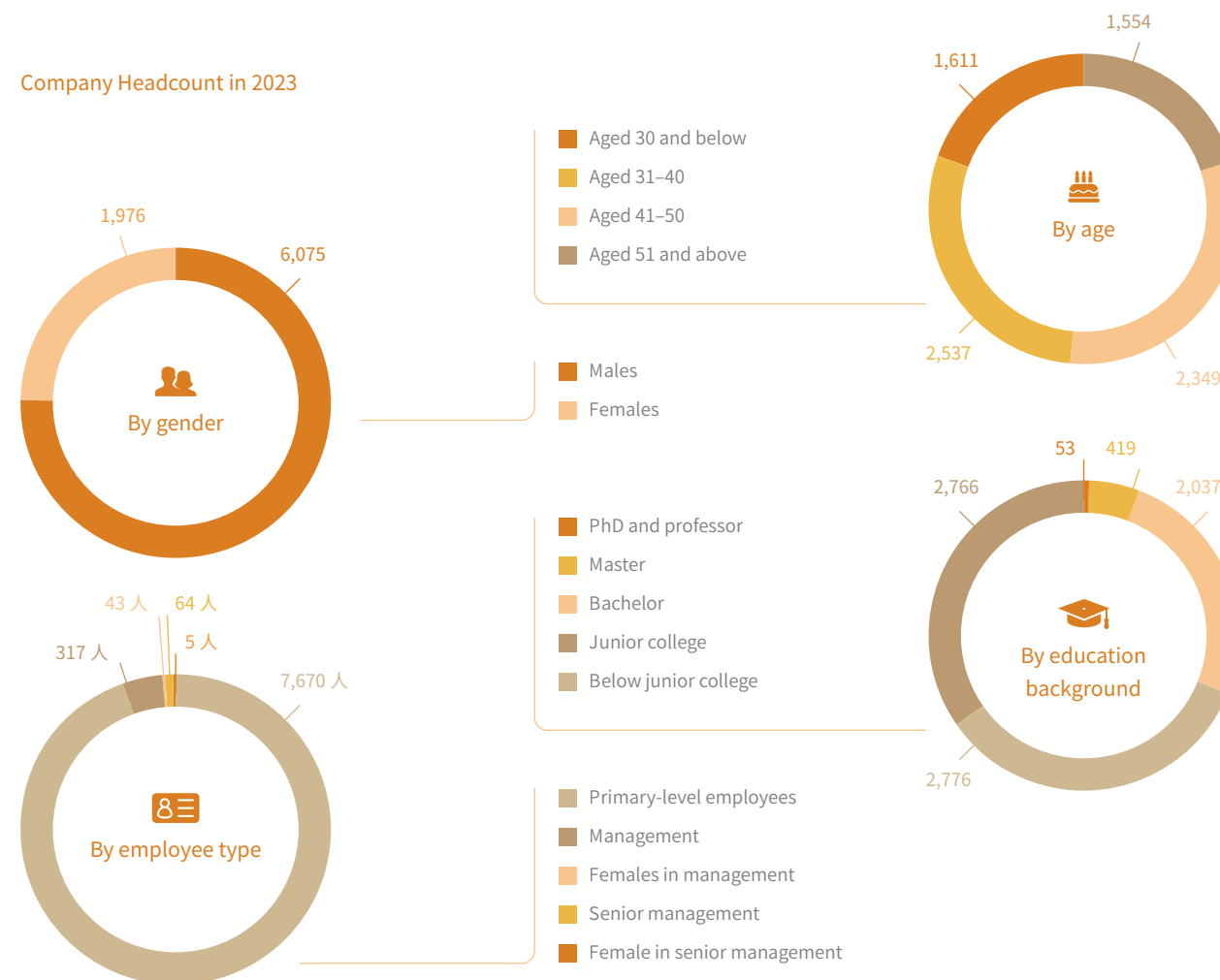
communication and interaction with job seekers and deliver a comfortable experience for job seekers.

As of the end of 2023, the Company had a total of 8,051 employees. Among them, 474 were newly recruited in 2023. All of the employees have entered labor contracts with the Company. They are provided with social security benefits, and have joined the labor union.



▲ Campus recruitment

## Company Headcount in 2023



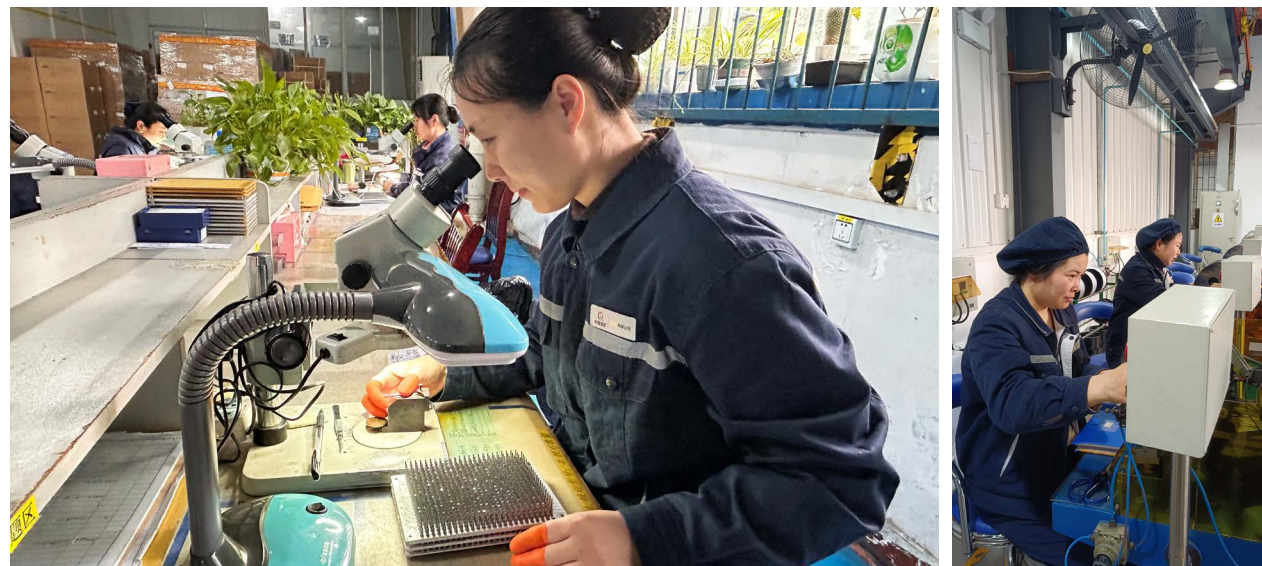
## Labor Union and Information Disclosure

The Company attaches great importance to the role of its labor union and information disclosure. It takes comprehensive measures to safeguard employees' rights and interests. It holds regular staff representatives meeting to ensure that employees' voices are heard and respected, and that they can participate in the Company's decision making. In the meantime, the Company has put in place a collective consultation

system, providing a platform for equal dialogue between employees and the management, on which they can discuss and resolve issues related to the interests of employees.

The Company releases important information on its internal website and bulletin boards, and holds staff meetings to share information on the running and decision making of the Company.

These efforts safeguard employees' rights to know, participate and supervise, and enable them to get involved in the Company's management and development. As a result, it enhances employees' sense of belonging and satisfaction, and improves the Company's transparency and credibility, laying a solid foundation for the Company's sustainable development and stability.



## Listening to Employees' Suggestions

The Company values employees' suggestions. There are suggestion boxes and regular staff meetings for employees to contribute their suggestions. The Company also encourages employees to share their suggestions and opinions on its international platform.

### Case: Spurring Employees' Wisdom: ZCC Encourages Employees to Contribute Suggestions on Business Development

In 2023, ZCC revised and issued a circular on encouraging employees to contribute suggestions on business development. It set up a leading group for suggestion collection. To spur employees' enthusiasm, ZCC gave rewards to each piece of good suggestions. It selected "quarterly good suggestions" and "golden suggestion", "silver suggestions" and "copper suggestions" at the year end. It also requires its secondary organizations to contribute a certain number of suggestions amid efforts to create an enabling environment where employees compete for excellence.

## Improving Salary and Benefits System

The Company attaches great importance to building the salary and benefits system. It takes a market-oriented approach to optimize the system. Fairness in internal salary payment and competitiveness in the external market are both taken into consideration. The Company has put in place a comprehensive salary and bonus system that includes fixed salary, performance-based salary, term bonus, medium and long-term bonuses and benefits. Bonuses are linked to the performances of both the Company and the employees themselves. The Company is dedicated to providing its employees with competitive salary and benefits and enhancing their sense of gaining and happiness.

### Work Hours and Vacation

In the Company, eight-hour workday policy is clearly provided in the corporate institutions and employees' labor contract. If employees have to work overtime, the Company will give them compensatory time off and overtime payment. In 2023, the Company revised its Management Measures for Attendance, Leave and Work Disciplines. Apart from annual leave, employees who are the only child are given caregiving leave when their parent needs care. It also begins to offer childcare leave and paternity leave for male employees.

### Diversified Benefits

The Company provides its employees with salaries, bonuses, allowances, subsidies included in the total compensation, education subsidies, basic pension, basic medical insurance, unemployment insurance, work injury insurance, maternity insurance and housing provident funding, and other benefits. It formulated CMT Interim Measures for Staff Benefits Management based on national regulations and its own conditions to strengthen management on the Company's benefits expenditure and ensure that its employees enjoy full benefits.

## Caring for Employees

The Company is well aware of the importance of employees' happy lives for productivity and the cohesion of teams. It works to ensure its employees can balance their work and life and obtain sense of happiness from both work and life. Apart from providing them with

above-average benefits, the Company cares for its employees' mental health. It organizes a variety of cultural and sports activities and works to create a happy workplace for its employees.

### Case: "Red Earth Cup" Air Volleyball League

In May 2023, the Company held the "Red Earth Cup" air volleyball league in Nanchang, Jiangxi Province. Fourteen teams from the Company headquarters and its subsidiaries, consisting of over 200 athletes, coaches and referees, gathered in Nanchang for a four-day competition with more than 50 round-robin matches. Following the principle of sharing and simplicity, the event provided a platform for the Company's subsidiaries along its industrial chain to communicate and exchange, and also showcased employees' vitality and morale, creating a healthy and uplifting corporate cultural atmosphere in the Company.



### Case: Building Dreams Together: Mutual Promotion of Corporate Culture

On September 22, 2023, the Company held a friendship event themed "Building Dreams Together" with the Changsha Research Institute of Mining and Metallurgy in Changsha. In the afternoon, the two sides held a football match at the Yangshu Sports Park. On the field, players, adhering to the principle of "friendship first, competition second", poured their passion and sweat into the game, exhibiting exceptional skills and positive spirit.



### Case: Making Aroma Candles in Celebration of International Women's Day

On March 7, 2023, the Company's labor union and the labor union group of the headquarters' audit center organized an event in celebration of the 113th International Women's Day. More than 30 female employees got together and made aroma candles, using fragrance as a medium to refresh and delight their bodies and minds. An experienced teacher introduced the cultural evolution and production steps of aroma candles. Under the guidance of the teacher, participants made their own aroma candles. They used their imagination and creativity and turned originally scattered flowers and grasses into exquisite and beautiful artworks.



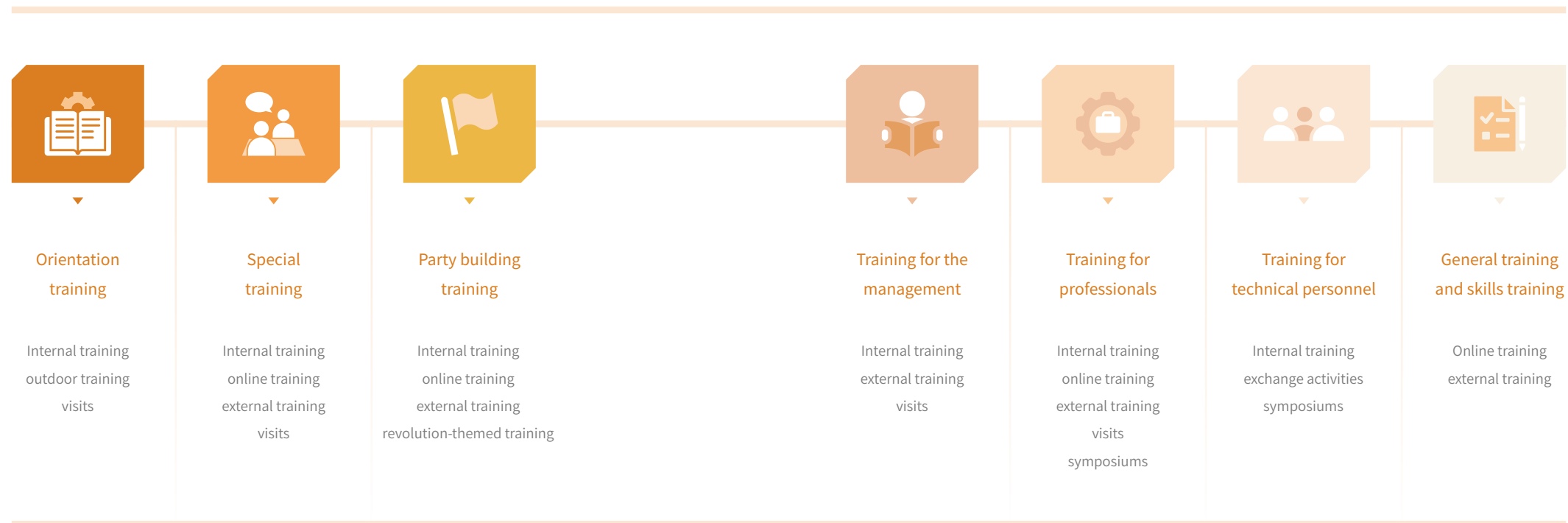


## Promoting Employees' Career Development

Employee training is an important component and crucial function of an enterprise's human resource management. The Company has formulated the Measures for the Management of China Tungsten School to promote the running of China Tungsten School in a standard manner. It sets up branches of the school in its subsidiaries to give full play to the role of China Tungsten School in employee training. In the meantime, the Company introduced Measures for the Management of Lecturers in China Tungsten School to select the best lecturers, cover more employees in training, make the training more effective, and improve the core competitiveness of talents for the Company's high-quality development.

The China Tungsten School provides seven types of training programs, which are orientation training, special training, Party building and education training, training for the management, training for professionals, training for technical personnel, general training and skills training. A total of 8,051 staff workers took part in the training programs.

The Company encourages its employees to enhance their academic qualifications and professional credentials. It gives allowances to those getting professional qualifications, such as Certified Public Accountant and Certified Tax Agent. Every year, the Company organizes financial personnel to study financial and economic laws and regulations, and encourages them to pursue a master equivalent's degree.



### Case: Up-and-Coming Youth Training Camp Opened, Igniting Employees' Enthusiasm to Fight

In 2023, the Company launched 2023 Up-and-Coming Youth Training Camp. From theoretical learning to field trips, it offered a series of courses covering corporate culture and strategic planning, helping new employees better know the Company and assimilate to the CMT team.



### Case: Gold Honing Training Camp Opened, Improving Management Personnel's Comprehensive Way of Thinking

The Company attaches great importance to the leadership and management expertise of its management. In 2023, it launched the 2023 Gold Honing Training Camp at the China Tungsten School. The training camp featured interpretation of the report to the 20th CPC National Congress, building of capacity for managing enterprise value in the digital era, the improvement of behavior-based leadership, financial management for non-financial personnel, and emotional and pressure management. Attendees also visited Sany Group and Sunward Intelligent Equipment.



### Case: Value Marketing Training Enhanced Coordination within the Marketing Team

In May 2023, the Company organized a special training session on value marketing at China Tungsten School for its marketing personnel. At the training session, attendees learned about the concept of value marketing, its theory and sales management tools. The training helped improve their overall competency and marketing philosophy, optimized business decision-making processes and action strategies, and created a nimble and efficient marketing management team.



## Building a Responsible Supply Chain

The supply chain is the core support for the Company's business development. Following the principle of responsible procurement, the Company has established long-lasting and stable partnerships with quality suppliers across the country, ensuring stable supply of raw materials and reliable quality of products.



## No Conflict Minerals

Article 17 of the Standard Contract for Procurement by CMT's Trade Department stipulates, "The seller shall observe the buyer's 'no conflict materials' policy, and ensure that products and raw materials (including but not limited to wolframite and scheelite) needed for the making of the products under the sales contract are all made in China and contain no conflict materials. They shall not come from the Democratic Republic of the Congo and surrounding conflict regions. If the buyer needs, the seller shall provide quality inspection certificate. The seller shall bear all responsibilities and losses to the buyer arising from violation of the 'no conflict materials' policy."

## Management of Suppliers

The Company has been following the principle of fairness, transparency and win-win cooperation and conducting cooperation with suppliers in good faith. It has introduced standards for granting access and selecting suppliers and evaluates suppliers from multiple aspects of quality, price, delivery date and services to ensure that suppliers can meet the Company's demands. In the meantime, the Company has established an evaluation system for suppliers, making random assessment on suppliers' quality, environment, safety and delivery, and services, to ensure suppliers continue to improve their products and deliver quality services.

## Sustainable Procurement

In evaluating suppliers, the Company not only pays attention to short-term economic benefits, but also stresses long-term partnership values and social responsibilities. The Company encourages suppliers to follow the principle of protecting the environment, fulfilling corporate social responsibilities and pursuing sustainable development, so as to jointly advance green, low-carbon and circular development of the entire supply chain.

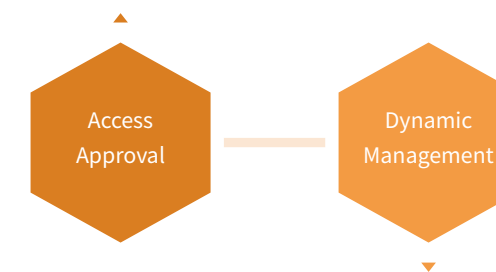
In managing suppliers, the Company complies with regulations set out by China Minmetals. It conducts suppliers access approval, evaluation and day-to-day management on China Minmetals Procurement E-commerce platform in line with stipulated procedure and evaluation module. There are corresponding requirements, standards and management mechanisms for different suppliers in environmental protection, safety, labor and quality among other environmental and social aspects. All of them are reflected in the evaluation form for suppliers.

## Suppliers Access and Evaluation

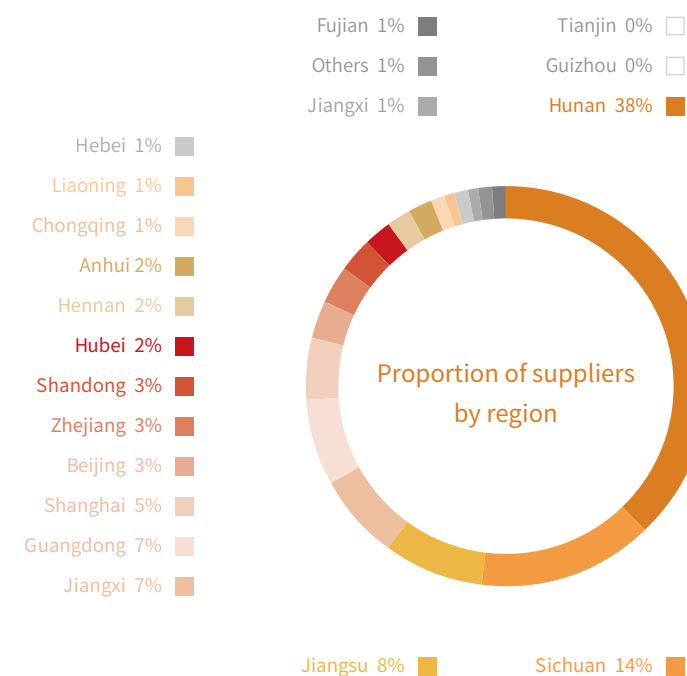
The Company formulated *CMT Guidelines for Suppliers Management and CMT Regulations on Procurement Management*. It advances coordinated management of suppliers following the principle of unified management, grading-based implementation, dynamic evaluation and selection of the better.

As of the end of 2023 the Company had **2,299** suppliers more than 50% of which were based in Hunan Province

- In the access link, the Company requires suppliers to sign a letter of commitment, promising to honor clean business and fair competition and establish and improve a long-term mechanism for fighting commercial bribery.
- In 2023, the Company required suppliers to declare their relations with the Company's management. New suppliers were asked to take the initiative in reporting their relations with the Company's management. Previous suppliers can continue their cooperation with the Company after their declaration was confirmed by the Company's discipline inspection department.



- The Company evaluates its suppliers annually and gives them four ratings of A, B, C and D. Suppliers receiving A, B and C ratings are qualified suppliers. Those rated D are unqualified and their qualification will be suspended for one year.





## Giving Back to Society

CMT has been committed to creating benefits to communities. By providing job opportunities, expanding investment projects and paying taxes in accordance with the law, the Company contributes to local economic and social development. To fulfill its corporate social responsibilities, it has been making donations and participating in public welfare undertakings through various channels and methods. The Company also encourages its employees to make blood donations and do volunteer services and contribute to building a harmonious and beautiful community.

## Supporting Rural Revitalization

The Company has been contributing to consolidating the achievements of poverty reduction and then to rural revitalization through the paired-up assistance program. In 2023, the Company gave greater assistance to Yiliang County, Shaotong City of Yunnan Province. It offered targeted assistance based on local conditions. In 2023, Li Zhongze, Party Secretary and Chairman of the Company, went to Yiliang County and inspected on paired-up assistance. He learned about the implementation of the industrial assistance project – the demonstration project for efficient cultivation of Ganoderma lucidum in Baozang Village, Xiaocaoba Town. Managers stationed by the Company in the village led local farmers to plant Ganoderma lucidum in a bid to increase their incomes and make them wealthy.



▲ Li Haixiong, a manager sent by CMT to help with poverty reduction, checked the growth of Ganoderma lucidum with colleagues.

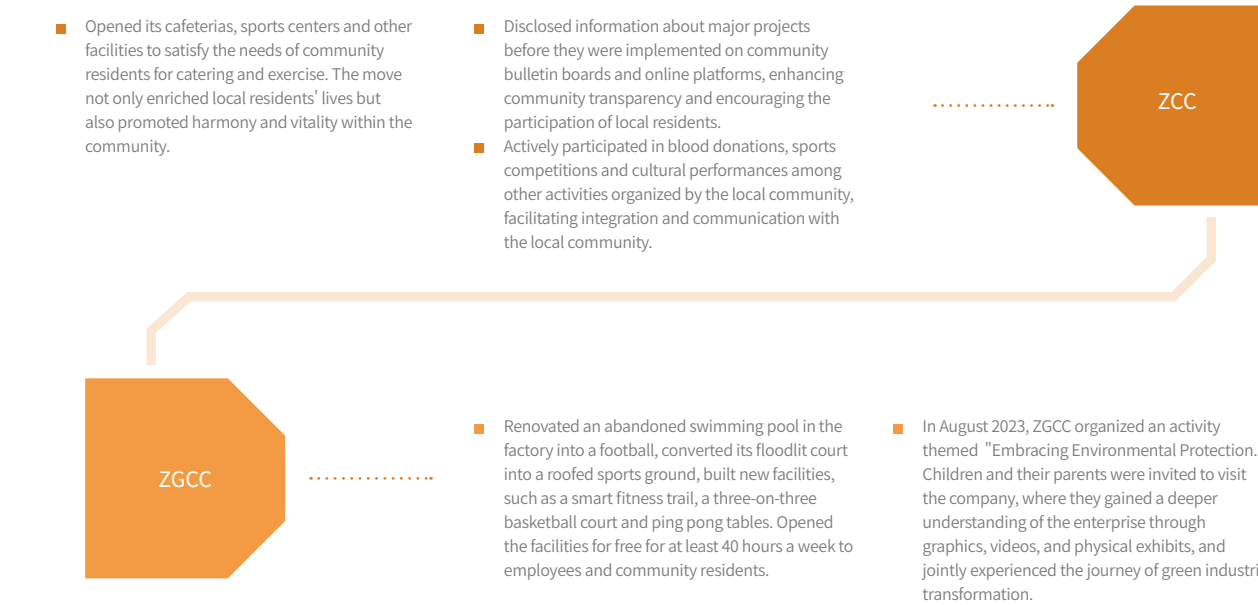


**Case: ZGCC Made Donations to Lianghe Township Central School in Yiliang County**

In December 2023, the management of the Company and ZGCC visited Yiliang County, and donated 80,000 yuan to the Lianghe Township Central School on behalf of the Company. They money was used to purchase electronic teaching equipment, such as interactive teaching machines and computers, replacing some aging electronic teaching equipment in the school. The donation helped improve the school's teaching quality.

## Community Communication and Mutual Benefits

The Company takes the initiative in building bridges for communication with local communities. It encourages its subsidiaries to pay attentions to the demands of the communities they are in and make contributions to the best of their ability for the development of the community.



▲ ZGCC open day



## Devoting to Public Welfare Undertakings

Staying committed to its original aspiration of giving back to society, the Company has contributing to education, healthcare and assisting vulnerable groups. It encourages its employees to take part in volunteer services. In 2023, the Company donated 230,000 yuan. A total of 791 employees participated in youth volunteer services, and a total of 102 youth volunteer service activities were carried out.

By the end of 2023

▶ The Company donated

 **230,000** Yuan

▶ Participated in youth volunteer services

 **791** employees

▶ Youth volunteer service activities

 **102** times

### Case: Carrying Forward Lei Feng's Spirit

#### ZCC

- Volunteers went to Zhipi Village in Youxian County, giving milk, fruits and bedding items to elders in the village. They also helped elders trim their nails, tidy up their rooms and clean the courtyard.



▲ The Chinese Communist Youth League branch at ZCC carried out a theme event of carrying forward Lei Feng's spirit.

#### ZCC CT

- ZCC CT organized a blood donation event with the theme of "Drops of Love, Shared Life." A total of 46 employees participated in the event, donating a total of 16,200 milliliters of blood.
- 13 young volunteers went to the emergency room of Zhuzhou Central Hospital. After receiving professional guidance from doctors, they provided various volunteer services to patients and medical workers, including giving directions, accompanying patients in taking exams, and offering assistance to patients.



▲ ZCC CT volunteers helped medical workers to carry a patient to a stretcher.

#### Jinzhou

- Volunteers from Jinzhou reminded motor riders of wearing helmets for the traveling safety at the intersection in Shengping Road.



▲ A group photo of volunteers from Jinzhou

March 5, 2023 marked the 24th China Youth Volunteer Service Day. The Chinese Communist Youth League committees at all levels of the Company organized diverse and distinctive volunteer service activities, putting into practice the spirit of Lei Feng and carrying forward Lei Feng's Samaritan virtue.



### Case: Volunteer Service in Seniors' Home

On January 31, 2023, volunteers from ZCC went to Zhuzhou Kangle Seniors' Home. Staff there introduced in detail the residents and supplies during the Spring Festival. After that, ZCC volunteers gave their donations to the elders and extended New Year wishes to them. They chatted with the elders about their daily lives, inquired about their health conditions, diet and accommodation, and reminded everyone to keep warm and use fire and electricity safely.

On August 23, 2023, the company organized the representatives of party branches and young employees to go to the health care service center to carry out "Learning from Lei Feng" theme of volunteer service activities again. The arrival of the volunteers filled the lobby of the healthcare service center with laughter. Volunteers sent summer relief materials to the elderly, and the retired old employees of ZCC also fondly recalled various experiences during their working hours. For the elderly with limited mobility, the volunteers talked with them cordially and understood their body, living conditions and needs with concern.



The Company achieved smooth running through the "three sorts of meetings":

- 6 meetings of the Board of Directors, 6 meetings of the Board of Supervisors, 4 Shareholders' Meetings, A total of 83 motions were deliberated and adopted

The Company built an effective compliance management system covering all of the Company's subsidiaries, and improved its internal audit system. The compliance rate of information disclosure was

- 100% the company received A-grade rating in the Shenzhen Stock Exchange's information disclosure assessment

The Company's Party building theme event was upgraded to the theme program of "The Blueprint Is Drawn, and It's Time for Hard Working." Party building was integrated into various aspects of the Company's production, business operation, reform and development

The Company built an organizational system for risk management.

- 7 major risks have been identified and corresponding countermeasures have been formulated

In 2023 the Company's investment in R&D increased by

- 24.57% year on year

The total earnings from main lines of business

- 4.06%

Formulated

- 6,170 Corruption risk prevention and control measures

The Company advanced the building of the "CMT digital brain" and "intelligent manufacturing" based on its real conditions and in an integrated approach, with safety, environmental protection and operational risk management being the focus.

Governance

# Integrity and Stability for Common Excellence

CMT has been optimizing its management structure, making its governance structure more standard, strengthening communications with investors and enhancing its risk management capabilities. With well-regulated check and balance of power, diverse perspectives and insights, good investor relations, and solid risk prevention mechanisms, the Company has been safeguarding the legitimate rights and long-term interests of all shareholders and investors in a holistic manner. Staying committed to the cemented carbide industry, the Company has been making great efforts in advancing intelligent manufacturing, automated transformation of cemented carbide tool production, building a complete industrial chain ecosystem, sharing achievements with fellow companies and jointly promoting industry development.

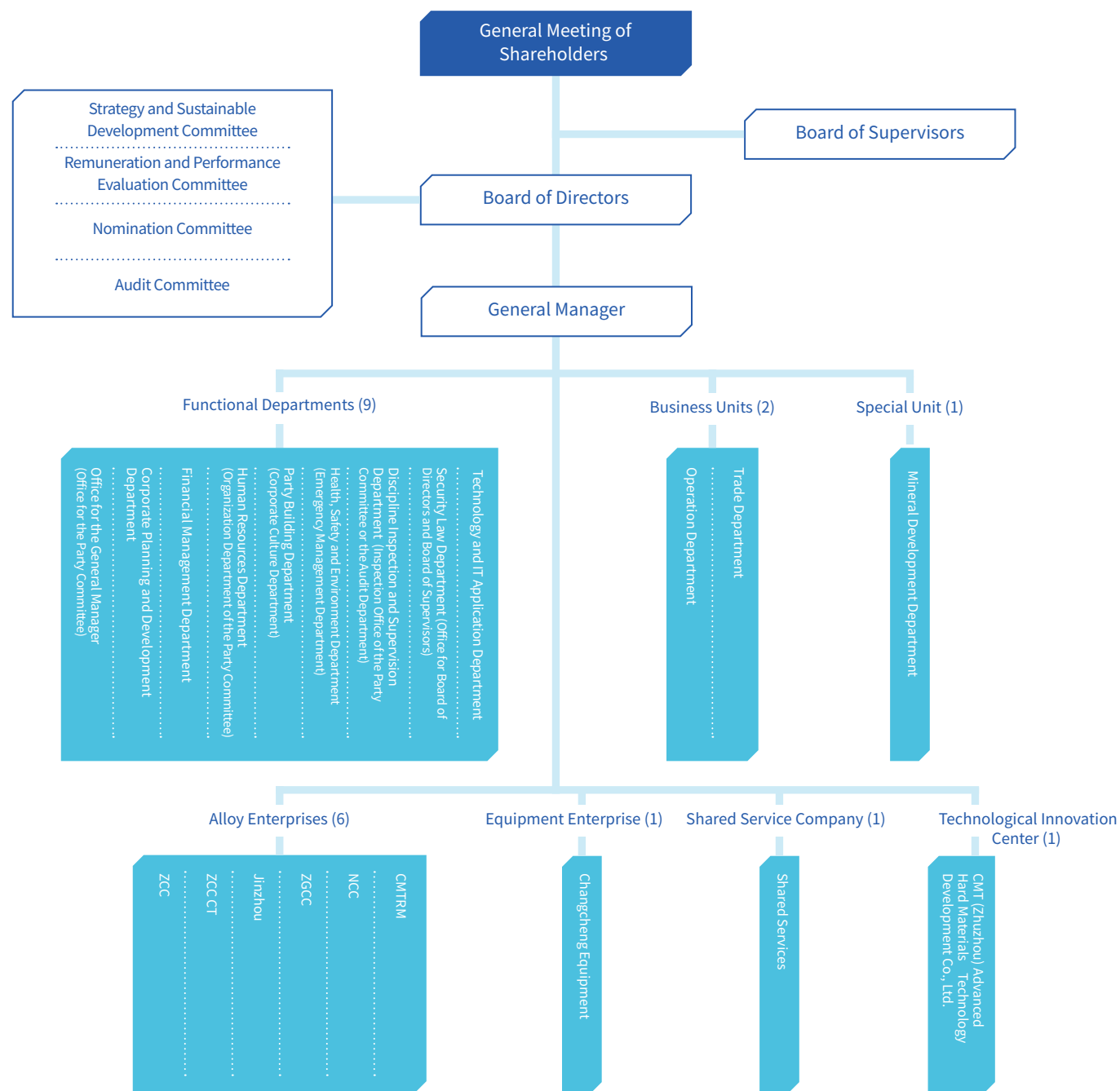
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# Optimizing Governance Structure

In strict accordance with the *Company Law of the People's Republic of China*, *Securities Law of the People's Republic of China*, *Code of Corporate Governance for Listed Companies*, and *Guidelines of Shenzhen Stock Exchange on Self-regulatory Supervision of Listed Companies No.1 - Standardized*

*Operation of Listed Companies on the Main Board*, the Company has formulated regulations and mechanism for internal governance such as the *Articles of Incorporation*. It has been optimizing its corporate governance structure and regulating business operation, laying a solid foundation for its sustained and long-lasting development.



▲ CMT Organizational Structure

# Building of the Board of Directors

In order to give full play to the Board of Directors and enhance the quality of its decision making, the Company has established four specialized committees under the Board of Directors in accordance with its functions, which are the Strategy and Sustainable Development Committee, the Remuneration and Performance Evaluation Committee, the Nomination Committee and the Audit Committee.

The Board of Directors consists of **8** directors and **7** external directors, including **4** shareholder directors and **3** independent directors.

In 2023, the Company achieved smooth running through the "three meetings": **6** meetings of the Board of Directors, **6** meetings of the Board of Supervisors, and **4** Shareholders' Meetings. A total of 83 motions were deliberated and adopted. The Strategy and Sustainable Development Committee, the Performance Evaluation and Remuneration Committee, the Nomination Committee and the Audit Committee held **13** meetings in total.

As the core decision-making body of the Company, the Board of Directors decides on major issues of the Company, including its development strategy. The Company has been optimizing the structure of the Board of Directors, aiming to create a more vibrant, independent and professional body so as to enhance the Company's capability for preventing various risks and safeguarding its long-term development. In terms of independence, the Board of Directors has three independent directors, accounting for approximately 38% of the total. In terms of diversity, members of the Board of Directors have diversified professional backgrounds in economics, accounting, business administration, metallurgy, materials, physics and other fields. They have extensive experience in the tungsten industry, such as industrial integration, technological research and development, trade and management.



▲ The 12th (interim) meeting of the 10th Board of Directors of CMT

# Executive Remuneration

The Company has established and been optimizing a fair and transparent system for evaluating the performance of directors, supervisors and other senior management personnel and a system of incentives and disincentives. The remuneration of the Company's senior management consists of basic salary and performance bonus. The annual tasks of the Company's general manager have been aligned with the assessment indicators set by China Minmetals for CMT, which include R&D investment intensity/investment in exploration and environmental protection. Evaluation on the performance of the environmental protection is led by the Safety and

Environmental Protection Department of China Minmetals. A statement of responsibility in safety and environmental protection will be signed. The evaluation results and scoring suggestions are submitted to the Remuneration and Performance Evaluation Committee.

Based on the above evaluation system, the Company breaks down evaluation indicators for the Company and executives respectively and sets personalized and differentiated annual performance tasks for the management personnel. Rigid payment is promised based on the performance evaluation results.



## Spearheading Development with Party Building

Adhering to the leadership of the Party, the Company has been strengthening Party building, and promoting in-depth integration of Party leadership with corporate governance, and efforts in Party building with production and operation. The Company has been faithfully carrying out the study and implementation of General Secretary's theme of socialism with Chinese characteristics for a new era. It organized its management and employees to study the report to the 20th National Congress of the CPC and 8 designated learning materials. It made learning General Secretary's speeches and instructions the top priority of Party committee meetings. In 2023, the Company held 16 studying sessions by theory learning group of the Company's Party Committee.

In 2023, the Company upgraded its Party building theme event with "progress indicator" as the benchmark to the theme program of "The Blueprint Is Drawn, and It's Time for Hard Working." Party building was integrated into various aspects of the Company's production, business operation, reform and development.

Make overall objectives of "progress index" and adopt approaches to realizing the objectives in accordance with industry standards and results of historical comparisons. Incentives are highlighted in the process. Plans are made in a coordinated manner, specifying responsible parties, target tasks, deadlines, implementation methods and supporting measures. In the meantime, implementation progress, achievements and problems are presented in a straightforward manner to push for the solution of problems.

Conduct real-time tracking of the implementation, establish system for regular summaries and reviews, strengthen process management, publicize achievements, review performance regularly and reward outperformers so as to accumulate achievements, discover problems, improve performance and ensure implementation.

- ▼ The company's party committee participated in Chairman Weng's theme party day special party lessona



- ▲ The company carried out the "Young Horse Project" and Youth Literacy Enhancement Project training



The Company attaches great importance to the theme education campaign of studying and implementing Xi Jinping Thought on Socialism with Chinese Characteristics for the New Era, guiding Party members and employees to gain new insights and put them into action. It helps them draw strength from learning, thinking and acting to improve capabilities for advancing high-quality development.

- ▼ "Progress index" board for the theme program of "The Blueprint Is Drawn, and It's Time for Hard Working" in ZCC a



### Case: Theme Party Education Trip to Sunward

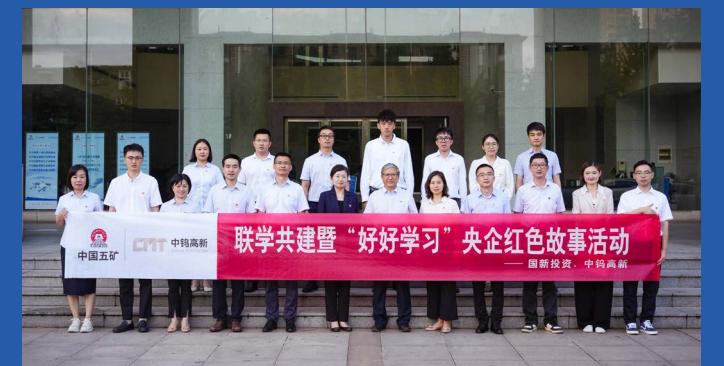
On June 13, 2023, the theory learning group of the Company's Party Committee took a theme Party education trip to Sunward Intelligent Equipment Co., Ltd. embarked on the route General Secretary Xi Jinping took when he inspected Sunward on September 17, 2020. Through on-site learning, listening to explanations and immersive experience, the theory learning group guiding principles of the important speeches by General Secretary Xi, and gained a deeper understanding of his instructions, "Innovation is the most important quality of business" and "We must keep the key core technologies in our own hands, and the manufacturing industry in our own hands." This trip further strengthened the confidence and determination of CMT to enhance its capabilities for technological innovation, industrial control and safety support.



- ▲ Theory learning group of the CMT's Party Committee visited a factory of Sunward Intelligent Equipment Co., Ltd.

### Case: CMT and Guoxin Investment Jointly Launched Theme Party Education Event

On September 7, 2023, the Party Committee of CMT and its counterpart from Guoxin Investment jointly launched a theme Party education event in Zhuzhou, in which they learned the revolutionary stories of centrally-administered enterprises. In the event, participants jointly studied the guiding principles in the speech and instructions made by Premier Li Qiang during his inspection tour in ZCC in March 2023. Experts from the enterprise shared the corporate history, the history of China's cemented carbide industry and the enterprise's significant contributions in different periods. The enterprise's morale of "refining once again and again can break gold" was demonstrated.





## Protection of Investors' Rights and Interests

The Company has been actively implementing the new Securities Law of the People's Republic of China, the Measures for the Administration of Information Disclosure of Listed Companies, and the Guidelines of the Management of Investor Relations of Listed Companies, among other laws and regulations. It strictly adheres to the rules of information disclosure, ensures investors' equal access to information, continuously improves the working mechanism for investor relations, enhances the initiative and planning in managing investor relations, enriches the channels and content for investor communication, and effectively safeguards the legitimate rights and interests of investors.



## Management of Investor Relations

The Company regards investor relations management as a bridge and link between listed companies and investors. It has been strengthening communication with the capital market. On the basis of investor communication activities such as shareholder meetings, performance meetings and investor briefings, the Company actively explores in-depth on-site communication with investors through platforms such as industry forums and leveraging international machine tool exhibitions to showcase the Company's achievements in digital and intelligent manufacturing transformation.

In 2023, the Company conducted full communication with over 800 investors, received over 200 calls from investors, and replied to all inquiries made by investors on the interactive platform of the Shenzhen Stock Exchange.

## Information Disclosure

Timely fulfillment of information disclosure obligations is a basic requirement for listed companies to convey their corporate value to the capital market. The Company has been enhancing coordination for the reporting of major information, optimizing procedure for information disclosure, disclosing more information of its own accord, and enhancing the transparency of corporate information. The Company has been ensuring that disclosed information is fully and properly

reviewed. It enriches the content of its periodic reports and makes them readable by using images, charts and other formats. In 2023, the Company released 95 announcements, and all of the information disclosed was in line with compliance requirements. The Company was rated as Grade A in the information disclosure assessment of listed companies on the Shenzhen Stock Exchange for two consecutive years.



▲ Supervisors visit Jinzhou's company in Kunshan.

## Strengthening Internal Control and Compliance

CMT is committed to business compliance. It operates business in accordance with laws and regulations, regulatory requirements, industry standards, corporate charters, rules and regulations, as well as international treaties and rules. The Company believes that senior management should work as a role model in business compliance, encourages its employees to take the initiative in complying with business compliance requirement, and that business compliance will create values. It has established and is improving an organizational system to advance business compliance. The Company holds a zero-tolerance attitude toward corruption and violations of business ethics, and works to prevent any significant compliance risks or events.

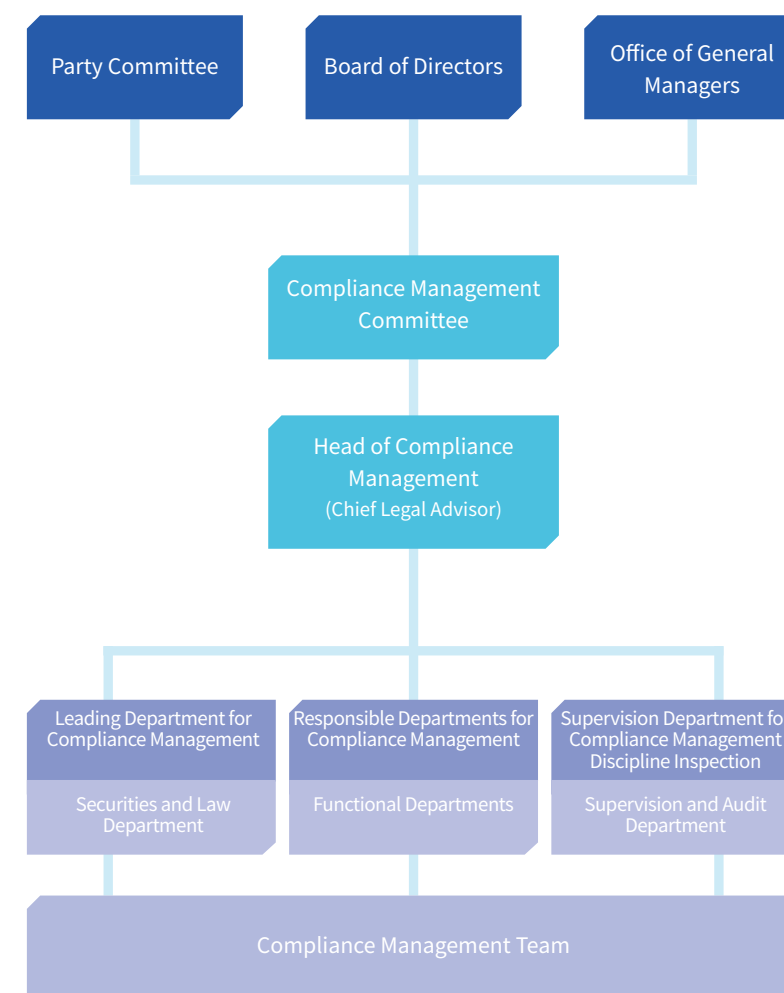
## Compliance Management

In 2023, CMT revised *CMT Measures for Compliance Management*. Following the principle of senior management working as a role model in business compliance, employees taking the initiative in complying with business compliance requirement, and business compliance creating values, the Company has been making concerted efforts to create an effective system for business compliance covering all of its subsidiaries. It worked to build and improve a compliance organization, put in place compliance mechanisms, forestall and control compliance risks, and foster corporate compliance culture.

## Compliance Organizational System

The Company has established a Compliance Management Committee, which is integrated with the Leading Group for Rule of Law. The committee assumes the responsibility of planning and coordinating business compliance. Each directly-administered enterprise is required to establish its own

Compliance Management Committee based on its real conditions. The Company's Chief Legal Advisor concurrently serves as the Chief Compliance Officer, responsible for compliance management and day-to-day supervision.



▲ Organizational system for compliance management



## Key Areas

All departments of the Company have compiled three lists – the compliance risk identification list, the compliance responsibilities list and the process control list. These lists specify compliance obligations and ensure that compliance responsibilities are assigned to individuals and integrated into various management processes.



▲ Company confidentiality training

In line with external laws and regulations, national policies, industry standards, as well as internal rules and regulations, the Company summarizes its compliance obligations, identifies compliance risks, and categorizes them according to the impacts of the risk.

### Compliance risk identification list

### Compliance responsibilities list

The Company ensures that each compliance obligation is assigned to a responsible employee. It gives specific description of compliance responsibility for each position and highlights the importance of compliance responsibility.

The Company ensures that compliance obligations are part of its work procedures. With the compliance risk identification list and compliance responsibilities list as the basis, the Company follows compliance management requirements and decide on procedure control measures to specify responsible body, approval requirements and applicable conditions, making sure that requirements of compliance management are integrated into specific work procedures.

### Procedure control list

After identifying and assessing major compliance risks, the Company and its directly-administered enterprises should strengthen compliance management in key areas, including but not limited to safe production and environmental protection, anti-commercial bribery, intellectual property rights and trade secret protection, employment, data and privacy protection.

In 2023, the Company reviewed the performance of "three lists" by each department and found no major lawsuits or arbitration cases in the year.

## Compliance Training

The Company has included compliance into its employee training system. Revolving around business compliance, it relied on external training resources and organized special training programs for compliance regulation, guidance and external risk control. In the meantime, it built an effective, pragmatic and professional mechanism for legal information sharing on the LEB legal affairs platform to enhance compliance capabilities of staff workers working on legal affairs.

In 2023, the Company organized three training sessions on compliance, involving 289 employees. The Company also carried out the "Compliance Awareness Promotion Month" campaign, sharing compliance cases with employees via new media platforms.

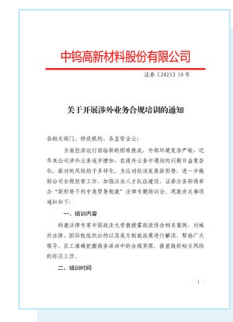
### Case: Training on Compliance of Foreign-Related Business

On December 11, 2023, the Company invited professors from China University of Political Science and Law to give lectures on international laws and regulations, and conventions of international organizations based on real cases. The lectures aim to help executives and employees of the Company understand the compliance boundaries in business activities and prevent possible risks.



### CMT Launches Compliance Awareness Promotion Month

In November 2023, the Company launched the annual "Compliance Awareness Promotion Month" campaign. Interpretations of compliance cases were released on the Company's official WeChat account to enhance employees awareness of business compliance.



## Internal Control

CMT's organizational system for internal control management includes the Board of Directors, Risk Management Committee, various departments and member enterprises. The Board of Directors is responsible for building, improving and effectively implementing internal control. The Risk Management Committee is a special committee for the building of internal control. The Operation Department is the department directly managing internal control, responsible for organizing, coordinating and managing the internal control system. The Discipline Inspection and Supervision Department is responsible for organizing and implementing self-evaluation of internal control and carrying out spot checks. Other departments

and member enterprises are the executive bodies for policies and measures on internal control, and responsible for the building, implementing, and maintaining of internal control within their respective departments and enterprises.

The Company has put in place regulations such as *CMT Guidelines for Internal Control Management* and *CMT Guidelines for the Evaluation of Internal Control*. It conducts self-evaluation on internal control in accordance with its management system and the *China Minmetals Standards for Internal Control (2022 Edition)*.

The Company has been advancing institutional building. It has reviewed and revised its rules and regulations, implemented standards for internal control, avoided defects in the design of internal control and optimized work procedures and systems. In 2023, the Company held five meetings to complete the revision of 25 regulations, establish 11 new ones, and abolish three ones. At the end of 2023, the Company had a total of 244 management regulations.

## Internal Audit

The Company has been promoting the establishment of its own system for internal audit. In accordance with requirements by China Minmetals, the Company has formulated 16 regulations, including the *CMT Regulations on Internal Audit Management* and the *CMT Regulations on Economic Responsibility Audit*. At the same time, it has been optimizing the audit rectification mechanism. It revised the *Guidelines for the Rectification of Audit Issues and Internal Control Defects*, specifying responsibilities of departments on rectifying problems found in audit, types of problems to be rectified, rectification processes, acceptance procedures, utilization of results and accountability. This further enhanced directly-administered enterprises' sense of responsibility in rectification. Directly-administered enterprises are required to devise their own management systems based on their real conditions and in accordance with CMT regulations.

In November 2023, the Company made an in-depth review into its systems for compliance management and identified potential audit risks. Based on this, it introduced measures to further improve its internal audit system.

## Comprehensive Risk Management

To ensure its stable and sound operation, CMT has been carrying out comprehensive risk management and established an organizational system for risk management. At the same time, it launches training sessions on risk management and works to improve its management of risks.

### Risk Management System

The Company has formulated 10 risk management mechanisms, including the rules of procedure for the Risk Management Committee, rules for approval of contracts and payments, measures for managing market risks facing member enterprises, measures for managing credit risks involving customers and suppliers of member enterprises, measures for managing risks in monetary and financial derivatives, and measures for managing risks in warehousing and logistics. In addition, the Company introduced the CMT Guidelines for Internal Reporting of Major Information, which specifies the procedures, management and responsibilities for reporting major information.

The Company has been optimizing its risk management framework. It organizes its departments and subsidiaries to carefully review and summarize the overall risk management performance every year. The Company then makes a thorough study and predicts the impact of changes in internal and external environments on the Company in the next two years. It combines its business and management goals for the following year, identifies and assesses various important risks that each department and enterprise may face in the next year, and devises strategies and countermeasures. The Company also tracks and evaluates the implementation of risk response plans on a regular basis.

In 2023, the Company identified seven major risks and devised corresponding countermeasures.

No.	Major Risks in 2023	Importance and Urgency of the Risk
1	Credit risk	Highly valued
2	Environmental risk	Highly valued
3	Compliance risk	Highly valued
4	Exchange rate risk	Highly valued
5	Risk in the tungsten market	Closely watched
6	Safe production risk	Closely watched
7	Occupational health risks	Closely watched

#### Case: Training on Risk Management

Acting upon the strategic arrangement of the CPC Central Committee on forestalling and resolving major risks and the requirement of China Minmetals on building safe business, the Company held a training session on the building of a risk management system, related theories and working methods in September 2023. A total of 75 people attended the training session. They comprehensively and systematically studied the requirements of the CPC Central Committee, the State-owned Assets Supervision and Administration Commission of the State Council, and China Minmetals on risk management. Focusing on bottom indicators in key areas, attendees had thorough discussions and learned to promote the building of a risk management system and enhance risk management capabilities.



## Observing Business Ethics

CMT is committed to creating a fair, transparent and honest workplace and business environment. It holds a zero-tolerance attitude toward commercial bribery and corruption. The Company strictly abides by the *Law of the People's Republic of China Against Unfair Competition*, and attaches great importance to business integrity. It has been working to strengthen stakeholders' confidence and trust in the Company's healthy and sustainable development, reduce governance risks, and promote high-quality development of its business.

### Anti-Corruption

The Company has formulated a series of regulations on enhancing Party conduct and integrity and fighting corruption, including the Measures for Fulfilling the Party Committee's Principal Responsibility in Enhancing Party Conduct and Integrity and the Discipline Inspection and Supervision Commission's Supervisory Responsibility, Measures for Tracing the Party Committee's Principal Accountability in Enhancing Party Conduct and Integrity and the Discipline Inspection and Supervision Commission's Supervisory Accountability, Guidelines for the Supervision and Inspection on Decision-Making on Major Matters, Appointment and Removal of Executives, Investment in Major Projects and the Use of Huge Amount of Capital, Guidelines for Integrity of Executives, Guidelines for Party Committee Accountability and Measures for Enhancing Supervision on the "Top Leader" and the Leading Group. All departments are required to faithfully implement the regulations.

### Identifying Corruption Risks

Drawing experience from its dual prevention mechanism in production safety and environmental protection, the Company explored to establish a dual prevention mechanism for integrity risks. By means of managing and controlling integrity risks, it investigated potential hazards and found out possible deficiencies and omissions in the running of power, thus nipping potential hazards in the bud.

Through close scrutiny, the Company located 3,627 integrity risks, of which 415 are high-level risks, 1,045 medium-level risks, and 2,167 low-level risks. In building the dual prevention mechanism, the Company pushes the Party committee to fulfill its leading responsibility and the discipline inspection and supervision committee to assume its supervision responsibility, blazing a new integrity risk management and control model with its own characteristics.

### Education with Corruption Cases

In 2023, the Company held an education meeting on corruption prevention with real cases about violations of the Party's conduct and integrity requirements. A total of 257 employees attended the meeting. Within the year, the Company also organized its Party organizations,

Party members and staff workers, a total of 4,676 participants, to visit a theme exhibition on corruption prevention. In addition, 328 people of the management listened to theme lectures on corruption prevention launched by the Company.



▲ The company organizes employees to sign a compliance pledge



## Mechanism for Petition and Whistle Blowing

The Company handles letters of petition and whistle blowing in line with *China Minmetals Discipline Inspection and Supervision Group's Interim Measures for Handling Petitions and Whistle Blowing*. It publicizes the mailbox, telephone number and office address to ensure the channels for lodging complaints are smooth.

CMT's *Regulations on Case Investigation and Trial by the Discipline Inspection and Supervision Department* stipulates, "There must be two staff workers present when receiving those making petitions or complaints. They shall record the petition and complaint and collect necessary documents. Complaints lodged by phone shall be recorded." Whistle blowers' names and privacy are strictly protected.

## Tax Compliance

In compliance with relevant laws and regulations such as the *Enterprise Income Tax Law of the People's Republic of China* and the *Provisional Regulations on Enterprise Income Tax of the People's Republic of China*, the Company has been paying its due taxes. It strictly follows the relevant tax policies and regulations in countries and regions where it runs business, and its own corporate management system and operational norms, and pays all taxes in a lawful, accurate and timely manner.

In 2023, the Company was not involved in any significant tax-related litigation or arbitration matters.

The Company discloses its taxation information in a standard manner, ensuring the disclosure is in line with taxation regulatory rules. Detailed information on the Company's main tax categories, tax rates and tax incentives can be found in the CMT 2023 Annual Report.



## Advancing Technological Innovation

Innovation is the primary driving force for the development of CMT. As a leading enterprise in the industry, the Company has been pursuing an innovation-driven, technology-led and sustainable development strategy. CMT has been committed to scientific research and development facing cutting-edge technologies in the world, demand of economic development, major national needs and people's life and health. Bearing in mind its mission of "empowering products made in China and the world with CMT tools," the Company has been building a system for highly-efficient technological innovation to advance technological innovation in a holistic manner.

### Performance Highlights in 2023

- The Company had **2** new research projects funded by the Ministry of Science and Technology and **1** funded by the National Development and Reform Commission;
- The Company won **14** awards at national, provincial and ministerial levels, and from China Minmetals and industry associations.
- 3** national key research and development projects were successfully approved by the Ministry of Science and Technology.
- The Company founded **CMT (Zhuzhou) Advanced Hard Materials Technology Development Co., Ltd.**, initiating the construction of its innovation center.
- The Company had **3** new provincial-level research projects.
- The Company had **5** new research projects funded by China Minmetals.
- The Company funded **11** new research projects, **7** of which were special ones, and the remaining **4** were selected from the most competitive applicants.

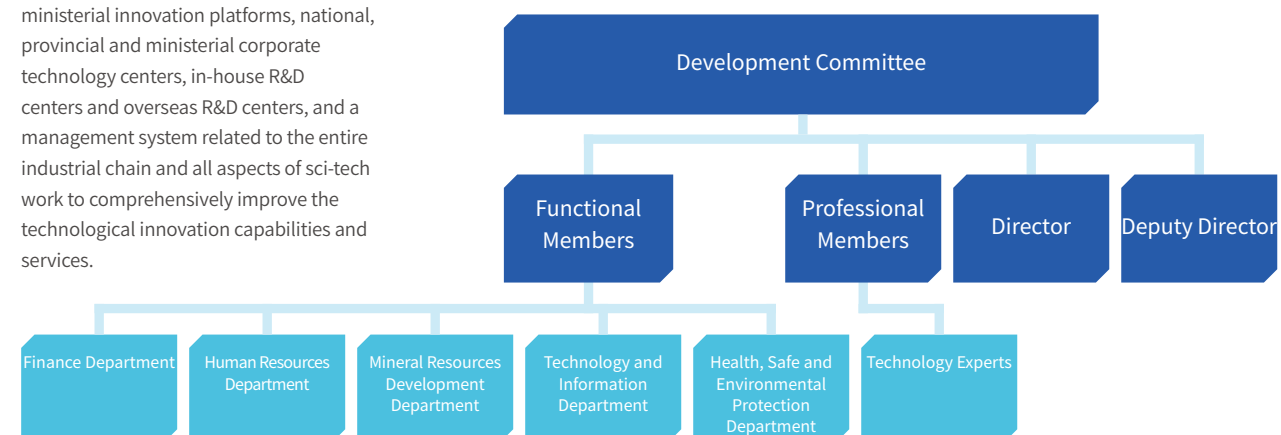


## R&D System

Setting focus on national strategy and the need of industrial development, the Company has put in place a technology management system, a technology innovation system with the Technology Development Committee as the top body and covering national, provincial and ministerial innovation platforms, national, provincial and ministerial corporate technology centers, in-house R&D centers and overseas R&D centers, and a management system related to the entire industrial chain and all aspects of sci-tech work to comprehensively improve the technological innovation capabilities and services.

To strengthen the Company's technological innovation and R&D capabilities, improve the management system for technological innovation, and ensure more professional and standardized technology management,

the Company has set up the Technology Development Committee to provide consultation for the top-level design and planning of the Company's sci-tech work.



▲ Organizational structure of the Technology Development Committee

To spur technological innovation, the Company has formulated measures and differentiated technology assessment schemes, such as the *Technology Management Measures of CMT*, the *Implementation Rules for Science and Technology Awards of CMT*, the *Implementation Rules for the Management of Technology Projects of CMT*, the *Measures for the Management of the Technology Development*

*Committee of CMT (Trial)*, and *Rules for the Management of External Experts*, to further improve its technology management system, optimize the management and elevate related work to a new level.

In 2023, the Company worked to further reform its technology research management, create an enabling environmental for innovation, spur

innovation vitality, and solve key technological problems. Spurring innovation of strategic, innovative, visionary and advanced technologies, the Company introduced a new scheme of innovation competition, scaled up funding and rewarding and gave rewards to those who achieved innovation outcomes.

In July 2023, the Company founded CMT (Zhuzhou) Advanced Hard Materials Technology Development Co., Ltd., dedicated to creating a hub for technological innovation and incubator of technological achievements. Keeping in line with laws of industrial development, the enterprise set its focus on technological and R&D breakthroughs in key links of the industrial chain and worked to foster a host of new business lines in specialized, sophisticated and emerging sectors, extend the industrial chain to terminal application scenes and enhance the Company's competitiveness in the tungsten industry.



## Building of a Technological Innovation Platform

The Company has made coordinated planning for its technology research platforms. It has been leveraging its influence to integrate internal and external technological resources, and strengthening cooperation with renowned research institutions and enterprises along the industrial chain in building technological innovation platforms at various levels.

▶ At the end of the Company had



**4** state-level technological innovation platforms



**1** overseas technological innovation platform

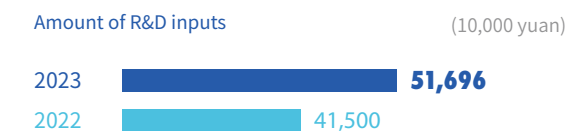


**11** provincial and ministerial-level technological innovation platforms.

Platform level	Platform name	Supporting enterprise
State level	National key laboratory for cemented carbide study	ZCC
State level	Technology center of Zhuzhou Cemented Carbide Group	ZCC
State level	Laboratory for quality control and technical evaluation of industrial products (cemented carbides and tungsten products)	ZCC
State level	Platform for precision tool innovation capability	ZCC CT
Overseas	Center for cutting technology demonstration and services	ZCC CT
Provincial and ministerial level	Key laboratory of cemented carbide cutting tools in machinery industry	ZCC CT
Provincial and ministerial level	Hunan provincial industrial design center	ZCC CT
Provincial and ministerial level	Hunan provincial enterprise technology center	ZCC CT
Provincial and ministerial level	Hunan provincial center for engineering and technology research of high-performance cutting tools	ZCC CT
Provincial and ministerial level	Guangdong provincial center for engineering and technology research of precision micro-drill bits used in high-end printed circuit boards	Jinzhou
Provincial and ministerial level	Jiangsu provincial enterprise technology center	Jinzhou
Provincial and ministerial level	Jiangsu provincial center for engineering and technology research of high-precision machining tools for printed circuit boards	Jinzhou
Provincial and ministerial level	Sichuan provincial center for engineering and technology research of cemented carbide	ZGCC
Provincial and ministerial level	Sichuan provincial enterprise technology center	ZGCC
Provincial and ministerial level	Jiangxi provincial enterprise technology center	NCC
Provincial and ministerial level	Jiangxi provincial research center for ultra-fine cemented carbide new materials	NCC

## R&D Inputs

In 2023, the Company invested 516.96 million yuan in R&D, up 24.57% from the previous year. The proportion of investment in R&D to total earnings from main lines of business was 4.06%, up 0.89 percentage points from the previous year.





## State-Level Honors

The Company has **6** state-level high-tech enterprises, **4** state-level single-product champion enterprises, **2** state-level little giant enterprises, **2** state-level demonstration enterprises in intellectual property rights, and **2** national intellectual property advantageous enterprises.

Type of honor	Enterprise	
National high-tech enterprises (6) ZCC	ZCC ZCC CT Jinzhou	ZGCC NCC CMTRM
National single-product champion enterprises (4)	ZCC Jinzhou	ZCC CT* ZGCC
National "little giants" enterprises (2)	Changcheng Surface	NCC
National intellectual property demonstration enterprises (2)	ZCC	ZGCC
National intellectual property advantageous enterprises (2)	ZCC CT	NCC

**Note:** ZCC CT and ZGCC were both honored as National Manufacturing Individual Champion Enterprises in March 2024

## Innovation Achievements

Project Name	Award	Award Presenter
Integrated design and control technology for cutting tools used in the processing of critical components for aerospace energy equipment	First prize of science and technology invention in machinery industry	China Machinery Industry Federation and Chinese Mechanical Engineering Society
Zhuzhou Cemented Carbide Group Co., Ltd.	Shortlisted for China Quality Award	China Association for Quality
Zhuzhou Cemented Carbide Group Co., Ltd.	Outstanding organization of national implementation award	China Association for Quality
Research on key technologies for the preparation of high-performance cemented carbide for rock drilling and development of series products	Third prize of the science and technology award in the nonferrous industry	China Nonferrous Metals Industry Association and the Nonferrous Metals Society of China
Tungsten carbide-based cemented carbide and its preparation method	Award of Excellence of the National Patent Award	China National Intellectual Property Administration
Tungsten carbide-based cemented carbide and its preparation method	Second prize of Hunan Patent Award	Administration for Market Regulation of Hunan Province
Research on key technologies for the preparation of high-performance cemented carbide for rock drilling and development of series products	First prize of science and technology progress	China Minmetals
Precision high-performance indexable cutting tool series for processing high-temperature resistant materials	Second prize of science and technology progress	China Minmetals
Preparation of ultra-fine tungsten carbide with low shrinkage rate and its application in precision manufacturing of cemented carbide	Second prize of science and technology progress	China Minmetals
A type of cemented carbide, its preparation method and application	Patent award	China Minmetals
Zhuzhou Cemented Carbide Cutting Tools Co., Ltd.	Outstanding organization for technological innovation	China Minmetals
Zigong Changcheng Equipment Technology Co., Ltd.	Outstanding organization for technological innovation	China Minmetals
Shenzhen Jinzhou team for developing ultra-fine diameter cutting tools (0.01mm diameter)	Outstanding organization for technological innovation	China Minmetals
Zhuzhou Cemented Carbide Group Co., Ltd. and Shenzhen Jinzhou Precision Technology Co., Ltd.	Science and Technology Coordination Award	China Minmetals

### Case: ZCC's Ball Teeth Contributed to National Strategy for Deep Underground Exploration

As the largest research and manufacturing base for cemented carbide used in mining and oilfield drilling and excavation in China, ZCC has long been the preferred choice for oil and gas drillers working on various difficult-to-drill strata. Safeguarding national energy security and meeting the demand for faster and more efficient drill bits in ultra-deep well drilling, ZCC has devoted great energy into the R&D and manufacturing of high-quality ball teeth and high-end composite matrix for oil and gas extraction. It established a special project team to conduct in-depth research on alloys for deep well drilling, working to solve the critical problem in drilling and excavation materials. ZCC ensures that each cutting tooth is manufactured with high precision, smooth surface and strong wear resistance, contributing to rapid development in China's deep oil and gas exploration and development.



### Case: ZCC CT Won First Prize of Science and Technology Invention in Machinery Industry

With the integrated design and control technology for cutting tools used in the processing of critical components for aerospace energy equipment, ZCC CT developed products massively applied in leading enterprises in China's aerospace sector. The result shows that its cutting tools can compete with international counterparts and some could even replace foreign-produced ones. For this reason, ZCC CT won the first prize of science and technology invention in machinery industry in 2023.



## Intellectual Property

The Company attaches great importance to full life cycle management of intellectual properties. It has built a joint coordination mechanism for intellectual property management. Comprising of functional departments and directly-administered enterprises, the mechanism has well-defined duties and division of functions, thus building synergy in managing the Company's intellectual properties.

The Company has formulated the *Measures for the Protection and Management of Intellectual Property Rights of CMT (Trial)* and the *Measures for Commercialization of Research Achievements* among other regulations on intellectual property protection.

During the reporting period, we continued following the principle of applying patents for research achievements, and pursuing international standards of such patents. We devised specific requirements for the management of the Company's research achievements, patents, technology secrets, technical standards and software copyrights. We regulated management of technological innovation achievements, improved the system for technological innovation and further strengthened protection for the Company's original innovation achievements.

### Unified Leadership

- The Company plans and coordinates intellectual property management in an integrated manner, guides and urges directly-administered enterprises to manage intellectual properties.

### Centralized Management

- By types of intellectual properties, the management responsibility is designated to a specific department.

CMT implements the working mechanism featuring unified leadership, centralized management and graded responsibility in its intellectual property protection. The Company plans and coordinates intellectual property management in an integrated manner. It has built a joint coordination mechanism for intellectual property management. Comprising of functional departments and directly-administered enterprises, the mechanism has well-defined duties and division of functions, building synergy in managing the Company's intellectual properties.

### Graded Management

- The headquarters is responsible for CMT's intellectual property application, maintenance, management, use and protection.
- Directly-administered enterprises are responsible for their respective intellectual properties, including its application, maintenance, management, use and protection.

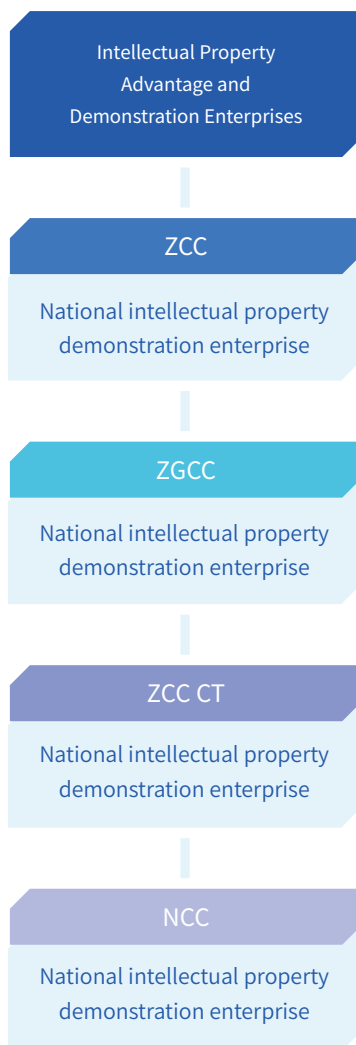
In 2023, the Company obtained 197 new patents, 92 of which were invention patents and 130 new patents were authorized, adding the number of total effective patents to 1,617. It made 10 new national standards, adding the number of its total national standards to 180. The Company also made five industry standards, and the number of its total industry standards it released reached 49. It reported 13 new software copyrights and the number of its total software copyrights increased to 30. In addition, the Company's Technology and Information Department organized a special training session on patent retrieval so as to improve technical personnel's skills in patent retrieval. Close to 100 technical staff attended the training session.



### Case: Safeguarding the "Teeth of Industry", ZCC CT Cracked Rights Infringement Case Involving Counterfeit Goods

Reputed as the "teeth of industry," cemented carbide cutting tools are widely used in various fields, such as aerospace, mold manufacturing, auto making, rail transport and energy engineering and play an irreplaceable role in modern industrial manufacturing and intelligent manufacturing. The Company has been working to fulfill its mission of "revitalizing China's cutting tools" by means of technological innovation. It has won such honors as national innovative enterprise and national intellectual property advantageous enterprise. The registered trademark "ZCC·CT" represents its reputation in the industry. However, in recent years, there have been frequent infringements on this trademark and trademark theft, posing a severe challenge to the enterprise's legitimate rights and interests.

In mid-October 2023, the enterprise received a call from the police. On October 18, 2023, the police station in Nanhu District of Jiaxing City received a report from a local enterprise, who claimed that the ZCC·CT-branded cemented carbide cutting tools it purchased from an online store were fake. ZCC CT immediately sent professional personnel to Jiaxing to assist the police in investigating the case. After nearly two months of investigation, the police understood the operation processes and patterns of this illegal industrial chain. In December 2023, the police launched a special operation, closing illegal places producing, selling and storing the fake products. In the operation, the police confiscated 124,000 pieces of fake ZCC CT cemented carbide cutting tools, as well as 43,000 fake labels and packaging boxes. The handling of the case not only effectively safeguarded the legitimate rights and interests of the enterprise but also boosted its confidence and determination in pursuing independent innovation.



### Patents and Awards in 2023

Patent name	Award name	Award presenter
Tungsten carbide-based cemented carbide and its preparation method	Award of Excellence of National Patent Award	China National Intellectual Property Administration
Tungsten carbide-based cemented carbide and its preparation method	Second Prize of Hunan Patent Award	Administration for Market Regulation of Hunan Province
A type of cemented carbide, its preparation method and application	Patent Award	China Minmetals



## Implementing Digital Transformation

CMT has been devoting great energy to building itself into an innovative high-tech manufacturing enterprise. The Company made sustained efforts to advance intelligent construction and renovation projects in its subsidiaries. By creating automated and intelligent production lines and workshops, it enhanced its overall automation, IT application, digitization and intelligent levels, further optimizing lean management and empowering high-quality development. In the meantime, the Company continuously built its

cybersecurity defense and strengthened information security, safeguarding its digital transformation efforts.

In 2023, working toward safety, environmental protection and operational risk management goals, the Company continued to promote the building of a "digital enterprise brain", further diversifying the scenarios for management and control and enhancing the efficiency of digital empowerment.

The Company finished building the online monitoring and early warning information platform for safety and environmental protection. This platform enables management personnel for safety and environmental protection at all levels to check data of pollution sources and tailings ponds from the Company's online monitoring system on both PC and mobile devices. It allows for timely, scientific and effective early warning, analysis, prediction, evaluation, decision-making and management of excessive emissions from pollution sources.

Digitalization of safety and environmental protection

Digitalization of operational risks

The Company has further strengthened its data foundation. It used data collected from its business system to build operational risk analysis models for production, customer management, and credit analysis, thereby improving efficiency in business management and control.



## Innovating Intelligent Manufacturing

The Company grasps opportunities of intelligent manufacturing, encourages and supports its subsidiaries to develop intelligent manufacturing development and explore deep integration of new-generation information technology with

advanced manufacturing technology to drive industrial technological revolution and upgrading, thereby promoting the improvement of the Company's production technology.

### Intelligent Production Lines

#### ZCC MES System Building of Powder Business Unit

- Achieved automation of major production equipment and material handling
- Realized automated collection of data on energy of equipment energy through a data collection platform
- Attained linked control based on actual production logistics and further explored big data analysis for production process optimization



#### ZCC CT Intelligent Production Line for Mixtures

- Achieved automated control of the main processes for mixture production, as well as the collection and display of production information
- Completed real-time capture and display of order production status, equipment running status and operating parameters, as well as fault alert and query on mobile app
- Developed and implemented in partnership with Changcheng Equipment, possessing full independent intellectual property rights and meeting the standards, and being universal and expandable



#### Jinzhou Automated Workshop

- Achieved logistical automation from centerless grinding process to product marking process
- Obtained the status of manufacturing processes and material storage for precision micro cutting tools through automated information collection devices
- Displayed the operating status of automated logistics system and machine tools in real time, and realized transparent management of production and logistics systems
- Reduced the production cycle from seven days to 24 hours, effectively shortening the delivery time by 85.7%



#### ZCC Intelligent Manufacturing of Axle Sleeve Products

- Upgraded equipment to make it intelligent, realizing data collection from main locations and nodes of the equipment
- Built an intelligent sampling system and developed intelligent scheduling solutions to address key scheduling technical issues and enhance automatic scheduling capabilities
- Developed an automated upgrading plan to address key technologies such as automated detection and compensation





### Digital System for Investment Management

Through interacting with multiple information systems, the system collects and compiles key data and facilitates close coordination among various business processes. This enables full-lifecycle management of an investment project from budgeting to approval, implementation and acceptance. In addition, it enables comprehensive and dynamic monitoring and management of the following evaluation of investment management.

### Digital System for Business Management

It has core business functions, such as special price management, contract management, channel management and order management. Its data can be integrated with that of the SAP system. The system covers the enterprise's core business processes. It establishes a digital management system for the entire process, helping optimizing the enterprise's sales strategies and seizing market opportunities.

### Digital System for Production Management

Utilizing advanced digital technology and combining it with the unique requirements of the industry's processes, the system is a future-oriented digital production management system. It comprises a computer-based platform and a mobile application. It covers various business processes and operational scenarios, covering process management, production management, quality management, equipment management, energy management, data analysis and data collection. It facilitates efficient production scheduling, smooth internal communication and collaboration as well as information sharing.

#### Case: Digital Achievements Debuted on the International Exhibition Venue

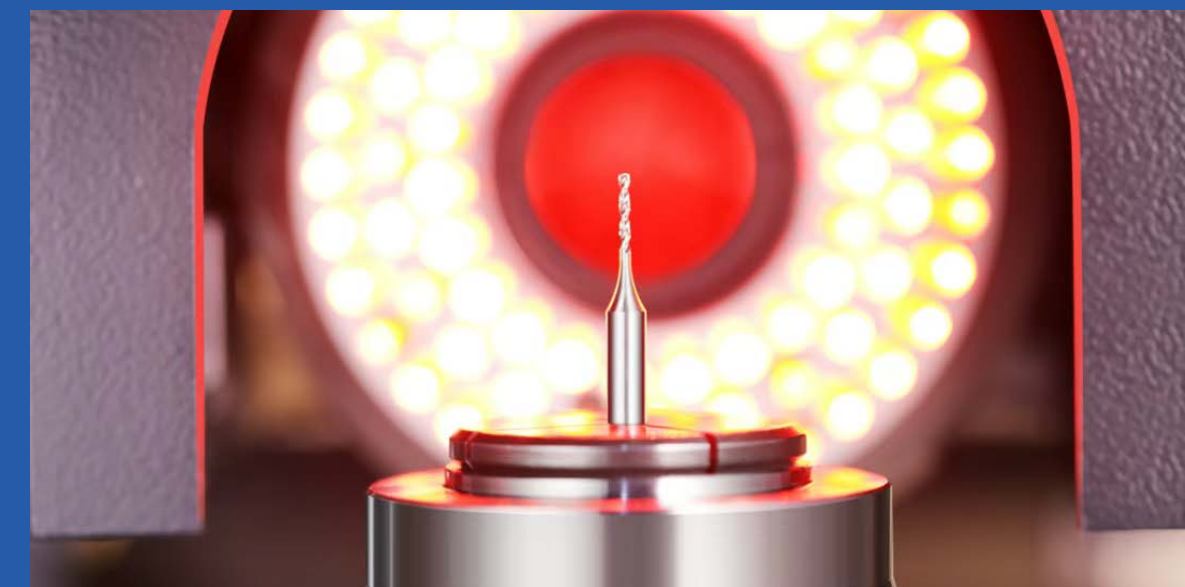
As the pace of going intelligent accelerates worldwide, ZCC CT has planned study of digital processing solutions in response to the demand for intelligent manufacturing. Following the release of the first domestic digital tool library at China International Machine Tool Show (CIMT) in 2021, the Company launched the Cutting Guide Cloud Platform and the Intelligent Management System for Cutting Tools in Digital Workshop at the 18th China International Machine Tool Show (CIMT2023) held on April 10, 2023 at the China International Exhibition Center in Beijing.

- The Cutting Guide aims to optimize processing efficiency and lower production costs. At the stage of preparation for digital processing, the platform provides users with quick and accurate recommendations for tool selection and processing parameters;
- The Intelligent Management System for Cutting Tools in Digital Workshop can realize information-driven management of cutting tools with comprehensive and timely data collection and analysis. This ensures that enterprise's needs for tool use can be satisfied, and at the same time reduces costs of production and management, and improves production efficiency.

#### Case: Jinzhou Recognized as a National Demonstration Factory for Intelligent Manufacturing and Scenario of Excellence in 2023

In recent years, with comprehensively building an intelligent factory for precision micro cutting tool as the goal, Jinzhou has been focusing on scaling up investment in typical factory scenarios, including digital R&D and design of products, intelligent online monitoring, precision tracing of quality, application of industrial tech software, optimization of production planning, intelligent scheduling in workshop, lean production management, intelligent warehousing, optimization of equipment operation, and monitoring of energy consumption. Breakthroughs on key technologies have been made. The aim is to build the enterprise into an intelligent manufacturing factory for precision micro cutting tools and enhance intelligent manufacturing.

In December 2023, the Ministry of Industry and Information Technology released the list of demonstration factories for intelligent manufacturing and scenarios of excellence in 2023. Jinzhou's demonstration factory for intelligent manufacturing of precision micro cutting tools made the list. The completion of the factory for intelligent manufacturing of precision micro cutting tools will effectively enhance the manufacturing of the precision micro cutting tools for printed circuit boards, thereby improving the level of intelligent manufacturing in the discrete precision manufacturing industry and providing a good example for similar manufacturing enterprises.



## Smart Management Platform

ZCC CT has been managing digital information centering on "cost reduction, efficiency enhancement and quality improvement." With the strategic goal of "Digital ZCC CT, Smart Manufacturing for the Future," the Company works to build a more efficient and convenient digital management platform. It has successfully launched three systems for managing investment, business and production.



▲ ZCC CT's digital management platform



## Safeguarding Information Security

CMT has been improving its information technology system. It has established a cybersecurity and IT application leading group for information security management. Under the group, an information security management office has been set up to oversee information security. This office is made up by the Technology and Information Department, the General Manager's Office, and the Discipline Inspection, Supervision, and Audit Department. The Technology and Information Department serves as the leading department.

To ensure the security of its information system and prevent data leakage, the Company carries out vulnerability scans and penetration testing with protection grade assessments every three years. It applies two-factor authentication to its major business systems. In 2023, the Company revised the *CMT Measures for Managing the Collaborative Office System*, which regulates the use, operation and maintenance of the office system, and further strengthens information security requirements. It prohibits connections with high-risk ports on the Company's firewall.

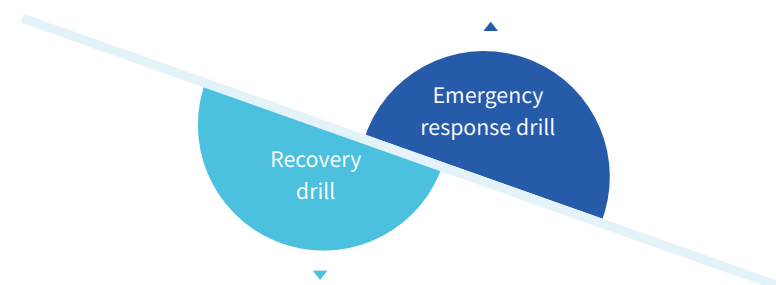
## Drills for Information Security Emergency Response

The Company has formulated the *CMT Plan for Information Security Emergency Response*. It has been working to improve its capability for handling information security emergencies and put in place a scientific, effective and rapidly-responding working mechanism for emergencies. This ensures the physical security, operational security, and data security of important computer information systems, minimizes the harm caused by network

and information security emergencies, and protects public interests.

The leading group for information security emergency response arranges at least one drill every year and establishes a regular drill system for emergency response to promptly identify and address issues in the emergency response system and working mechanism, thereby enhancing emergency response capabilities.

The Company carried out emergency response drill targeting its collaborative office system on October 16, 2023. It simulated a suspected system exception and attack of a ransomware. The Company's information center followed the emergency response plan, and handled the situation for around an hour. The drill helped the staff better understand emergency response procedures and enhanced the Company's capability for information system emergency response.



Following the arrangements of CMT, ZCC CT carried out a system emergency recovery drill in September 2023. The drill simulated a ransomware attack. In accordance with the emergency response plan, the responding team restored applications and data from the backup system. The entire handling process lasted approximately one hour and successfully restored the system.

### Case: Online Training for Industrial Internet Security

In a cybersecurity awareness campaign held on September 15, 2023, CMT invited senior experts in industrial security to give an online lecture on industrial internet security. A total of 87 employees took part in the training. The lecture focused on security risks and security frameworks of the industrial internet, and how to establish a robust protection system for industrial internet security, and how to create a safe and reliable environment for digital transformation. Solutions and cases were also shared in the lecture.

## Joining Force for Industry Development

CMT attaches great importance to its role in the development of the industry. It has been actively taking part in exchanging activities held by trade associations, and compiling or participating in the formulation of national and industry standards. During the reporting period, the Company had **4** state-level technological innovation platforms and 10 provincial and ministerial-level ones. It boasted **6** state-level high-tech enterprises, **4** national single-product champion enterprises, **2** state-level "little giant" enterprises, **2** national intellectual property demonstration enterprises and **2** national intellectual property advantageous enterprises. The Company newly took the lead in undertaking **3** state-level projects, and **3** national key research and development projects successfully passed the acceptance inspection by the Ministry

of Science and Technology. In addition, it had **8** new provincial and ministerial-level technological projects. The Company also obtained 130 new patents, making the total number of valid patents 1,617. It formulated 10 new national standards and **5** industry standards, and received 14 new awards at the national and provincial and ministerial levels and from China Minmetals and industry associations. Adhering to the principle of "open cooperation and mutual benefits," the Company has been working with industry partners to build a community with a shared future for the industry, sharing achievements with fellow enterprises and boosting industry development with partners throughout the industrial chain.

## Spearheading Industry Development

The Company plays an important role in various industry organizations, such as the Nonferrous Metals Society of China, International Tungsten Industry Association and China Tungsten Industry Association. It has been assuming its roles and responsibilities, striving to inherit and carry forward the fine traditions of the tungsten industry associations, and maintaining and giving full play to the main role of the tungsten industry associations to make greater contribution to the development of the industry.

In January 2024, the Company began to serve as the second council chairman of the Strategic Alliance for Technological Innovation in Nonferrous Metal Tungsten and Cemented Carbide Industries. In the future, it will assist the alliance in formulating a technological roadmap for industrial development and promote the development of the tungsten and cemented carbide industries so that they can use resources more efficiently, be able to produce higher-end products, and achieve higher level of precision manufacturing.



▲ Li Zhongze, Chairman of CMT, won the award of the third (2021) annual economic figure in the nonferrous industry on February 17, 2023.

**Case: CMT Attended Annual Meeting of the International Tungsten Industry Association**



Founded in 1988, the International Tungsten Industry Association aims to promote the use of tungsten and tungsten products globally. It is the most authoritative and influential institution in the global tungsten industry. In October 2023, the 36th Annual Meeting of the International Tungsten Industry Association was held in Osaka, Japan. More than 200 representatives from dozens of businesses in over 20 countries attended the annual meeting.

At the meeting, CMT's Deputy General Manager Gao Bo was elected Chairman of the International Tungsten Industry Association. CMT representatives gave an in-depth analysis of China's market dynamics and made a scheme report. Representatives from ZCC also shared a report on the new demand for cemented carbide in the field of intelligent mining, which received unanimous praise from domestic and international peers.



▲ Gao Bo, Deputy General Manager of the CMT, was elected Chairman of the International Tungsten Industry Association

**Trade Associations CMT Joins in**

	Name of trade associations	Association	Membership
The Company	The Nonferrous Metals Society of China	State-level trade association	Council president
	China Tungsten Industry Association	State-level trade association	Council vice president
	International Tungsten Industry Association	Others	Council member
	International Conflict Materials Organization	Others	Member
	China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters	State-level trade association	President of tungsten and tungsten products branch
	Hainan Association for Public Companies	Provincial-level trade association	Ordinary member
	China Association for Public Companies	State-level trade association	Ordinary member
	China Industry Technology Innovation Strategic Alliance	State-level trade association	Others

	Name of trade associations	Association	Membership
ZCC CT	Zhuzhou Enterprise Confederation, Zhuzhou Directors Association	Others	Executive council member
	China Metal Cutting Tool Engineering Association	State-level trade association	Deputy chairman
	China Machine Tool & Tool Builders' Association	State-level trade association	Executive council member
	Hard Materials Sub-Committee of China Cutting Tool Standardization Committee	State-level trade association	Secretariat
	China Tungsten Industry Association	State-level trade association	Council member
	Intelligent Manufacturing Branch of the China Machinery Industry Federation	State-level trade association	Ordinary member
	High-end CNC Machine Tool Innovation Alliance	Others	Ordinary member
	China Machine Tool & Tool Builders' Association	State-level trade association	Ordinary member
	China Aero-Space Tooling Association	State-level trade association	Ordinary member
Jinzhou	China Printed Circuit Association	State-level trade association	Council president
	Shenzhen Printed Circuit Association	Others	Council vice president
	Taiwan Printed Circuit Association	Others	Ordinary member
	China Tungsten Industry Association	State-level trade association	Others
	China Shenzhen Machinery Association	Others	Others
	China Metal Cutting Tool Engineering Association	State-level trade association	Ordinary member
	China Machine Tool & Tool Builders' Association	State-level trade association	Others
	Oral Cavity Branch of the Shenzhen Association of Medical Devices	Others	Ordinary member
	China Die & Mould Industry Association	State-level trade association	Ordinary member
ZGCC	China Tungsten Industry Association	State-level trade association	Council president
	International Tungsten Industry Association	Others	Ordinary member
	China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters	State-level trade association	Ordinary member
	China National Nonferrous Metals Standardization Committee	State-level trade association	Ordinary member
	Talent Center for Nonferrous Metals	Provincial-level trade association	Council president
	Powder Metallurgy Branch of the Sichuan Mechanical Engineering Society	Provincial-level trade association	Council president
	Zigong Human Resources Association	Others	Council vice president
	Zigong Quality Association	Others	Council vice president
	New Materials for Oil Equipment Branch of the Association of Oil Industry, All-China Federation of Industry and Commerce	State-level trade association	Council vice president
	Zigong Lawyers' Association	Others	Ordinary member
	Zigong Cost Engineers' Association	Others	Others
Zigong Technology Market Association	Others	Council president	



	Name of trade associations	Association	Membership
NCC	China National Nonferrous Metals Standardization Committee	State-level trade association	Ordinary member
	Jiangxi Brand Promotion Association	Provincial-level trade association	Others
	Jiangxi Enterprise Confederation & Jiangxi Entrepreneurs Association	Provincial-level trade association	Ordinary member
	Nanchang Enterprise Confederation & Nanchang Entrepreneurs Association	Others	Council president
	China Machine Tool & Tool Builders' Association	State-level trade association	Ordinary member
	China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters	State-level trade association	Ordinary member
	Thermal Spraying Committee of Surface Engineering Association	State-level trade association	Council president
ZCC	China Tungsten Industry Association	State-level trade association	Others
	Hunan Federation of Enterprises and Industrial Economy	Provincial-level trade association	Council vice president
	Zhuzhou Enterprise Confederation, Zhuzhou Entrepreneurs Association	Others	Council vice president
	Zhuzhou Cemented Carbide Industry Association	Others	Council president
	Nonferrous Sub-committee of the National Standard Sample Technical Committee	State-level trade association	Ordinary member
	Zhuzhou Statistical Society	Others	Ordinary member
	Hunan Advanced Materials Industry Association	Provincial-level trade association	Ordinary member
	China Nonferrous Metals Industry Association	State-level trade association	Others
	Hunan Journals Association	Provincial-level trade association	Ordinary member
	China National Nonferrous Metals Standardization Committee	Provincial-level trade association	Ordinary member
	China Quality Association	State-level trade association	Ordinary member
	Zhuzhou Female Tech Workers' Association	Others	Others
	Zhuzhou Vocational Education Association	Others	Council vice president
	Hunan Society of Special Equipment	Provincial-level trade association	Others
	Rock Drill Steel Branch of the China Steel Construction Society	State-level trade association	Ordinary member
	Super Hard Material Branch of the China Machine Tool & Tool Builders' Association	State-level trade association	Others
	International Tungsten Industry Association	Others	Others
	Customs Borders Association of Hunan Province	Provincial-level trade association	Ordinary member
	China Tungsten Industry Association	Others	Ordinary member
	ITSCI Programme for Responsible Mineral Supply Chain	Others	Others
China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters	State-level trade association	Council vice president	

## External Cooperation

CMTRM

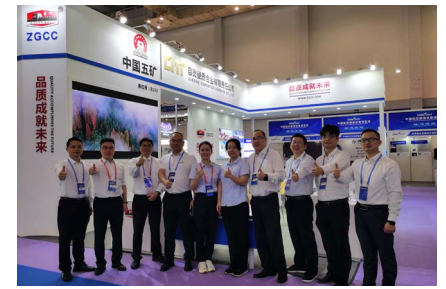
Attending the 17th Laser World of Photonics China

The 17th Laser World of Photonics China was held in Shanghai New International Expo Center from July 11 to 13, 2023. As an important international event in the laser, optics, and photoelectric industries in Asia, the expo boasted a total exhibition area of more than 80,000 square meters, and a total of 94,648 domestic and international visitors. CMTRM showcased its sputtering targets for optical coating, X-ray targets for high-end medical use, vacuum coating equipment and components for the semiconductor industry at the expo. The products received widespread industry attention.

ZGCC

Attending the First China Aviation Manufacturing Equipment Expo and Delivering Keynote Speech

In October 2023, ZGCC attended the first China Aviation Manufacturing Equipment Expo and delivered a keynote speech entitled "Development and Application of Thermal Spraying Materials for Aviation" at the forum on the development of aeronautical materials. The enterprise also displayed its aviation surface coating material and application services and received positive feedback from attendees.



ZCC CT

Attending the 2023 Academic Forum on the Manufacturing Technology for High-Performance Aero-Engines

On October 14, 2023, ZCC CT attended the 2023 Academic Forum on the Manufacturing Technology for High-Performance Aero-Engines and delivered a keynote speech. Jointly held by MIIT Key Laboratory for the Manufacturing of High-Performance Aero-Engines, MOE Engineering Research Center for Advanced Aero-Engines Manufacturing Technology and the Intelligent Manufacturing Committee of the Computer Federation of Shaanxi Province, the forum aimed to provide a platform for exchanges among businesses, research institutes and universities in the aero-engine manufacturing sector.



## Key Performance

### Environmental Performance

Disclosure Description		Unit	2021	2022	2023
Energy consumption	Natural gas	m <sup>3</sup>	8,091,905	6,609,606	7,097,733
	Diesel	liter	863,260	570,755	242,532
	Petrol	liter	1,487,567	1,071,408	1,074,545
	Purchased power	kWh	491,236,723	503,999,640	514,541,208
	Comprehensive energy consumption per 10,000 yuan of output (comparable price)	tce/10,000 yuan	0.0693	0.0562	0.0603
	Energy consumption (all energies)	tce	78,182	78,046	76,434
GHG emissions	CO <sub>2</sub> emissions	10,000 tons of CO <sub>2</sub> -equivalent	26.8	28.04	28.67
	CO <sub>2</sub> emissions per 10,000 yuan of output (comparable price)	ton of CO <sub>2</sub> -equivalent per 10,000 yuan	0.2377	0.2242	0.2277
Exhaust gas emissions	Total exhausts	m <sup>3</sup>	79,543,382	86,305,588	90,656,103
	Particulate matter	mg/m <sup>3</sup>	96.71	77.83	83.10
	Nitrogen oxides	mg/m <sup>3</sup>	29.78	29.12	28.72
	Sulphur oxides	mg/m <sup>3</sup>	28.93	29.19	29.33
Water pollutant discharg	Total wastewater discharge	ton	2,232,380	2,240,403	2,144,870
	Chemical oxygen demand (COD)	mg/liter	38.27	31.85	33.05
	Ammonia and nitrogen	mg/liter	4.52	3.70	4.59
Waste emissions	Total general solid waste	ton	2,700	3,508	3,198
	Total recyclable waste	ton	1,670	2,102	1,916
	Total recycled general solid waste	ton	1,670	2,102	1,916
	Total hazardous waste	ton	434	331	387
Investment in environment protection	Investment in environmental protection	10,000 yuan	2,952.62	2,353.59	2,539.90
	Total investment in energy saving and emission reduction	10,000 yuan	4,053.62	3,775.98	4,014.59
Water resource use	Purchased municipal water	10,000 tons	296.03	337.58	318.67
	Total recycled water/ reclaimed water	10,000 tons	4,801.94	5,425.18	6,360.63

### Social Performance

Disclosure Description		Unit	2021	2022	2023	
Employment	Total employees	person	9,263	8,337	8,051*	
	Labor contract signing rate	%	100%	100%	100%	
	By gender	Male	person	6,915	6,144	6,075
		Female	person	2,348	2,193	1,976
	By employment category	Labor contract	person	7,512	7,418	7,227
		Labor dispatch	person	1,740	910	824
		Others	person	11	9	0
	By age	51 or above	person	1,597	1,478	1,554
		41-50	person	2,829	2,522	2,349
		31-40	person	2,891	2,724	2,537
	By education background	30 or below	person	1,947	1,613	1,611
		Doctor and professor	person	42	46	53
		Master	person	347	373	419
		Bachelor	person	2,010	1,975	2,037
		Junior college	person	3,046	2,737	2,766
	By employee category	Below junior college	person	3,818	3,206	2,776
		Total primary-level employees	person	8,926	7,923	7,670
Total middle management		person	290	309	317	
Female employees in total middle management		person	30	41	43	
Total senior management		person	47	58	64	
Female employees in total senior management		person	4	6	5	
By position	Production personnel	%	68	66	67	
	Sales personnel	%	6	6	6	
	Technical personnel	%	12	13	13	
	Finance personnel	%	1	2	2	
	Administrative personnel	%	10	10	9	
	Service personnel	%	3	2	3	
Employee turnover rate	%	4	5	4.5		

Note: \*Total number of employees including labor dispatchers.



## Social Performance

Disclosure Description		Unit	2021	2022	2023	
Employee training	Total employees receiving training	person	9,263	8,337	8,051	
	By gender	Total male employees receiving training	person	6,314	6,186	6,075
		Total female employees receiving training	person	3,311	3,128	1,976
	By employee category	Total primary-level employees receiving training	person	8,924	8,616	7,670
		Total middle management receiving training	person	595	590	317
		Total senior management receiving training	person	106	108	64
	Total training hours	hour	439,977	413,239	450,856	
	Average training hours	hour	47	49	56	
	By gender	Total training hours received by male employees	hour	296,758	309,300	340,200
		Total training hours received by female employees	hour	145,992	156,406	110,656
	By employee category	Total training hours received by primary-level employees	hour	410,596	380,304	429,520
		Total training hours received by middle management	hour	24,070	26,265	17,752
Total training hours received by senior management		hour	5,311	6,670	3,584	
Work safety	Employee health and safety	Number of employees at positions with occupational disease risk	person	2,906	3,146	2,943
		Number of employees covered by occupational disease screening program	person	2,606	2,080	2,275
		Number of employees suffering from occupational diseases	person	0	0	0
	Investment in health and safety	Investment in occupational health and safety of employees	10,000 yuan	983.29	1,087.33	1,090.87
Investment in work safety		10,000 yuan	3,223.97	2,744.56	4,069.65	

## Governance Performance

Disclosure Description		Unit	2021	2022	2023
Composition of the Board of Directors	Executive directors	person	2	2	1
	Non-executive directors	person	2	2	4
	Independent directors	person	3	3	3
Three Meetings	General Meeting of Shareholders	time	4	5	4
	Meeting of the Board of Directors	time	8	9	6
	Meeting of the Board of Supervisors	time	7	7	6

## Business Operation Performance

Disclosure Description		Unit	2021	2022	2023
R&D and innovation	R&D investment	10,000 yuan	41,488.82	41,499.78	51,695.85
	New patents	piece	163	178	130
	Total patents	piece	1,487	1,577	1,617
Product responsibility	Number of products recalled for safety and health causes	piece	0	0	0
	Number of complaints for safety and health causes	piece	0	0	0

# Verification Statement



Verification Statement Number: CN-202404-CSR-03

## Verification Statement of ESG Report

TÜV NORD (Hangzhou) Co., Ltd. (hereinafter referred to as 'TÜV NORD China') has been commissioned by the management of China Tungsten and hightech Materials Co., LTD (hereinafter referred to as 'China Tungsten Hightech') to carry out an independent third-party verification of China Tungsten Hightech 2023 Environmental, Social and Governance (ESG) Report (hereinafter referred to as 'report').

China Tungsten Hightech is responsible for the collection, analysis, aggregation and presentation of information within the Report. TÜV NORD China carries out this work (verification of the report) within the terms of reference agreed in the agreement with China Tungsten Hightech.

China Tungsten Hightech is the designated user of this statement.

This statement is based on the 2023 Environmental, Social and Governance (ESG) Report prepared by China Tungsten Hightech. China Tungsten Hightech is responsible for the integrity and authenticity of the information and data in the report.

### Verification Scope

- ✦ The report discloses key environmental, social and governance performance and related information that happened in 2023.
- ✦ We evaluated the management process of collection, analysis, inspection of the information and data.
- ✦ Because the economic data had been audited by the third party, we did not do double audit this time. The verification was done on 01~02.04.2024.

### Verification Methodology

The verification process includes the following activities:

- ✦ Review the document information which provide by TÜV NORD China.
- ✦ Interview the person who collected the report information.
- ✦ View the related websites and media reports, verify the data and information through sampling method.
- ✦ Evaluates sustainability reports in accordance with the requirements of the Sustainable Development Reporting Guidelines (GRI Standards 2021) for balance, comparability, accuracy, timeliness, clarity and reliability;
- ✦ Refer to AA1000 Verification Standard (V3).
- ✦ Verification activity is based on TÜV NORD China Rules (SP-C-A015,Rev.00) for the Implementation of Report Verification.

### Verification Conclusion

China Tungsten Hightech 2023 Environmental, Social and Governance (ESG) Report prepared by comprehensively disclosed the actions and performance of China Tungsten Hightech in fulfilling its environmental, social and governance in 2023. The data in report is reliable and objective, TÜV NORD China found no systemic or substantial errors.

- ✦ Balance: The report objectively disclosed the total number of lost workdays, which has a certain balance;
- ✦ Comparability: In the ESG Key Performance, the three-year key performance of energy consumption, greenhouse gas emissions, employee structure, research and development innovation and other indicators are disclosed, and the comparability is good.
- ✦ Accuracy: Through sampling audit, it is found that the cases and data disclosed in the report are basically objective and accurate;



Verification Statement Number: CN-202404-CSR-03

- ✦ Timeliness: The disclosure period of this report is 2023 sustainable development performance, and the company regularly releases reports in the second year, with good timeliness;
- ✦ Clarity: The report uses pictures, charts, annotations and other forms to make the information in the report easy to understand;
- ✦ Reliability: China Tungsten Hightech Securities and Legal Department is responsible for collecting, recording, arranging and analyzing the information and process used in the preparation of the report, and the sampled data in the inspection process can be traced to ensure the quality and substance of the information to a certain extent.

### Recommendation for Improvement

Through verification and evaluation, we have following improvement suggestions on ESG practice and management:

- ✦ The company has participated in a number of projects in the field of sustainable development. It is suggested to clarify the statistical caliber, statistical method, statistical frequency and responsible department of the relevant performance indicators of sustainable development, so as to facilitate the rapid and accurate collection of relevant data and cases when the projects are carried out.
- ✦ Increase the disclosure of negative performance indicators in reporting, such as the number of customer complaints, to improve reporting balance.

### Special Statement

This statement excludes:

- ✦ The activity outside information reveal.
- ✦ The position, ideas, beliefs, goals, future development direction and commitment which stated by China Tungsten Hightech.

### Statement of Independence and Competence

TÜV NORD is the world's leading Certification Body in inspection, testing and verification, operating in more than 100 countries throughout the world and providing services which includes management systems and product certification; quality, environmental, occupational health and safety, social responsibility auditing and training; environmental, social responsibility and sustainability report verification.

TÜV NORD (Hangzhou) Co., Ltd. is an independent organization registered and established by TÜV NORD in China and ensure that there are no conflicts of interest with China Tungsten Hightech or its branches and stakeholders during the implementation of the verification process of this report.

All information in this report was provided by China Tungsten Hightech, and TÜV NORD China was not involved in the report preparation process.

TÜV NORD (Hangzhou) Co., Ltd.

The team leader: Liu Han  
Date: 21.04.2024

The authorized person: SONG Haining  
Date: 21.04.2024

Note: In case of conflict between the Chinese and English versions of this statement, please refer to the Chinese version.



# Content Index

## Reference Index System for ESG Reporting of Centrally-Administered Listed Companies

Primary index	Secondary index	Third-level index	Reporting content/note
<b>Environment</b>			
<b>E.1 resource consumption</b>	E.1.1 water resources	E.1.1.1 amount of fresh water in use	P33, P94
		E.1.1.2 amount of recycled water in use	P33, P94
		E.1.1.3 proportion of recycled water in use	P33
		E.1.1.4 water resource consumption intensity	P33
	E.1.2 materials	E.1.2.1 consumption of non-renewable materials	P36-39, P94
		E.1.2.2 consumption of toxic materials	P37-38
		E.1.2.3 material consumption intensity	P36-39
	E.1.3 energies	E.1.3.1 consumption of fossil fuel	P32-33, P94
		E.1.3.2 consumption of non-fossil fuel	P32-33, P94
		E.1.3.3 proportion of non-fossil fuel in use	P32-33
		E.1.3.4 total energy consumption	P32-33, P94
		E.1.3.5 energy consumption intensity	P32-33, P94
	E.1.4 packaging materials	E.1.4.1 amount of materials used in packaging	P39
		E.1.4.2 environmentally friendly packaging	P39
<b>E.2 pollution prevention and treatment</b>	E.2.1 wastewater	E.2.1.1 up-to-standard wastewater discharge or not	P34
		E.2.1.2 measures for wastewater management and reduction	P27, P34
		E.2.1.3 amount of wastewater discharged	P33-34, P94
		E.2.1.4 amount of wastewater and pollutant discharged	P34, P94
		E.2.1.5 concentration of wastewater and pollutant discharged	P34, P94
	E.2.2 exhaust gas	E.2.2.1 up-to-standard exhaust gas emissions or not	P35
		E.2.2.2 emissions of exhaust gas and pollutant	P35, P94
		E.2.2.3 concentration of exhaust gas and pollutant emissions	P35
	E.2.3 solid waste	E.2.3.1 up-to-standard solid waste treatment or not	P36
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		E.2.3.3 general industrial solid waste treated	P36, P94
		E.2.3.4 management of hazardous waste	P36-38
		E.2.3.5 hazardous waste treated	P36-38

Primary index	Secondary index	Third-level index	Reporting content/note
<b>E.3 climate change</b>	E.3.1 GHG emissions	E.3.1.1 sources and types of GHG	P40-41
		E.3.1.2 management of GHG emissions	P40-41, P94
		E.3.1.3 emissions of scope 1	/
		E.3.1.4 Emissions of scope 2	/
		E.3.1.5 emissions of scope 3	/
		E.3.1.6 GHG emission intensity	P41, P94
	E.3.2 emission reduction management	E.3.2.1 management of GHG emission reduction	P41
		E.3.2.2 GHG emissions reduced	P41, P94
		E.3.3 trading of environmental rights	E.3.3.1 carbon trading
	E.3.3.2 trading of energy use rights, water use rights and wastewater discharge rights		/
E.3.3.3 trading of green power	/		
E.3.4 management of climate risks	E.3.4.1 management of climate risks	P40-41	
<b>E.4 biodiversity</b>	E.4.1 impact of production, services and products on biodiversity	E.4.1.1 impact of production, services and products on biodiversity	/
	E.5.1 making of low-carbon development goals and strategies	E.5.1.1 making of low-carbon development goals and strategies	P5, P14, P17, P40-41
		E.5.2 measures for resource management	E.5.2.1 management of water use
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	E.5.3 accounting and monitoring of energy conservation and carbon reduction and system for evaluation, awarding and punishing	E.5.3.1 monitoring, accounting, and reporting of energy conservation and carbon reduction and evaluation system	P24-28, P29
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Primary index	Secondary index	Third-level index	Reporting content/note
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		S1.1.2 headcount structure	P53, P95
		S1.1.3 avoidance of child labor or forced labor	P52
	S1.2 employee remuneration and benefits	S1.2.1 guidelines and policies for remuneration	P54
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## Readers' Feedback

### Dear readers

Thanks for reading this report. In order to continuously improve our company's management for sustainable development, we sincerely hope to hear from you, and please be kindly to contribute your opinions and suggestions.

1.What is your overall rating for this report?

Very Good       Fair       Passable

2.Do you think this report has fully, clearly and accurately disclose related information and data?

Yes       Fair       No

3.Do you think this report presents our company's major environmental, social and governance impacts?

Yes       Fair       No

4.How do you think of our company's performance in safeguarding stakeholders' interests?

Very Good       Fair       Bad

5. What opinions and suggestions do you have for our company's management for sustainable development?

### If it is convenient, please give us your contact information:

Name

\_\_\_\_\_

Occupation

\_\_\_\_\_

Employer

\_\_\_\_\_

Zip code

\_\_\_\_\_

Email

\_\_\_\_\_

Tel

\_\_\_\_\_

Address

\_\_\_\_\_

Your opinions and suggestions will be taken into full consideration and we promise to safely keep your personal information.



**CMT 中钨高新**

## **China Tungsten and Hightech Materials Co., Ltd.**

Address: 10th to 12th floors, Diamond Building, No. 288 Diamond Road, Hetang District,  
Zhuzhou City, Hunan Province

Postal Code: 412000

Fax: 0731-28265500

Phone:+86-731-28265977/28265979

Official website: <https://www.minmetalstungsten.com/>

Email: [zwgx000657@126.com](mailto:zwgx000657@126.com)