



本报告采用可降解环保再生纸制作
This report is printed on environmentally friendly paper.

让攀钢钒钛产品
惠及千家万户

To benefit thousands of households with
Pangang's vanadium and titanium products



2023
攀钢集团钒钛资源
股份有限公司

环境、社会及
管治 (ESG) 报告

Pangang Group Vanadium &
Titanium Resources Co., Ltd.
ESG Report 2023



CONTENTS 目录

关于本报告 About This Report	24 专业领军，高质高效发展 Striving for High-Quality Development Based on Our Transition into a Professional Leading Demonstration Enterprise	60 合作共赢，携手伙伴共进 Collaborating with Partners for Mutual Success	92 责任绩效 ESG Performance
04 董事长致辞 Message From The Chairman	27 建设现代化产业体系 Developing a Modern Industrial System	64 精益求精生产 Continuously Optimizing Production	96 展望 2024 Outlook 2024
06 走进钒钛股份 About Us	30 完善科技创新体系 Improving the Science and Technology Innovation System	66 提升客户服务 Improving Customer Service	98 指标索引 Index of Indicator
06 公司简介 Company Profile	34 推动数字化创新 Advancing Digital Innovation	67 打造责任链条 Building a Responsible Supply Chain	
08 组织机构 Organizational Structure	36 求真务实，奠定发展基石 Establishing the Cornerstone of Development with Diligence and Pragmatic Endeavors	69 促进行业进步 Driving Industry Development	
09 主要产品 Main Products	39 完善公司治理 Enhancing Corporate Governance	70 以人为本，赋能员工成长 Putting People First and Facilitating Employee Growth	
10 2023 年资质荣誉 Certificates & Honors in 2023	42 深化国企改革 Deepening SOE Reform	73 保障员工权益 Protecting the Rights of Employees	
12 党建强企 Empowering the Company Through Party Building	43 落实降本增效 Reducing Costs and Improving Efficiency	76 人才培养与发展 Enhancing Talent Cultivation and Development	
14 ESG 管理 ESG Management	45 规范稳健经营 Conducting Standardized and Prudent Operations	78 职业健康与安全 Protecting Occupational Health and Safety	
14 ESG 管理体系 ESG Management System	46 低碳环保，打造绿色钒钛 Pursuing Green and Low-Carbon Development	83 加强员工关爱 Strengthening Employee Care	
17 ESG 工作进展 Progress in ESG Initiatives	49 严格环境管理 Conducting Rigorous Environmental Management	86 同心向善，普惠社会和谐 Pursuing Goodness and Benefiting the Society	
18 实质性议题识别 Identification of Materiality Issues	51 应对气候变化 Addressing Climate Change	89 助力乡村振兴 Contributing to Rural Vitalization	
19 利益相关方沟通 Stakeholder Engagement	56 清洁绿色生产 Clean and Green Production	91 聚力公益慈善 Uniting for Charity	
20 贡献联合国可持续发展目标 SDGs Contribution to UN SDGs	59 改善生态环境 Improving the Environment		

关于本报告

ABOUT THIS REPORT

本报告为攀钢集团钒钛资源股份有限公司（以下简称“钒钛股份”“公司”或“我们”）以年度报告形式发布的第十五份社会责任（ESG）报告，报告披露了钒钛股份及下属公司 2023 年 1 月 1 日至 12 月 31 日履责理念、实践与绩效，部分内容有所延伸。

编制依据

- 国务院国有资产监督管理委员会《关于中央企业履行社会责任的指导意见》；
- 中华人民共和国国家质量监督检验检疫总局、中国国家标准化管理委员会《社会责任报告编写指南》(GB/T 36001-2015)；
- 全球可持续发展标准委员会（GSSB）《可持续发展报告标准》（GRI Standards）；
- 国际标准化组织 ISO 26000: 2010《社会责任指南》；
- 联合国 2030 年可持续发展目标（SDGs）。

数据来源

报告所披露的内容来源于公司内部文件和统计数据，所涉及的财务数据符合国家颁布的《企业会计准则》和相关会计制度，并按照《中国内部审计准则》进行审计，真实反映企业财务指标、经营状况。报告中如无特殊说明，均以人民币为单位表示。

可靠性保证

公司保证本报告内容不存在任何虚假记载、误导性陈述或重大遗漏，并对内容的真实性、准确性和完整性承担个别及连带责任。

报告获取

本报告以印刷版和电子版两种形式发布，电子版可在钒钛股份网站 (<http://www.pgvt.cn>) 和巨潮资讯网 (<http://www.cninfo.com.cn>) 查阅。

This report is the fifteenth Environmental, Social and Governance (ESG) report issued by Pangang Group Vanadium & Titanium Resources Co., Ltd. (hereinafter referred to as "the company" or "we") in the form of annual report. The report discloses the concept, practice and performance of the company and its subsidiaries from January 1 to December 31, 2023, with some contents extended.

Preparation Basis

- The Guidelines to the State-owned Enterprises Directly under the Central Government on Fulfilling Corporate Social Responsibilities issued by the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council.
- The Guidance on Social Responsibility Reporting (GB/T 36001-2015) issued by Standardization Administration of the P.R.C. and General Administration of Quality Supervision, Inspection and Quarantine of the P.R.C.
- The Sustainability Reporting Standards (GRI Standards) issued by the Global Sustainability Standards Board (GSSB)
- ISO 26000:2010-Guidance on Social Responsibility issued by International Organization for Standardization
- The United Nations 2030 Sustainable Development Goals (SDGs)

Data Sources

The contents disclosed in the report are from the company's internal documents and statistical data. The financial data involved comply with the Accounting Standards for Business Enterprises and relevant accounting systems issued by the state, and are audited in accordance with the China Internal Audit Standards, which truly reflect the financial indicators and operating conditions of the enterprise. Unless otherwise specified in the report, it shall be expressed in yuan.

Reliability Assurance

The company guarantees that the contents of this report are free from any false records, misleading statements or major omissions, and bears individual and joint liabilities for the authenticity, accuracy and completeness of the contents.

Report Acquisition

This report is published in both printed and electronic versions, which can be found on the website of Vanadium Titanium (<http://www.pgvt.cn>) And <http://www.cninfo.com.cn> (<http://www.cninfo.com.cn>) Review.

董事长致辞

MESSAGE FROM THE CHAIRMAN



谢俊勇

钒钛股份董事长

Xie Junyong

Chairman of Pangang Group
Vanadium & Titanium Resources
Co., Ltd.

2023 年，我们认真学习贯彻习近平新时代中国特色社会主义思想 and 党的二十大精神，以深入开展主题教育为契机，面对错综复杂的市场形势，主动应变不畏难，锚定目标不放松，真抓实干不懈怠，生产经营、改革发展取得来之不易的成绩。全年实现营业收入 143.80 亿元、利润总额 11.82 亿元，公司完成钒制品（以 V_2O_5 计）4.98 万吨，同比增长 6.09%；钛白粉 25.10 万吨（其中氯化钛白粉 1.31 万吨），同比增长 3.09%；钛渣 19.34 万吨，同比增长 3.27%。圆满完成向特定对象发行股票项目，为钒钛产业 7 个重点项目募集资金 22.8 亿元。

科技赋能未来，形成新质生产力。2023 年，我们成为国务院国资委创建“世界一流专精特新示范企业”，投入研发经费 5.66 亿元，扎实推进各层级科研项目 63 项，新增授权专利 70 项，实现科技创效 1.83 亿元，多个数智工程投入使用，多项重点科研项目和新产品攻关取得突破，以新质生产力塑造新的核心竞争力和发展新动能。

锚定双碳目标，践行绿色发展。我们深入贯彻习近平生态文明思想，锚定国家“双碳”战略目标，坚持加快推进清洁制造、绿色升级与低碳循环发展，努力使环保生产、清洁生产成为公司提高效益的稳压器和增长极。2023 年，重庆钛业获得重庆市级绿色工厂称号，环保诚信企业达标率实现 100%，全年实现安全环保零事故和零处罚。

坚持质量为先，优化产业生态。我们秉持“精益求精，品质优先，顾客满意”的质量方针，完善质量管理体系，严抓原辅料入厂验收、过程精细管理、成品出厂质量把关及过程质量异常纠偏管理，产品质量持续改善。公司获评“2023 年度钢铁行业质量标准化工作优秀单位”，攀枝花钒制品分公司获评“第三届攀枝花市政府质量奖”，6 个 QC 小组获评“四川省优秀质量管理小组”，5 个班组获评“四川省优秀质量信得过班组”。

切实关爱员工，共创美好社会。我们秉承以人为本的原则，注重发挥高层次人才引领作用，打造多种形式的高层次人才发展平台，为公司的高质量发展提供不竭动力。截至 2023 年底，公司共有“经纬人才”“双碳人才”“纪检人才库”等各类人才 31 人，获攀枝花市级以上荣誉的专家人才 18 人次。公司重视社会公益慈善事业，助力乡村振兴，2023 年投入帮扶资金 1221 万元，在盘州市花甲山村持续开展旧普安美丽乡村建设、旧普小学教学楼改造、捐资助学及无菌纸盒灌装生产线建设等公益项目，为当地社会发展、民生改善贡献源源不断的动能。

路虽远，行则将至。事虽难，做则必成。钒钛股份将高举习近平新时代中国特色社会主义思想伟大旗帜，坚持稳中求进、守正创新，加快推进公司高质量发展，为把钒钛产业打造成为鞍钢集团“第三极”排头兵不懈奋斗！

In 2023, we earnestly studied and implemented Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and the guiding principles from the 20th CPC National Congress. Seizing this opportunity, we took proactive measures to adapt to the complex market conditions, confronted challenges without hesitation, and unwaveringly advanced towards our objectives. Through tangible actions, we attained significant achievements in production, operations, as well as reform and development. In 2023, the company recorded an operating revenue of 14.38 billion yuan and a total profit of 1.182 billion yuan. The Company produced 49,800 tons of vanadium products (measured as V_2O_5), marking a 6.09% year-on-year increase. We produced 251,000 tons of titanium dioxide (including 13,100 tons of chloride-process titanium dioxide), showing a 3.09% year-on-year increase, and 193,400 tons of titanium slag, reflecting a 3.27% year-on-year increase. Furthermore, we successfully concluded the issuance of stocks to specific entities, securing 2.28 billion yuan in funds for seven key projects in the vanadium and titanium sector.

Empowering the future with technology and cultivating innovative productive forces. In 2023, we achieved the distinction of being included in the list of “building world-class specialized and sophisticated demonstration enterprises” released by the SASAC. We allocated 566 million yuan for research and development, resolutely progressing in 63 research projects at various levels. We secured 70 new authorized patents, and generated an economic benefit of 183 million yuan through technological innovations. Several digital projects were implemented, substantial breakthroughs were made in key research projects and the development of new products, enabling us to shape innovative productive forces and cultivate new core competitiveness and development momentum.

Focusing on carbon peaking and carbon neutrality in promoting green development. We have thoroughly implemented Xi Jinping Thought on Ecological Civilization and intensified our endeavors to accomplish clean manufacturing, green upgrading, and low-carbon circular development in alignment with China’s 30·60 Decarbonization Goal. One of our objectives is to make eco-friendly and clean production serve as the stabilizer and growth engine for the company’s efforts to enhance efficiency. In 2023, Chongqing Titanium Industry was honored the title of “Green Factory in Chongqing, along with a 100% compliance rate in creating environmentally trustworthy enterprises. Throughout the year, we recorded zero safety and environmental incidents and received zero penalties.

Prioritizing quality for optimizing industrial ecology. Adhering to the quality guideline of “continuous improvement, quality first, and customer satisfaction,” we have consistently worked to enhance our quality management system. Specifically, we have rigorously implemented processes such as acceptance inspection of raw and auxiliary materials upon arrival, refined management during production, quality control before dispatching finished products, and corrective measures for quality anomalies, thereby ensuring continuous improvement in product quality. The company has been recognized as a “Distinguished Unit for Promoting Quality Standardization Efforts in the Steel Industry in 2023.” In the same period, Panzhihua Vanadium Products Branch was honored with the “3rd Panzhihua Government Quality Award.” Six QC teams were acknowledged as “Excellent Quality Management Teams in Sichuan Province,” and 5 production teams received the title of “Trustworthy Production Teams in Sichuan Province.”

Fostering employee well-being and contributing to a better society. Guided by the principle of putting people first, we have focused on creating opportunities and favorable conditions for high-level talents to assume leadership roles. We have established diverse platforms to nurture their development, making them an inexhaustible driving force behind the company’s high-quality development. As of the end of 2023, the company boasted a total of 31 talents categorized as “Leading Talents,” “Carbon Peak and Carbon Neutrality Talents,” and “Disciplinary Inspection Talents.” Moreover, 18 titles as honorary experts at the Panzhihua municipal level or higher were attained. Simultaneously, we have placed great emphasis on social welfare and charitable endeavors, actively contributing to rural vitalization. In 2023, we dedicated 12.21 million yuan to assistance programs, including ongoing initiatives in Huajianshan Village, Panzhou. These efforts encompass the enhancement of scenic rural landscapes, renovation of primary school teaching buildings, educational donations, and the establishment of a sterile paper box filling production line. These projects have consistently generated positive momentum for local development and elevated the well-being of the local community.

Long as the journey is, we will reach our destination if we stay the course. We will persistently hold high the great banner of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era. We will continue to pursue progress while ensuring stability, and uphold fundamental principles in breaking new ground. We are dedicated to accelerating the company’s high-quality development, resolutely working towards positioning the vanadium and titanium sector as the forefront of Ansteel’s “third-pole” strategy.

走进钒钛股份

ABOUT US

公司简介

Company Profile



攀钢集团钒钛资源股份有限公司成立于1993年3月27日，1996年11月15日在深圳证券交易所上市（股票代码：000629），总部位于四川省攀枝花市。凭借得天独厚的资源优势和技术积累，钒钛股份探索出独具特色的钒钛磁铁矿资源综合利用道路，形成一批拥有自主知识产权的专有技术，获得行业领先的制造能力、研发能力与客户服务能力。

作为世界主要的钒制品供应商、中国主要的钛原料供应商、中国重要的钛渣生产企业、硫酸法和氯化法钛白粉生产企业，公司产品广泛应用于钢铁工业、电子工业、有色金属、涂料油墨及储能等领域，畅销国内外市场。钒钛股份正紧紧抓住国家供给侧结构性改革和攀西资源创新开发的战略机遇，以“建设国内一流、国际知名的钒钛新材料上市公司”为己任，让钒钛产品惠及千家万户。

Established on March 27, 1993, Pangang Group Vanadium & Titanium Resources Co., Ltd was listed on Shenzhen Stock Exchange on November 15, 1996 (Stock Code: 000629). Headquartered in Panzhihua City, Sichuan Province, the Company has explored a unique way of utilizing vanadium and titanium magnetite resources based on its special advantages in resources and technology. We have gained a number of technologies with independent intellectual property rights, and boast industry-leading manufacturing capabilities, R&D capabilities and customer service capabilities.

As a major supplier of vanadium products in the world, a major supplier of titanium raw materials and a key titanium slag manufacturer in China, we are also among the key titanium dioxide manufacturers by both sulfuric acid and chlorination processes. Our products are widely used in steel industry, electronic industry, non-ferrous metals, coatings and inks, stored energy, etc., and sold well in the markets at home and abroad. Firmly grasping the strategic opportunity brought by the national supply-side structural reform and the innovation-driven development of strategic resources in Panxi region, we uphold the mission of “building a domestic first-class and internationally famous listed company specialized in new vanadium and titanium materials” to benefit thousands of households with our vanadium and titanium products.

公司愿景 Our vision

建设国内一流、国际知名的钒钛新材料上市公司
Building a domestic first-class and internationally famous listed company specialized in new vanadium and titanium materials

公司使命 Our mission

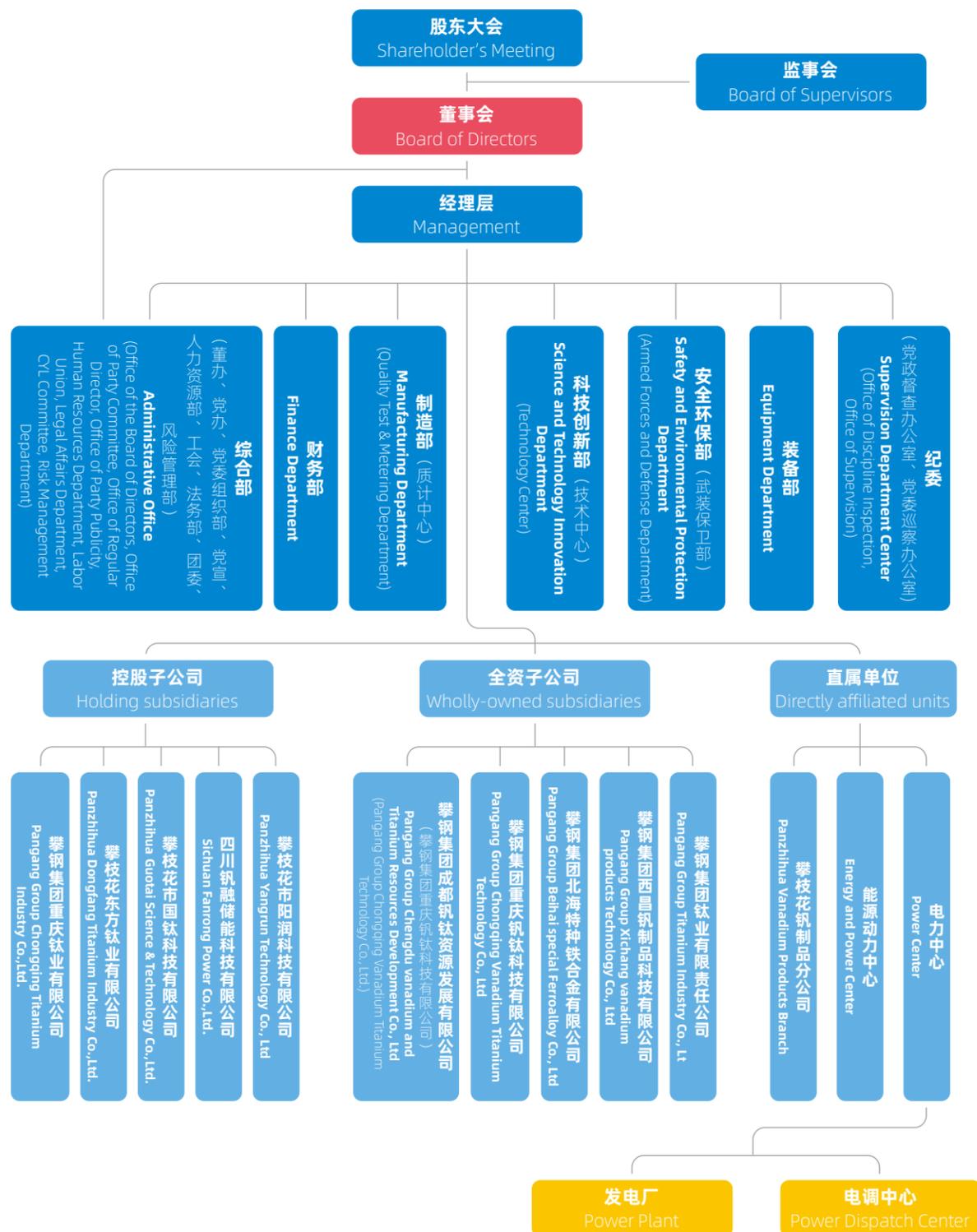
让攀钢钒钛产品惠及千家万户
To benefit thousands of households with vanadium and titanium products of Pangang Group Vanadium & Titanium Resources Co., Ltd.

发展战略 Our strategy

协同资源 做强基体 做大产业 绿色发展
Integrating resources, consolidating foundations, enlarging industries, boosting green development

组织机构

Organizational structure



主要产品

Main products

产品类型 Product Type	主要产品 Main Products	产品特点 Product Features	代表产品 Representative Products
钒系列 Vanadium Series	氧化钒 Vanadium Oxide	在氧化钒生产规模、成本、质量等方面优势明显。产品多用作催化剂、钒储能原料等。We have significant advantages in the production scale, cost, and quality of vanadium oxide, which is widely used as a catalyst and vanadium energy storage material.	三氧化二钒、高纯五氧化二钒、粉状及片状五氧化二钒 Vanadium trioxide, high purity-vanadium pentoxide, vanadium pentoxide powder and flakes
	钒合金 Vanadium Alloy	产品质量优良，供货稳定，化学成分稳定，杂质含量低，表现质量好。The product, which is stably supplied, has excellent quality, stable chemical composition, low impurity content, and good surface quality.	钒铝合金、钒氮合金、钒铁 Vanadium-aluminum alloy, vanadium-nitrogen alloy, ferrovanadium
	其他 Other	包含“全钒液流电池用电解液”等新型产品。New products such as the “Electrolyte for all-vanadium redox flow batteries (VRFBs)”	全钒液流电池用电解液 Electrolyte for all-vanadium redox flow batteries (VRFBs)
钛系列 Titanium Series	钛精矿 Titanium Concentrate	具有质量稳定、不含放射性元素、重金属含量低、三价铁低等特点。Our titanium concentrate has stable quality, and contains no radioactive elements, low heavy metal content, and low trivalent iron content.	钛精矿 PTK20A、PTK10A、PTK20、PTK10 Titanium concentrate PTK20A, PTK10A, PTK20, PTK10
	钛渣 Titanium Slag	二氧化钛含量 74% 以上，不含放射性元素，重金属含量低。The titanium dioxide content in titanium slag is above 74%, and it contains no radioactive elements and has low heavy metal content.	氯化钛渣 PTZ85、PTZ78，酸溶钛渣 PTZ74 Titanium dioxide slag PTZ85, PTZ78 Acid-dissolved titanium slag PTZ74
	硫酸法钛白 Titanium Dioxide by Sulfate Process	具有高光泽、高白度、高分散等特点。The product has characteristics of high gloss, high whiteness, and high dispersion.	钛白粉 R-288、PTA110、R-298、R-248+、R-248、R-249、R-278、PTA121、PTA1201 Titanium dioxide R-288, PTA110, R-298, R-248+, R-248, R-249, R-278, PTA121, PTA1201
	氯化法钛白 Titanium Dioxide by Chlorination Process	公司独特产业资源及自主知识产权生产决定了产品极具安全卫生等特点。With our unique industrial resources and proprietary production process, we ensure the product's extreme safety and cleanliness.	钛白粉 CR-340、CR-350 Titanium dioxide CR-340, CR-350
	功能性钛白 Functional Titanium Dioxide	应用自主知识产权成套技术生产功能型钛白，产品具有优异的耐候性、显著的随角异色和优美的兰相色调等。We apply proprietary technology to the production of functional titanium dioxide, giving it excellent weather resistance, a significant angle-dependent optical effect, and a beautiful blue tone.	钛白粉 PGNR-318G、PGNR-328 系列、PGNR-B508 系列、PGNR-508 系列 Titanium dioxide PGNR-318G, PGNR-328 series, PGNR-B508 series, PGNR-508 series

2023 年资质荣誉

Certificates & Honors in 2023

钒钛股份 Pangang Group Vanadium & Titanium Resources Co., Ltd.

入选国务院国资委
创建世界一流“专精特新”
示范企业名单

The company was included in the list of “building world-class specialized and sophisticated demonstration enterprises” released by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC)

《创建世界一流专业领军
示范企业实施方案》
获评
国资委 A+

The Implementation Plan of Building World-class Professional Leading Demonstration Enterprises was rated A+ by the SASAC

四川省科技进步奖
“Science and Technology
Progress Award of
Sichuan Province”

国新杯 ESG 金牛奖
碳中和五十强
Top 50 Enterprises in Carbon
Neutrality at the CRHC Cup
ESG Golden Bull Award

2023 年度钢铁
行业质量标准化工
作优秀单位
“Distinguished Unit
for Promoting Quality
Standardization Efforts
in the Steel Industry in
2023”

6 个 QC 小组获评
四川省优秀质量
管理小组
6 QC teams were rated
as “Excellent Quality
Management Teams in
Sichuan Province”

5 个班组获评
四川省优秀质量
信得过班组
5 production teams
received the title
of “Trustworthy
Production Teams in
Sichuan Province”

ESG 报告获评
金蜜蜂 2023 年优秀企业社会责任报告
“环境责任信息披露奖”

The company was honored with the “Environmental Responsibility Information Disclosure Award” on the 2023 GoldenBee CSR Report Honor Roll for its outstanding ESG report

钒钛贸易 Vanadium & Titanium Trade

四川天府新区
“贯彻新发展理念优秀企业”
“An Outstanding Enterprise in Applying the New
Development Philosophy” in Tianfu New Area,
Sichuan Province

四川天府新区兴隆街道
2023 年度经济发展贡献先进单位
An outstanding organization in promoting
economic development of Xinglong Sub-district,
Tianfu New Area, Sichuan Province, in 2023

西昌钒制品 Xichang Vanadium Products Technology

国家“高新技术企业”称号
National High-Tech Enterprise

攀枝花钒制品分公司 Panzhuhua Vanadium Products Branch

第三届攀枝花市政府质量奖
“The 3rd Panzhihua Government Quality
Award”

重庆钛业 Chongqing Titanium Industry

“重庆市级绿色工厂”
称号
“Green Factory in
Chongqing”

重庆市企业
创新奖
“Chongqing
Enterprise Innovation
Award”

重庆市技术创新
示范企业
“Chongqing Demonstration
Enterprise in Technology
Innovation”

东方钛业 Dongfang Titanium Industry

攀枝花市第一批
“文明形象示范企业”称号
One of the first “Exemplary Enterprises with Outstanding Corporate Image”
in Panzhihua City



党建强企

Empowering the Company Through Party Building

钒钛股份党委认真学习贯彻习近平新时代中国特色社会主义思想 and 党的二十大精神，把党的领导贯穿生产经营、改革发展全过程，坚持党建引领，大抓基层党建，增强党组织政治功能和组织功能，全面贯彻从严治党，着力加强党风廉政建设，构建风清气正良好政治生态；强化队伍建设，打造一支政治坚定、作风过硬、攻坚克难、开拓创新的高素质干部人才队伍，主动应变不畏难，锚定目标不放松，真抓实干不懈怠，以高质量党建引领创建世界一流领军示范企业。

The Party Committee of the company has meticulously studied and implemented Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and the guiding principles from the 20th CPC National Congress, and has incorporated the Party's leadership into the entire process of the company's production, operation, reform, and development. We have consistently upheld the guiding role of Party building, vigorously advancing grassroots Party building to enhance the Party political and organizational functions of Party organizations. Concurrently, the Party Committee has exercised thorough self-governance, intensifying efforts to improve Party conduct and promote integrity, thereby fostering a sound political ecosystem characterized by honesty and integrity within the Party. We have bolstered team-building efforts, with a focus on cultivating a cadre of high-caliber officials and personnel known for their unwavering political commitment, integrity, resilience in the face of challenges, and dedication to innovation. Proactively embracing change without hesitation, the Committee has consistently translated its objectives into tangible actions. Guided by high-quality Party building, the Committee is dedicated to the company's goal of evolving into building a world-class professional leading demonstration enterprise.

党建引领 有力有效
Ensuring robust Party building

坚持“两个一以贯之”，充分发挥党委把方向、管大局、保落实领导作用。深入开展学习贯彻习近平新时代中国特色社会主义思想主题教育，坚持“第一议题”制度，推动党的领导和公司治理深度融合。

Upholding the significant political principle of the Party's leadership over state-owned enterprises and regarding the establishment of a modern enterprise system as the direction of SOE reform, we fully play the role of Party Committee in setting the right direction, keeping in mind the big picture, and ensuring the implementation of Party policies and principles. Meanwhile, we have sustained the educational campaign on thoroughly studying and implementing Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era. We have persistently applied the "paramount topic" system, with the aim of fortifying the integration between the Party's leadership and corporate governance.

组织建设 见行见效
Strengthening Party organizations

从严落实党建工作责任制，与基层党委书记签订党建工作目标管理责任书，督促各级党组织扛起主责、抓好主业、当好主角。全面落实大抓基层党建 23 项重点任务，培训党员、党务人员 1800 余人次，解决基层基础问题 60 余项，扎实推进“学习贯彻二十大、建功鞍钢创一流”主题实践活动，通过搭建“一体、两翼、三融合”共建平台，实现合作共赢，共同发展。

The Party Committee has rigorously implemented the Party building responsibility system and entered into objective-oriented management agreements for Party building with secretaries of grassroots Party committees. This is aimed at urging Party organizations at all levels to shoulder their primary responsibilities, concentrate on their core tasks, and assume a leading role. The Committee has comprehensively undertaken 23 key tasks designed to fortify grassroots Party building, and has provided training for over 1,800 Party members and personnel, and addressed more than 60 foundational issues at the grassroots level. Concurrently, we have actively propelled the campaign with the theme "Studying and Implementing the Guiding Principles of the 20th CPC National Congress and Making Outstanding Contributions to Ansteel's Development." Through the establishment of a "Unified, Bifurcated, and Integrated Thrive" platform, the company's customers have consistently maintained a 100% procurement of the company's products for numerous years.

管党治党 从严从实
Exercising full and rigorous self-governance

组织召开党风廉政建设和反腐败大会，组织开展“清风工程+”专项行动，开展反舞弊、反贿赂、反欺诈专项治理，开展“四费”专项检查。抓实抓细“七个第一课”，强化纪律规矩意识教育。设置举报信箱，公布举报电话，畅通监督渠道。

The Party Committee has convened the conference on improving Party conduct, upholding integrity, and combating corruption, and launched the special campaign "Clean Governance Program+." Concurrently, targeted initiatives have been undertaken to combat fraud, bribery, and deception, alongside specific inspections pertaining to the "Four Expenses." The Party Committee has ensured the effective execution of the "Seven First Lessons" to strengthen education on discipline, rules, and awareness. Moreover, it has established a reporting mailbox, publicized reporting hotlines, ensuring the efficacy of oversight channels.

截至 2023 年底 By the end of 2023

组织党委理论学习中心组
集体学习

11 次

A total of 11 collective study sessions were conducted for the Party Committee's theoretical learning core group

深入学习贯彻党的二十大精神，组织宣讲会

7 场

During which members thoroughly studied and implemented the guiding principles from the 20th CPC National Congress

集中轮训

215 人

Seven lectures were organized, with centralized training involving 215 participants

网络知识竞赛参与答题

664 人次

664 participants participated in an online knowledge competition

完成“万名党员进党校”
培训工程的党员

377 名

377 Party members successfully completed the "Ten Thousand Party Members Study in Party Schools" training program

健全六类人才序列，获评
省级技能人才

2 人

The six categories of skilled personnel have undergone improvements. Two individuals received recognition as provincial-level skilled talents

“攀枝花青技能人才”入选

5 人

Five were selected as "Panzhihua Young Technical Talents." Moreover

攀枝花市级及以上荣誉
专家人才

18 人次

18 titles as honorary experts at the Panzhihua municipal level or higher were attained

获批技能等级认定资质

3 个工种

Qualifications for accrediting skill levels in three job categories were approved

技能员工晋升数量

400 余名

Over 400 skills employees were developed

开展共产党员工程

32 项

The company implemented 32 projects for Party members

“揭榜挂帅”创新创效

项目

50 项

50 projects for innovation and efficiency improvement where the open competition mechanism for selecting the best candidates are adopted

党建共建结对

29 对

A total of 58 Party organizations formed partnerships to collectively advance Party building initiatives

开展廉洁教育

143 次

143 education sessions on upholding integrity and combating corruption were conducted

受教育人数达到

1.97 万人次

19,700 participants were educated

ESG 管理

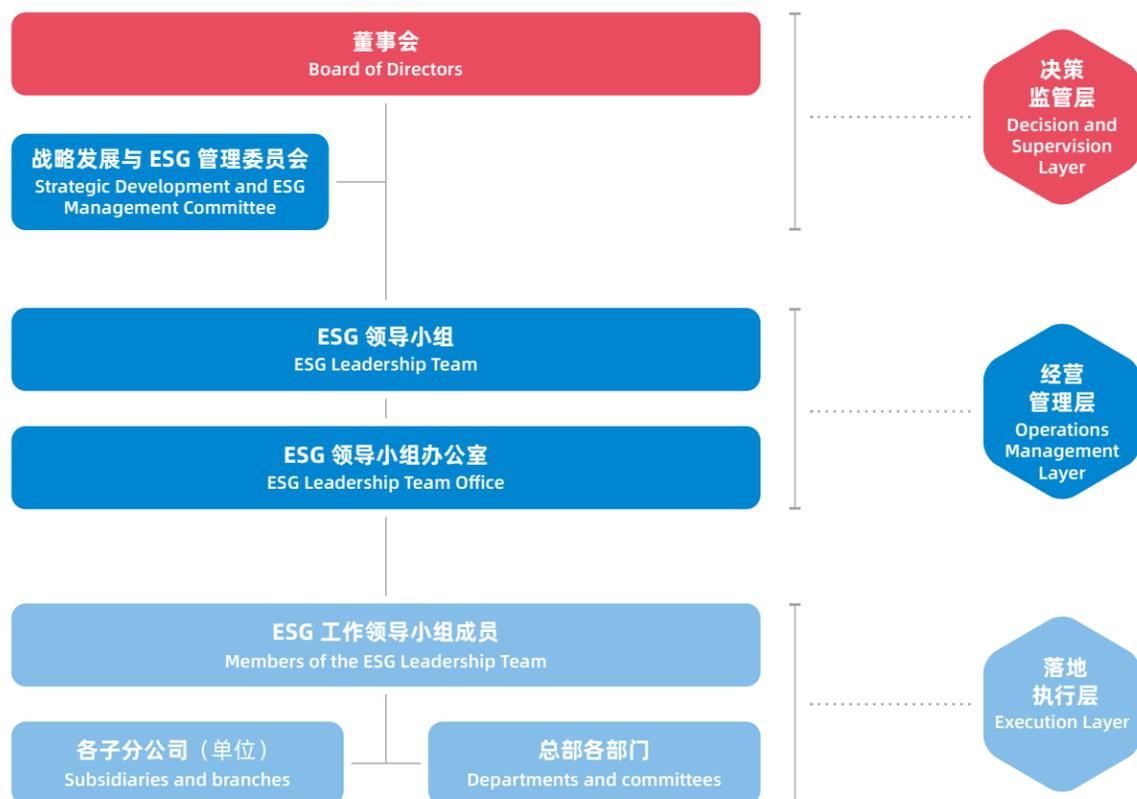
ESG MANAGEMENT

ESG 管理体系

ESG Management System

公司建立起决策监督层 - 经营管理层 - 落地执行层的三层 ESG 管理架构，战略发展与 ESG 管理委员会协助董事会开展 ESG 管理工作。董事会下设 ESG 领导小组，包括 ESG 管理小组办公室及 ESG 领导小组成员，自上而下推动 ESG 指标的管理落地。

The company has established a three-tiered management structure comprising decision and supervision, operations management, and execution. The Strategic Development and ESG Management Committee assists the Board of Directors in ESG management. The Board has established the ESG Leadership Team, comprising the ESG Leadership Team Office and members of the ESG Leadership Team, to oversee the comprehensive management and implementation of ESG indicators throughout the organization.



职责 Responsibility

董事会 Board of Directors

- 审议批准公司 ESG 愿景、管理原则与规划
- 听取经营管理层有关 ESG 工作汇报
- 批准 ESG 披露政策与报告
- 监督公司 ESG 机遇与风险识别过程
- 判定 ESG 重要风险和机遇
- 监督、评价与指导 ESG 有关事宜
- Reviewing and approving the company's ESG vision, management principles, and plans
- Receiving updates from the operations management layer on ESG initiatives
- Authorizing ESG disclosure policies and reports
- Overseeing the company's identification process for ESG opportunities and risks
- Assessing and determining significant ESG risks and opportunities
- Supervising, evaluating, and providing guidance on ESG-related matters

战略发展与 ESG 管理委员会 Strategic Development and ESG Management Committee

- 协助董事会监督和指导公司 ESG 愿景、原则及政策的制定、并提出更新建议
- 参与公司 ESG 重大风险与机遇的识别和评估，包括但不限于气候变化、环境、人权、健康与安全、人力资源等
- 监督和指导公司 ESG 新趋势、新风险，以此评估 ESG 架构与管理模式的有效性，并就其改进方向提供指引
- 监督和指导公司 ESG 目标制定，定期审核 ESG 目标进度、达成情况，并提出改进建议
- 监督和指导公司 ESG 管理规划实施情况，结合 ESG 法律法规及监管要求，以确保管理规划与时俱进
- 监督和指导公司 ESG 议题重要性评估及汇报过程
- 审阅并向董事会提报公司年度 ESG 报告及相关报告
- Assisting the Board of Directors in overseeing and guiding the development of the company's ESG vision, principles, and policies, and offering recommendations for updates in these areas
- Engaging in the identification and assessment of substantial ESG risks and opportunities, including but not limited to climate change, environmental factors, human rights, health and safety, and human resources
- Overseeing and providing guidance on the identification of new trends and risks in ESG, evaluating the effectiveness of the company's ESG framework and management model, and providing direction on enhancements to the framework and model
- Supervising and guiding the establishment of ESG goals, conducting regular reviews of the progress toward these goals, and offering suggestions for improvement
- Supervising and guiding the implementation of the company's ESG management plan, and ensuring its alignment with relevant laws, regulations, and regulatory requirements on ESG stays current
- Supervising and guiding the assessment and reporting process on the significance of ESG topics
- Reviewing and reporting to the Board of Directors on the company's annual ESG report and other related reports

职责 Responsibility

ESG 领导小组 ESG Leadership Group

- 审核 ESG 管理总体目标和规划
 - 审核公司 ESG 管理制度
 - 审核 ESG 议题评估结果和 ESG 重要议题清单
 - 审核公司 ESG 报告，评价公司 ESG 工作成果
 - 研究主要投资者、重要持有人的 ESG 投资整体趋势及 ESG 评级，提出改进要求
- Reviewing the overall objectives and plans of the company's ESG management
 - Conducting audits on the company's ESG management system
 - Auditing the results of assessments on ESG topics and the list of significant ESG topics
 - Auditing the company's ESG reports and assessing the company's accomplishments in the ESG domain
 - Investigating the overarching trends in ESG investments by major investors and significant shareholders, along with their ESG ratings, and suggesting improvement requirements

ESG 领导小组 成员 Members of the ESG Leadership Team

- 承接 ESG 管理总体目标，设定与业务相关的 ESG 指标目标值，制定工作计划和保障措施，有效协同利益相关方资源，围绕关键议题开展责任实践
 - 对业务相关的 ESG 指标进行日常跟进、管理和统计
 - 按季度汇总业务相关 ESG 指标目标完成情况，提交 ESG 主管部门汇总
 - 配合编制公司年度 ESG 报告，积极通过公司官网、媒体报道、公关活动等渠道宣传公司年度 ESG 报告
- Assuming responsibility for the overall ESG management objectives delegated by the Leadership Team, establishing ESG indicator targets pertinent to the company's business operations, and crafting work plans and supportive measures; efficiently coordinating resources from stakeholders and implementing initiatives around key topics
 - Regularly monitoring, managing, and collating ESG indicators relevant to the company's business operations
 - Summarizing the completion status of business-related ESG indicator targets on a quarterly basis and submitting them for consolidation to the ESG supervisory department
 - Providing assistance for the preparation of the company's annual ESG report and actively disseminating the report through various channels such as the company's official website, media coverage, public relations events, etc.

ESG 工作进展

Progress in ESG Initiatives

一直以来，钒钛股份持续提升公司治理水平，强化投资者沟通交流，完善企业 ESG 管治体系，荣获第十二届、第十三届中国上市公司投资者关系天马奖“最佳董事会”奖、“2022 年度最佳价值传递 IR 团队”奖、国新杯·ESG 金牛奖碳中和五十强；连续 15 年披露年度社会责任报告 / ESG 报告，荣获由《可持续发展经济导刊》杂志社和金蜜蜂智库联合颁发的“金蜜蜂 2023 优秀企业社会责任报告——环境责任信息披露奖”。多项殊荣印证了钒钛股份在公司治理、投资者关系管理、坚持绿色发展及可持续发展方面的显著成果。

Over the years, Pangang Group Vanadium & Titanium Resources Co., Ltd. has consistently enhanced corporate governance, fortified investor communication, and refined the corporate ESG governance system. The company has been recognized with prestigious awards, including the “Best Board of Directors” and the “Best Value Delivery IR Team of 2022” at the 12th and 13th Tianma Award for Investor Relations of Listed Companies in China, respectively. Additionally, it has earned the “Top 50 Enterprises in Carbon Neutrality at the CRHC Cup ESG Golden Bull Award” and other distinctions. Furthermore, the company has demonstrated transparency by publishing its annual social responsibility/ESG reports for 15 consecutive years, and has received the “Environmental Responsibility Information Disclosure Award” on the 2023 GoldenBee CSR Report Honor Roll, which was jointly presented by the China Sustainability Tribune magazine and the GoldenBee Think Tank. These accolades underscore the company's notable achievements in corporate governance, investor relations management, green development, and sustainable development.



荣获国新杯·ESG 金牛奖碳中和五十强
Top 50 Enterprises in Carbon Neutrality at
the CRHC Cup ESG Golden Bull Award



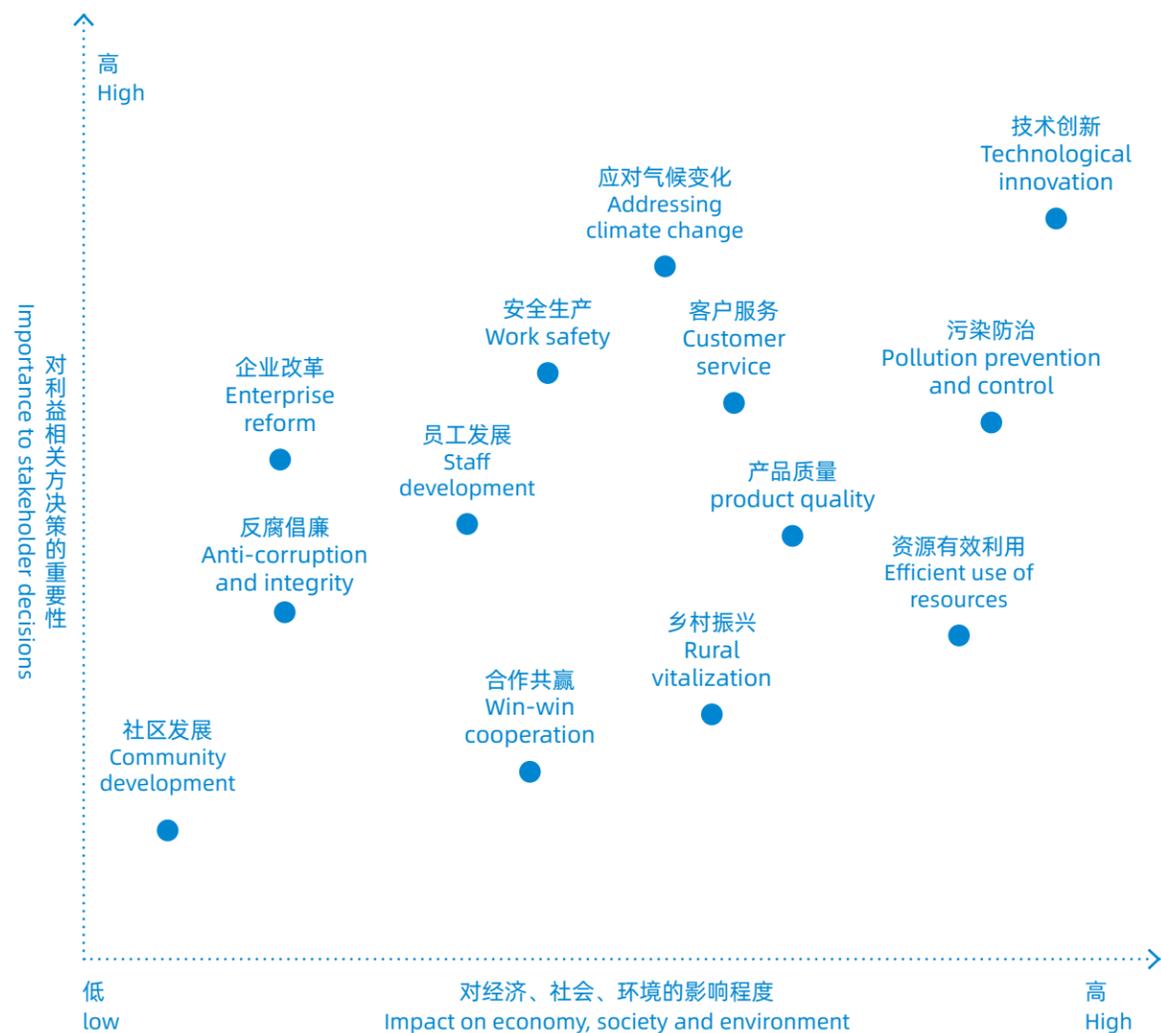
荣获金蜜蜂 2023 年优秀企业社会责任报告“环境责任信息披露奖”
The “Environmental Responsibility Information Disclosure Award” on the
2023 GoldenBee CSR Report Honor Roll

实质性议题识别

Identification of materiality issues

我们根据公司战略重点、行业特点、社会责任标准，建立公司可持续发展议题库；面向投资者、客户、供应商、社区等关键利益相关方开展调研，识别相关方关注重点；结合 ESG 相关指引文件、可持续发展相关标准、相关方关注度及对公司的影响程度进行议题筛选；由公司董事会、内外部专家对 ESG 议题的重要性进行审核，选定重点披露的实质性议题。

Aligning with the company's strategic focus, industry characteristics and social responsibility standards, we sort out and establish the company's sustainability issues database. In addition, research is carried out on key stakeholders such as investors, customers, suppliers and communities to identify the concerns of stakeholders. Issues are thus screened in accordance with ESG-related guidance documents, sustainability standards, the concerns of the stakeholders and the impact on the company. Then the company's Board of Directors and experts review the materiality of ESG issues and select the materiality issues for key disclosure.



利益相关方沟通管理

Stakeholder engagement

公司关注利益相关方的诉求，通过不同途径与利益相关方进行沟通，及时回应利益相关方合理诉求。

To track the demands of stakeholders, we communicate with stakeholders through different channels, and timely respond to their reasonable demands.

利益相关方 Stakeholders	期望与要求 Expectations and requirements	沟通方式 Communication mode	我们的回应 Our response
政府及监管机构 Government and regulatory agencies	<ul style="list-style-type: none"> 促进就业 Promoting employment 守法合规 Ensuring legal compliance 贡献地方经济发展 Contributing to local economic development 	<ul style="list-style-type: none"> 高层会晤 High-level meeting 交流会 Exchange meeting 信息报送 Information submission 地企专职联络机构 Full-time liaison organization of local enterprises 	<ul style="list-style-type: none"> 主动纳税 Active tax payment 增加就业岗位 Job creation 依法合规治企 Law-based governance
股东及投资者 Shareholders and investors	<ul style="list-style-type: none"> 提高企业盈利能力 Improving profitability 提高投资项目回报率 Increasing the return rate of investment projects 提质增效 Improving quality and efficiency 安全生产 Securing work safety 	<ul style="list-style-type: none"> 股东大会 Shareholder's Meeting 信息披露 Information disclosure 经营业绩考核 Business performance assessment 投资者沟通交流 Investor communication 	<ul style="list-style-type: none"> 保障股东权益 Protecting shareholders' rights 加强审计与风险管控 Strengthening audit and risk control 提高创新能力 Improving innovation ability 信息化建设 Informatization 加强安全生产管理 Strengthening work safety management
员工 Employees	<ul style="list-style-type: none"> 薪酬福利保障 Compensation and benefit guarantee 职业发展 Career development 人文关怀 Humanistic concern 	<ul style="list-style-type: none"> 职工代表大会 Workers' Congress 座谈会 Seminar 网络沟通 Online communication 	<ul style="list-style-type: none"> 提供有竞争力的薪酬 Providing competitive compensation 开展职业教育培训 Carrying out vocational education and training 建立职业发展通道 Establishing career development channels

利益相关方 Stakeholders	期望与要求 Expectations and requirements	沟通方式 Communication mode	我们的回应 Our response
员工 Employees	<ul style="list-style-type: none"> 安全与权利保护 Safety and rights protection 沟通与民主管理 Communication and democratic management 	<ul style="list-style-type: none"> 合理化建议 Feasible proposal 信息公开 Information disclosure 	<ul style="list-style-type: none"> 关爱员工 Caring for employees 提供防护设备设施与安全培训 Providing protective equipment and safety training
客户 Customers	<ul style="list-style-type: none"> 信守承诺 Honoring commitments 质高价优的产品和服务 Providing high-quality products and services with better price 个性化服务 Offering personalized services 信息保密 Guaranteeing confidentiality of information 	<ul style="list-style-type: none"> 销售代表日常联络 Daily contact with marketing representatives 展销会 Exhibition 客户大会 Customer Conference 定期走访 Regular visits 征求意见 Opinion solicitation 	<ul style="list-style-type: none"> 关注客户需求 Focusing on customer needs 强化质量管理 Strengthening quality management 提高服务能力 Improving service capability 产品创新 Realizing product innovation 加强与客户沟通交流 Strengthening communication with customers 重视客户信息保护 Protecting customer information
环境 Environment	<ul style="list-style-type: none"> 节约资源 Saving resources 污染防治 Pollution prevention 减少废弃物排放 Reducing waste discharge 应对气候变化 Tackling climate change 保护生态环境 Protecting the environment 	<ul style="list-style-type: none"> 环境管理 Environmental management 资源再生与利用 Resource recycling and utilization 落实节能减排 Energy conservation and emission reduction 加强生态建设 More efforts on ecological protection 	<ul style="list-style-type: none"> 开展能源管理 Energy management 开展水资源管理 Water resources management 进行污染防治 Pollution control 提高废弃物利用率 Improvement of waste utilization rate 创新绿色工艺及产品 Innovative green technology and products 推进厂区绿化 Plant greening 推行绿色办公 Promote green office

利益相关方 Stakeholders	期望与要求 Expectations and requirements	沟通方式 Communication mode	我们的回应 Our response
供应商 Suppliers	<ul style="list-style-type: none"> 诚实守信 Integrity 政策稳定 Policy stability 公开、公平、公正 Open, fair and just principle 互利共赢 Win-win cooperation 	<ul style="list-style-type: none"> 现场考察 On-site visit 合同谈判 Contract negotiation 定期走访 Regular visits 招标会议 Tender meeting 征求意见 Soliciting opinions 	<ul style="list-style-type: none"> 信守合同 Contract fulfillment 平等协商 Equal consultation 实施阳光采购 Transparent procurement 公开采购信息 Public procurement information 合规采购 Compliant procurement
行业与协会组织 Industry associations	<ul style="list-style-type: none"> 公平竞争 Fair competition 行业发展与进步 Industry progress 	<ul style="list-style-type: none"> 加入协会并担任职务 Joining an association and holding a post 参与同行研讨、交流 Participating in peer discussion and exchange 	<ul style="list-style-type: none"> 参与标准制定等活动 Participating in standard formulation and other association activities 参加展会、交流会 Attending exhibitions and exchange meetings 开展政企、校企等多方合作 Launching government-enterprise cooperation and university-enterprise cooperation
社区、公众与媒体 Communities, the public and media	<ul style="list-style-type: none"> 支持社区发展 Supporting community development 成为履行社会责任的模范 Being a CSR model 信息公开、透明 Offering open and transparent information 	<ul style="list-style-type: none"> 社区共建 Contribution to community development 共同开发项目 Joint development of projects 定期交流 Regular communication 媒体沟通 Media communication 	<ul style="list-style-type: none"> 投身社区建设 Engagement in community development 支持文化建设 Support for cultural progress 参与公益志愿活动 Participation in voluntary activities 及时发布相关信息 Release of relevant information of the company in time

贡献联合国可持续发展目标 SDGs

CONTRIBUTIONS TO THE UNITED NATIONS' SUSTAINABLE DEVELOPMENT GOALS (SDGS)

1 无贫穷

- 做好定点帮扶工作
- 积极投入公益慈善
- Carrying out targeted assistance work
- Actively investing in charity

2 零饥饿

- 在贵州省盘州地区推进现代乡村产业体系建设
- Promoting the establishment of modern rural industrial system in Panzhou, Guizhou province

3 良好健康与福祉

- 建立公司安全管理体系
- 保障员工职业健康与安全
- Establishing the Company's safety management system
- Ensuring the occupational health and safety of employees

4 优质教育

- 实施人才培养项目
- 开展技术技能培训、技能等级认定
- 实施教育帮扶
- Implementing talent training projects
- Offering out technical skill training and accrediting skill levels
- Implementing educational assistance

5 性别平等

- 董事会多元化
- 坚持平等雇佣，禁止性别歧视
- 注重女性关怀
- Diversifying the Board of Directors
- Adhering to equal employment and prohibiting gender discrimination
- Giving special care for female employees

6 清洁饮水和卫生设施

- 强化用水、排水管理，减少废水对环境的影响
- Strengthening water and drainage management to reduce the impact of wastewater on the environment

7 经济适用的清洁能源

- 加强节能降耗，提高能源使用效率
- 布局新能源领域，推动钒在储能领域的应用发展
- Strengthening energy conservation and consumption reduction, and improving energy efficiency
- Developing businesses of new energy and promoting the application and development of vanadium in energy storage

8 体面工作和经济增长

- 尊重和保障员工合法权益
- 提供职业发展和培训的机会
- 按时足额缴纳社会保险，禁止强制劳动
- 关心关爱员工
- Respecting and protecting the legitimate rights and interests of employees
- Providing opportunities for career development and training
- Paying social insurance in full and on time, and prohibiting forced labor
- Caring for employees

9 产业、创新和基础设施

- 强化自主创新能力
- 知识产权管理
- 推动产业结构调整升级
- Strengthening independent innovation capabilities
- Intellectual property management
- Promoting industrial structure adjustment and upgrading

10 减少不平等

- 坚持男女平等，关爱少数民族员工、残障人士及其他少数群体
- Adhering to gender equality, caring for ethnic minority employees, people with disabilities, and other minority groups

11 可持续城市和社区

- 改善社区居住环境
- 保护生态环境
- Improving the community living environment
- Protecting the ecological environment

12 负责任消费和生产

- 提高水资源利用率
- 废水、废气及固体废弃物规范化处理
- 践行绿色办公
- Improving water resource utilization efficiency
- Standardizing the treatment of wastewater, exhaust gas, and solid waste
- Implementing green office practices

13 气候行动

- 碳排放管理体系建设
- 加强应对和适应气候变化的能力
- 布局清洁能源
- 宣传低碳环保理念
- Developing carbon emission management system
- Strengthening the capability to respond to and adapt to climate change
- Developing clean energy
- Promoting the concept of low-carbon and eco-friendly philosophy

14 水下生物

- 加强水资源管理，减少废水排放
- Strengthening water resource management and reducing wastewater discharge

15 陆地生物

- 生态环境保护
- 厂区环境改善
- Ecological environment protection
- Improvement of factory environment

16 和平、正义与强大机构

- 加强党风廉政建设
- 坚持依法治企、合规经营
- 构建权威高效的审计监督体系
- Strengthening the building of Party conduct and clean governance
- Adhering to the law-based governance and compliant operation
- Building an authoritative and efficient audit supervision system

17 促进目标实现的伙伴关系

- 深化行业交流与合作
- 加强供应商培训，打造责任供应链
- Deepening industry exchanges and cooperation
- Strengthening supplier training and building a responsible supply chain



专业领军 高质高效发展

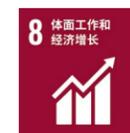
Striving for High-Quality Development Based on Our Transition into a Professional Leading Demonstration Enterprise



钒钛股份走出一条独具特色的攀西钒钛资源综合利用创新发展之路，成为国内行业的引领者。2023 年 3 月，钒钛股份入选国务院国资委创建世界一流专精特新示范企业。公司聚焦国家战略和市场需求，不断强化自主创新能力，加强核心技术攻关，推动数字化创新，增强产业发展后劲，以新质生产力塑造新的核心竞争力和发展新动能。

Pangang Group Vanadium & Titanium Resources Co., Ltd. has embarked on a distinctive path, dedicated to the comprehensive utilization of vanadium and titanium resources in the Panxi region, and became a leader in the domestic industry. In March 2023, the company was included in the list of building world-class specialized and sophisticated demonstration enterprises released by the SASAC. Focused on national strategies and market demands, we have continuously enhanced our independent innovation capabilities and strengthened breakthroughs in core technologies. Simultaneously, we have been driving digital innovation to boost industry vitality, shape new core competitiveness, and foster new development dynamics.

贡献联合国可持续发展目标
Contribution to UN SDGs



构建数字化钒钛产业体系

Building a digitalized vanadium-titanium industry system

钒钛股份深入应用新一代信息技术，率先在国内钛渣冶炼生产、钒制品生产、硫酸法钛白生产等长流程钒钛生产领域，建成并投运 MES 系统，在国内钒制造领域使用 5G 技术，将 AGV 无人叉车、工业机器人等智能装备融合应用在钒制造领域，建成两化融合生产示范线。

在西昌钒制品现场生产钒检测区域，每天需要化检验的数据多达上百个。新投用的远程网络计量化验系统，能够实现平台数据资源共享，大大简化工作流程，检测人员可以直接查询样品化验的分析数据，提高工作效率。

此外，重庆钛业智能化示范线、钛冶炼产线生产集控等数字化智能化转型项目、西昌钒制品智能工厂项目稳步推进。新一代数智化技术与产业制造技术，在钒钛股份深度融合。一个“从分散到集成，从 L0-L4 汇聚”的数字化钒钛产业体系，已雏形初现。

Pangang Group Vanadium & Titanium Resources Co., Ltd. has extensively applied next-generation information technology, and pioneered the development and application of Manufacturing Execution Systems (MES) in various long-process vanadium-titanium production fields in China, including titanium slag smelting, vanadium products manufacturing, and sulfuric acid-method titanium dioxide production. Meanwhile, the company has taken the lead in utilizing 5G technology in the domestic vanadium manufacturing sector, integrating intelligent equipment such as AGV unmanned forklifts and industrial robots. This effort has resulted in the establishment of a demonstration production line characterized by the integration of informatization and industrialization.

At Xichang Vanadium Products Technology's production site, the vanadium detection area deals with hundreds of data points that require chemical testing daily. The recently deployed remote measurement and testing system has enhanced the sharing of platform data, leading to a substantial streamlining of the workflow. As a result, testing personnel can now directly access analytical data from sample tests, which has led to a substantial improvement in their work efficiency.

Furthermore, the digital and intelligent transformation projects of Chongqing Titanium Industry's demonstration intelligent production line and titanium smelting production line, along with Xichang Vanadium Products Technology's smart factory project, have progressed steadily. At the company, the next-generation intelligent technologies and industrial manufacturing methods have been intricately incorporated, and a digitalized vanadium-titanium industry system is gradually emerging, converging "from decentralization to integration and from L0 to L4."

建设现代化产业体系

Developing a Modern Industrial System

建设现代化产业体系，引导资源向关键领域集聚，是当前推动企业发展的关键命题。过去的一年，钒钛股份不断适应发展阶段性特征，一手抓产线升级，一手抓加速布局，塑造独特竞争优势，新赛道越发宽广。

Currently, establishing a modern industrial system and channeling resources into key areas are top priorities for driving enterprise development. In the past year, Pangang Group Vanadium & Titanium Resources Co., Ltd. consistently adjusted to the characteristics of ongoing development, hastening its strategic layout while progressing with upgrades to production lines. As a result, the company has forged distinctive competitive advantages, paving the way for broader prospects in its development.

产线升级

Production line upgrading

公司高质量推进重点项目建设，基本建成四川省重点项目、打造鞍钢“第三极”的标志性工程之一的攀钢 6 万吨 / 年熔盐氯化法钛白项目，随着生产线建成投产，公司钛白粉产能将达到 29.5 万吨 / 年。

The company has promoted the construction of high-quality key projects. In 2023, we substantially completed a key project in Sichuan Province, which is also a landmark initiative in establishing Ansteel's "third pole" - Pangang Group's 60,000 tons/year titanium dioxide production project based on molten salt chlorination method. With the gradual commissioning of this production line, the company's titanium dioxide capacity will reach 295,000 tons/year.



6 万吨 / 年熔盐氯化法钛白项目全景图

A panorama of the 60,000 tons/year titanium dioxide production project based on molten salt chlorination method

案例 CASE



25.3 万吨 / 年破磨线热负荷试车成功

Successful hot-load testing of the 253,000 tons/year titanium slag crushing and grinding production line

25.3 万吨 / 年钛渣破磨线项目是钛冶炼产线 2023 年的重点工作，项目投产后，可有效满足攀钢 6 万吨 / 年熔盐氯化法钛白项目及下游客户对钛渣原料的颗粒要求，助力公司钛产业发展。钛渣破磨产线热负荷试车于 5 月 30 日取得一次性成功。

The 253,000 tons/year titanium slag crushing and grinding production line project stood out as a priority in the titanium smelting production line for 2023. Once operational, it will efficiently meet the particle specifications of the 60,000 tons/year titanium dioxide production project based on molten salt chlorination method of Pangang Group as well as those of downstream customers for titanium slag raw materials, thereby contributing to the development of the company's titanium sector. The hot-load testing of the titanium slag crushing and grinding production line was successfully completed in one go on May 30.



25.3 万吨 / 年破磨线项目
The 253,000 tons/year titanium slag crushing and grinding production line project

产业布局

Industrial layout

公司聚焦新能源新材料领域，加速推进钒产业化应用，牵手大连融科合作建设的 2000 立方米 / 年钒电解液产线建成运营，2023 年向大连融科销售的钒产品 8700 余吨（折合五氧化二钒），助力下游企业利用钒储能优势打造光储一体化“绿电”项目。钒电池电解液、多钒酸铵产品在新能源领域投放同比实现快速增长，公司已具备向高端用户批量供应钒铝合金的能力，产品成功打入专项领域，中高端产品销售占比持续提升，公司增强未来钒钛产业发展根基的集聚效应正在显现。

Focusing on new energy and new materials, Pangang Group Vanadium & Titanium Resources Co., Ltd. has expedited the industrial application of vanadium. The 2,000 cubic meters/year vanadium electrolyte production line, established in collaboration with Rongke Power, has been put into operation. In 2023, we successfully supplied Rongke Power with over 8,700 tons of vanadium products (equivalent to vanadium pentoxide), aiding downstream enterprises in leveraging vanadium energy storage advantages to develop integrated "green electricity" projects combining solar power generation and energy storage. The usage of vanadium battery electrolyte and ammonium polyvanadate products in the new energy sector has experienced significant year-on-year growth. The company has achieved the capability to provide large quantities of vanadium-aluminum alloy to high-end customers, with the products successfully penetrating specialized markets. The proportion of sales for the company's mid-to-high-end products has steadily increased, signaling the emerging synergy effect that strengthens the foundation for future development in the vanadium-titanium industry.

案例 CASE



钒融科技钒电解液产线建成

Fanrong Power completes its vanadium electrolyte production line

2023 年 5 月，钒融科技建设的 2000 立方米 / 年钒电解液产线完成设备安装和热负荷试车调试，仅用 12 天打通生产工艺，创造新的行业记录，6 月以来实现连续月达产。该产线的建成标志着钒钛股份在钒储能领域的供应能力得到进一步提升，为后续与大连融科按照《合资协议》共同投资建设 60000 立方米 / 年钒电解液产线提供支撑，有利于推动钒在储能领域的应用发展，助力我国“双碳”目标实现和以新能源为主体的新型电力系统建设。



In May 2023, Fanrong Power completed the equipment installation and hot-load testing for its 2,000 cubic meters/year vanadium electrolyte production line. The production process was established by Fanrong Power in just 12 days, setting a new industry record. Since June 2023, the production line has consistently achieved monthly production. The completion of this line signifies an enhanced supply capability for the company's energy storage, providing support for the subsequent joint investment with Rongke Power in building a 60,000 cubic meters/year vanadium electrolyte production line according to the *Joint Venture Agreement*. Fanrong Power's new production line will boost the application of vanadium in energy storage, contributing to the realization of China's 30·60 Decarbonization Goal and the development of a new electric power system based on new energy sources.

案例 CASE



高纯五氧化二钒产线生产顺行

High-purity vanadium pentoxide production line commences operation

钒钛股份采用具有自主知识产权的常温晶型沉淀生产技术，新建高纯五氧化二钒产线。该产线生产出的高纯五氧化二钒是全钒液流电池及先进钒系合金等战略性新兴产业不可或缺的原料。2023 年高纯粉钒产线完成产量 1001 吨、创效 928.9 万元。

Pangang Group Vanadium & Titanium Resources Co., Ltd. has employed its proprietary room-temperature vanadium crystallization technology to set up a new high-purity vanadium pentoxide production line. The high-purity vanadium pentoxide from this line is a crucial raw material for strategic emerging industries, including all-vanadium redox flow batteries, high-performance lithium-ion batteries utilizing vanadium lithium acid, and advanced vanadium alloys. In 2023, the production line yielded 1,001 tons, resulting in economic benefits totaling 9.289 million yuan.

完善科技创新体系

Improving the Science and Technology Innovation System

钒钛股份聚焦“绿色、高效、高值、智能”四大方向，部署并开展重大关键技术、工艺优化升级、产品品质提升及新产品开发等相关技术研究，强化基础管理，创新体制机制，构建最优品牌及技术能力，为公司生产经营与发展提供强有力的技术支持。

Focusing on the four directions of “green, efficiency, high value, and intelligence”, Pangang Group Vanadium & Titanium Resources Co., Ltd. has strategically engaged in the research and development of key technologies, process optimization and upgrading, product quality improvement, and the development of new products. Simultaneously, the company has enhanced foundational management and innovated organizational mechanisms to establish optimal brands and technological capabilities which will provide robust technological support for production, operation, and development.

提升科技管理水平

Enhancing technology management capability

公司以“第三代技术体系”构建为统领、以“两大创新平台”建设为保障，结合“十四五”钒钛产业发展规划及产品发展规划，持续推进体制机制改革和能力建设，激发科技创新活力。2023 投入研发经费 5.66 亿元，扎实推进各层级科研项目 63 项，获得两级集团科技成果奖 6 项，新增授权专利 70 项，实现科技创效 1.83 亿元。

With the construction of “third-generation technology systems” as a guide and the establishment of the “two major innovation platforms” as a guarantee, the company has consistently pursued institutional reforms and capacity enhancements in line with the development plan of the vanadium and titanium industry and products during the 14th Five-Year Plan period. In 2023, the company invested 566 million yuan in research and development, and steadfastly progressed 63 research projects at various levels. These efforts led to the recognition of six technological achievement awards at both Ansteel and Pangang Group levels. Furthermore, the company secured 70 new authorized patents and generated an economic benefit of 183 million yuan through technological innovations.



2023 年

受理专利

97 件

97 patent applications were submitted

其中发明专利

45 件

comprising 45 invention patents

授权专利

70 件

70 patents were approved

其中发明专利

20 件

with 20 being invention patents

获评国家知识产权优势企业
National Intellectual Property Advantage Enterprise

持续建立健全制度体系，修订发布公司《科技项目与知识产权管理办法》《新产品开发管理办法》《外聘专家管理办法》《技术委员会管理办法》等管理制度。着力提升专利质量和发明专利占比，加强和规范知识产权工作。2023 年，公司获评国家知识产权优势企业。

In our ongoing commitment to enhance our institutional system, we have revised and issued several management regulations, including the *Management Measures for Science and Technology Projects and Intellectual Property*, *Management Measures for New Product Development*, *Management Measures for External Expertise*, and *Management Measures for the Technical Committee*. Simultaneously, we have made a concerted effort to improve the quality of patents and increase the proportion of invention patents, while also enhancing and standardizing our intellectual property initiatives. In 2023, the company achieved recognition as a “National Intellectual Property Advantage Enterprise.”

健全科创制度体系

Establishing a sound institutional system for science and technology innovation

关键技术标准研究

Research on key technical standards

由钒钛股份牵头制订的《钒电池用氧化钒》《钒电池电解液用偏钒酸铵》两个团体标准获中国钢铁工业协会（CISA）批准立项，该标准旨在进一步规范钒电池的含钒原料供应标准，促进钒电池储能产业的健康发展。

The two group standards, *Vanadium Oxide for Vanadium Batteries and Ammonium Metavanadate for Vanadium Battery Electrolyte*, developed under the leadership of Pangang Group Vanadium & Titanium Resources Co., Ltd., have received approval from the China Iron and Steel Association (CISA). These standards aim to enhance the standardization of supply criteria for vanadium-containing materials in vanadium batteries, and promote the sustainable development of the vanadium battery energy storage industry.



加强科研人员保障

Enhancing research and development teams

公司加快建设素质优良的高水平科技人才队伍，夯实创新发展的人才基础。

The company has intensified its endeavors to establish high-caliber research teams and fortify the groundwork for promoting innovation-driven development.

成立新产品、低温氯化达产达效、工艺优化及质量提升 3 个科技攻关队，分别制定科技攻关计划及奖励办法，以及例会及检查、推进制度。各团队活跃在工艺升级、质量提升、新产品研发、产线达产达效攻关的第一线，为开展核心关键技术攻关提供坚实的人员保障。

The company has established three R&B teams responsible for developing new products, improving the low-temperature chlorination demonstration lines, and improving production processes and product quality. Meanwhile, the company has devised research plans, incentive measures, and systems for conducting regular meetings, inspections, and monitoring progress for these teams. Each team is actively engaged at the forefront of process upgrading, quality improvement, new product research and development, and production line optimization. They have played a pivotal role in securing breakthroughs in core technologies in key fields.

发挥高层次技术人才引领作用。完成 10 名首席工程师任期和年度考评，完成特级技师考评工作。

The company has ensured that high-level technical talents can assume leadership roles. In 2023, we concluded the tenure and annual performance evaluations for 10 chief engineers and also finished the assessment of special-grade technicians.



案例 CASE



主研技术获评“四川省科技进步奖”

Winning the “Science and Technology Progress Award of Sichuan Province”

2023 年 3 月，由钒钛股份主研的“介稳诱导高浓度连续沉钒技术及应用”获 2022 年度四川省科学技术进步奖三等奖。该技术解决了沉钒率及产品质量不能兼顾的行业共性技术难题，同时还解决了工艺参数及效果稳定控制的技术难点，对于提高钒资源利用率、降低废水处理能耗具有积极意义，有利于钠化提钒技术向提质增效、节能降耗方向快速发展。

In March 2023, the “Metastable Induction for High-Concentration Continuous Vanadium Precipitation Technology and Its Application,” developed under the leadership of Pangang Group Vanadium & Titanium Resources Co., Ltd., received the third prize of the “Science and Technology Progress Award of Sichuan Province 2022.” This technology addresses the industry-wide technical challenge of balancing the vanadium precipitation rate and product quality. In addition, it resolves technical difficulties related to the stable control of process parameters and effects. The significance of this technology lies in its positive impact on increasing the utilization rate of vanadium resources and reducing energy consumption in wastewater treatment. It is expected to drive the development of sodium-based vanadium extraction technology towards improved efficiency and energy conservation.



推动数字化创新

Advancing Digital Innovation

钒钛股份推进数字化智能化转型，运用信息化智能化手段，加强智能装备、控制系统集成等新技术运用，推进智能工厂建设项目、自动化升级建设项目，全面提升现代化钒钛产业工业数字化水平。公司在国内钒钛行业率先开发应用多个 MES 制造执行系统，以及覆盖钒钛各单元的财务一级核算系统、安全生产管理系统、计量检化验系统，2021 年以来累计完成 6 条产线自动化改造，6 条产线“四化”改造。

Pangang Group Vanadium & Titanium Resources Co., Ltd. has actively propelled the digital and intelligent transformation by harnessing information and smart technologies, and amplifying the adoption of innovations like intelligent equipment and integrated control systems. Concurrently, the company has progressed with initiatives for constructing smart factories and implementing automation upgrades, with the overarching goal of comprehensively enhancing the industrial digitization level of the modern vanadium-titanium industry. The company has been at the forefront of developing and implementing multiple Manufacturing Execution Systems (MES) within the domestic vanadium-titanium industry, and has implemented financial accounting systems, work safety management systems, as well as measurement and testing systems across all units. Since 2021, the company has successfully concluded the automation transformation of six production lines and executed the “automation, informatization, digitization, and intelligent” upgrade for six other lines.

案例 CASE



入选工信部 2023 年度智能制造优秀场景

Securing a place on the MIIT's list of outstanding intelligent manufacturing scenarios in 2023

钒钛股份“智能协同作业—钒氮合金智能制造示范性产线”融合智能装备、自动化、MES、5G 通讯、数字孪生等现代智能技术，通过对生产操作与工序物流转运、产线整体掌控、数据统计进行智能化升级，实现生产作业自动连续运行、生产可视化、产线数字化等功能，有效降低生产成本，显著提升本质安全、劳动生产率、产品质量和作业环境。该产线成功入选工信部 2023 年度智能制造优秀场景。



钒氮合金智能制造示范性产线
The smart manufacturing demonstration line for vanadium nitrogen alloy

The “intelligent collaborative operation - smart manufacturing demonstration line for vanadium nitrogen alloy” at the company incorporates cutting-edge technologies, including intelligent equipment, automation, MES, 5G communication, and digital twin. Through intelligent upgrades to production operations, process logistics, overall line control, and data statistics, the company has achieved automated continuous production, production visualization, and digitalization of the production line. This has resulted in a significant reduction in production costs and a notable improvement in intrinsic safety, labor productivity, product quality, and working conditions. The Ministry of Industry and Information Technology (MIIT) recognized the production line as an outstanding intelligent manufacturing scenario in 2023.



建设西昌钒制品智能工厂

Embarking on the intelligent factory project at Xichang Vanadium Products Technology

西昌钒制品智能工厂项目通过充分融合信息技术、大数据技术、自动化技术和人工智能技术等，实现智能装备、精益生产、智能运维和高效管控的目标，打造“无人工厂”+“智慧大脑”模式的全新数字化钒厂。项目于 2023 年 7 月完成一期建设，经过上线运行，一期项目集控中心、沉淀自动加铰系统及钒铁智能成品库等 7 个子项成功实现氧化钒收率提升等多个预期目标。

The intelligent factory project at Xichang Vanadium Products Technology has successfully realized the objectives of deploying intelligent equipment, implementing lean production practices, ensuring intelligent operation and maintenance, and establishing efficient control mechanisms. This accomplishment stems from the seamless integration of information technology, big data technology, automation technology, and artificial intelligence technology. It has created a new digitized vanadium plant powered by an “unmanned factory” + “smart brain” model. Having concluded its initial construction phase in July 2023, the project's seven sub-projects, which encompass the central control center, the automatic ammonium precipitation system, and the vanadium iron intelligent finished product warehouse, have effectively met various anticipated targets. Notably, these achievements include the enhancement of vanadium oxide yield.



西昌钒制品智慧管控中心
The intelligent control center at Xichang Vanadium Products Technology



求真务实 奠定发展基石

Establishing the Cornerstone of Development with Diligence and Pragmatic Endeavors



钒钛股份始终以“稳健、规范、专业、高效”为治理原则，持续提升企业治理水平，做强顶层设计，深化国企改革，激发发展活力。公司以成本管控为着力点，深挖内潜，做活降本增效大文章，努力实现效益最大化。严守商业道德、强化风险管理，构建合规经营、廉洁高效、运转流畅的机制体制，以保障长期稳健发展。

Pangang Group Vanadium & Titanium Resources Co., Ltd. steadfastly upholds the governance principles of “prudence, standardization, professionalism, and efficiency,” and has consistently refined its corporate governance practices. The company has bolstered top-level planning and deepened SOE reform to invigorate developmental vigor. Prioritizing cost control, the company has explored internal potential, simultaneously reducing costs and improving efficiency to maximize benefits. Concurrently, the company remains committed to upholding business ethics, reinforcing risk management, and instituting a mechanism for compliant, transparent, and seamless operations, thereby safeguarding its long-term, sustainable development.

贡献联合国可持续发展目标
Contribution to UN SDGs



成功实现再融资，增强发展后劲

Successfully concluding refinancing to enhance future development momentum

钒钛股份发挥上市公司直接融资功能，积极对接资本市场，启动向特定对象发行股票项目，成功募集资金 22.8 亿元，保障公司 7 个在建重点项目（钒钛产业重点工程、“四化”升级、技术研发等项目）资金来源，为钒钛产业发展提供重要支撑。

该项目是钒钛股份近十年来进行的首次再融资，是践行党的二十大精神、落实鞍钢集团把钒钛产业确立为“第三极”战略排头兵的决策部署的重要举措；同时也是公司把握资本市场融资时机、运用资本服务钒钛产业实体、引入优质投资者有效策略，有利于公司优化资产负债结构，进一步增强资本实力、市场竞争力和抗风险能力。

公司此次定增募投项目不仅成为全面注册制以来深交所主板首批审核通过的向特定对象发行股票项目。该项目的顺利实施，表明股东及投资者对钒钛产业发展的高度认可和对公司发展前景的强烈看好。

Pangang Group Vanadium & Titanium Resources Co., Ltd. has leveraged its position as a publicly listed company to engage in direct financing and has proactively established connections with the capital market. The company has launched a targeted stock issuance project, securing a successful fundraising of 2.28 billion yuan. This has guaranteed financial backing for seven key projects under construction, including key initiatives in the vanadium-titanium sector, advancements in “automation, information, digital, and intelligent technologies,” and various research and development endeavors. These funds have played a pivotal role in bolstering the development of the vanadium-titanium industry.

The project signifies the company's first round of refinancing in almost a decade and stands as a pivotal initiative in harmony with the guiding principles from the 20th CPC National Congress. It also represents a decisive move in executing Ansteel's decision to position the vanadium-titanium sector as a vanguard in the “third-pole” development strategy. Concurrently, the project embodies the company's effective approach to capitalize on financial opportunities in the market, channeling funds to support entities within the vanadium-titanium sector, and attracting high-quality investors. This initiative is instrumental in optimizing the company's asset-liability structure and will further fortify its capital strength, market competitiveness, and resilience against risks.

The company's targeted share issuance project has become one of the first stock issuance initiatives directed at specific entities approved by the Shenzhen Stock Exchange Main Board since the full implementation of the registration-based IPO system. The success of this project underscores the substantial support from shareholders and investors for the development of the vanadium-titanium industry and reflects a robust optimism regarding the company's future prospects.

完善公司治理

Enhancing Corporate Governance

钒钛股份把加强党的领导和完善公司治理有机统一，建立健全党委把关定向、董事会依法依规决策、经理层贯彻落实的组织架构，不断提升公司运作的规范性和有效性。公司建立完善党委落实全面从严治党主体责任清单、“三重一大”决策清单、党委前置研究讨论事项清单，高效有序推动“党建进章程”。

We have enhanced corporate governance while concurrently reinforcing Party leadership. We have established a robust organizational structure where the Party Committee provides guidance, the Board of Directors makes decisions in compliance with laws and regulations, and the management is accountable for implementation. This approach aims to continually enhance the standardized and effective operation of the company. To efficiently integrate Party building into the constitution, the company has developed the list outlining the main responsibilities of the Party Committee for exercising full and rigorous self-governance, the decision-making checklist for “major decisions, significant personnel appointments and dismissals, major project arrangements, and large-scale capital operations,” and the list of matters for pre-study and discussion by the Party Committee.

2023 年

召开董事会

7 次

审议通过

51 项议案

7 meetings of the Board of Directors were convened, with 51 resolutions approved after deliberations;

召开监事会

7 次

审议通过

22 项议案

7 meetings of the Board of Supervisors were convened, with 22 resolutions approved after deliberations;

召开股东大会

3 次

审议通过

13 项议案

3 Shareholders' Meetings were convened, with 13 resolutions approved after deliberations;

召开专门委员会会议

9 次

审议通过

19 项议案

9 specialized committee meetings were convened, with 19 resolutions approved after deliberations.



投资者到公司现场调研
Investors conduct an on-site inspection at the Company.

深化国企改革

Deepening SOE Reform

随着国企改革三年行动的收官，钒钛股份正式开启新一轮国企改革深化提升行动，以提高核心竞争力和增强核心功能为重点，在巩固深化三年行动已有成果基础上，补短板、强弱项、固底板、扬优势。

公司推进混合所有制改革，2023 年成功收购攀枝花阳润科技 51% 股权，已并入公司运营管控，提升公司钒产品加工能力，构建发展新格局。实施钒业务、钛渣业务专业化整合，减少厂级机构 2 个、作业区 10 个。成立能源动力中心，推进攀枝花区域能源动力一体化管控。实施公司机关改革，业务模块从 34 个减至 23 个，减幅 32.4%，岗位定员从 130 人减至 96 人，减幅 26.2%。

在收入分配制度改革方面，优化完善年度绩效与薪酬考评 1+N 体系，细化考评要素，突出考评精准，促进薪酬激励更差异化，推动分配改革见行见效，引导岗位价值、业绩价值的有机统一。在混改企业实施职业经理人制度，在干部人事制度改革方面，持续推行“赛马”机制。公司全员劳动生产率较 2020 年提升 151.45%。推进授权放权改革，优化核心业务审批流程，建立双跑评价机制，全面实施契约化管理。

After concluding the three-year action plan for SOE reform, the company has officially entered a new phase to solidify the accomplishments of the past three years. With a focus on enhancing core competencies and capabilities, our objective is to build upon the established outcomes of the action plan by addressing inadequacies, shoring up points of weakness, stabilizing foundations, and leveraging advantages.

While advancing the mixed-ownership reform, we successfully acquired a 51% equity stake in Panzhihua Yangrun Technology in 2023, and integrated it into the company's operational framework. This strategic move has not only boosted the company's vanadium processing capabilities but also accelerated the establishment of a new development paradigm. Concurrently, we have implemented comprehensive integration over vanadium and titanium slag businesses, and reduced two factory-level organization and 10 operation zones. The establishment of the Energy and Power Center has facilitated the coordinated management of energy and power resources in Panzhihua. As a result of organizational reforms, the number of operational modules was reduced from 34 to 23, a decrease of 32.4%, and the number of posts was reduced from 130 to 96, accounting for 26.2%.

In terms of income distribution system reform, we have fine-tuned assessment factors and underscored precision in evaluations, thereby optimizing the 1+N system for annual performance and remuneration assessments. This refinement has enhanced the differentiation of compensation incentives, and facilitated the effective implementation of income distribution reform and the seamless integration of position value and performance value. The professional manager system has been instituted in enterprises undergoing mixed-ownership reform. Regarding the reform of the cadre and personnel system, we have consistently implemented an open competition mechanism. In 2023, the company's overall labor productivity increased by 151.45% compared to 2020. Furthermore, we have spearheaded reform in delegation of authority, streamlined the approval process for core business, and fully embraced contract-based management.

落实降本增效

Reducing Costs and Improving Efficiency

“一切支出皆成本、一切收入皆收益”，2023 年，钒钛股份围绕降本增效目标，同步推进“与行业标杆对先进性，与内部单位对差异性”两种模式，从产量规模、技经指标优化、新投产线和品种结构创效等环节全方位滚动制定降本增效措施，充分释放产量规模，狠抓产线稳定高效运行。2023 年 8 条产线 30 项技经指标完成基本目标，优化技经指标降本 3.268 亿元，实现产量规模效益 6003 万元，实现降本增效完成率 145%。

In 2023, with a primary focus on cost reduction and efficiency improvement, the company examined industry benchmark initiatives and assessed internal unit variations. We systematically devised measures to reduce costs and enhance efficiency, encompassing aspects such as production scale, optimization of technical and economic indicators, as well as the realization of economic benefits from new production lines and the refinement of variety structures. The objective was to fully unleash production capacity and ensure the stable and efficient operation of production lines. By the end of 2023, 30 technical and economic indicators across the eight production lines were successfully met, resulting in a cost reduction of 326.8 million yuan and generating production scale benefits of 60.03 million yuan. The completion rate for cost reduction and efficiency improvement reached 145%.



西昌钒制品职工正在装车发货
Employees of Xichang Vanadium Products Technology loading and shipping goods

钒生产方面

Vanadium production

攀枝花钒制品分公司、西昌钒制品自产氧化钒产量实现历史突破。攀枝花钒制品氧化钒收率超基本目标 0.33%，同比提升 0.69%，创历史最好水平。西昌钒制品氧化钒收率虽较基本目标低 0.10%，但同比提升 0.46%，创历史最好水平。

Both the Panzhihua Vanadium Products Branch and Xichang Vanadium Products Technology have marked historic milestones in vanadium oxide production. Both achieved the best level of vanadium oxide yield in history. The former exceeded the basic target by 0.33% and improved 0.69% year-on-year. The latter attained a vanadium oxide yield that was 0.10% below the base target but improved by 0.46% year-on-year.

钛生产方面

Titanium production

东方钛业、重庆钛业多项产品收率指标取得良好成绩。重庆钛业二氧化钛收率超基本目标 0.24%，同比提升 0.36%，创历史最优；东方钛业二氧化钛收率超基本目标 0.35%，同比提升 0.34%，创历史最优。

Dongfang Titanium Industry and Chongqing Titanium Industry have excelled in various product yield indicators. The former has exceeded the basic target for titanium dioxide yield by 0.35%, marking a year-on-year improvement of 0.34%, reaching a historical peak. Meanwhile, Chongqing Titanium Industry has surpassed the basic target for titanium dioxide yield by 0.24%, reflecting a year-on-year increase of 0.36%, and achieving a historical optimum.

规范稳健经营

Conducting Standardized and Prudent Operations

钒钛股份贯彻习近平法治思想，强化风险管理。公司充分发挥专门委员会功能，将董事会“防风险”职责与内控合规、纪检监察、巡视巡察、内外审计等相结合，构建大监督体系。公司重大投资项目、经济合同、重要决策法律审核 100%。

公司开展防范化解重大生产经营风险专项工作，辨识 5 项重要风险并制定防范措施，印发《2023 年度全面风险管理报告》，并做好风险日常跟进和监测。全面梳理总结内控体系建设与监督工作，系统部署谋划 2023 年内控管理重点工作，印发《2023 年度内控体系工作报告》。开展“制度建设与执行情况监督检查和制度执行不到位审计问题整改回头看”“深化利用境外项目佣金中介费牟取私利专项整治”等专项治理，奠定公司依法合规经营基础。

Upholding Xi Jinping Thought on the Rule of Law, Pangang Group Vanadium & Titanium Resources Co., Ltd. has consistently reinforced risk management. The company has harnessed the capabilities of specialized committees, aligning the Board of Directors' responsibilities for risk prevention with internal control and compliance, disciplinary inspection and supervision, inspection tours, and internal and external audits. This integration has resulted in the establishment of a comprehensive oversight system. Furthermore, all significant investment projects, economic contracts, and important decisions are subject to legal scrutiny.

In 2023, the company initiated a special task to prevent and mitigate significant production and operational risks. Five key risks were identified, and corresponding preventive measures were formulated, leading to the issuance of the *Comprehensive Risk Management Report 2023*. Ongoing monitoring of risks was also ensured. The construction of the internal control system and oversight efforts were comprehensively reviewed and summarized. Key focus areas for internal control management in 2023 were systematically planned and arranged, and the *Report on Internal Control System 2023* was issued. Additionally, specific governance actions were taken, including "oversight and inspection of the construction and execution of systems, review of the resolution of deficiencies in system implementation, and addressing issues identified during audits." Moreover, a special initiative was launched to deepen actions against the use of commissions and intermediary fees from overseas projects for personal gain. These efforts have laid the foundation for the company's lawful and compliant operations.

截至 2023 年底
By the end of 2023

新增审计项目

13 个

13 new audit projects were initiated.

上报审计整改报告

8 个

8 audit and rectification reports were submitted.

审计整改问题

36 项

36 issues identified through audits were resolved.

整改率

100%

A 100% rectification rate for the identified issues was achieved.

对新增审计问题落实
责任考核

2.2 万元

22,000 yuan allocated for accountability assessments related to new audit findings.

法律审核

100%

A 100% rate of legal review was maintained.



攀钢钒制品分公司员工观察设备运转情况
Employees of Panzhihua Vanadium Products Branch observing equipment operation



低碳环保 打造绿色钒钛

Pursuing Green and Low-Carbon Development



钒钛股份以企业绿色低碳发展为目标，以绿色工厂打造为抓手，持续开展环保设备设施升级，实施超低排放改造，深入打好污染防治攻坚战，大力推进生产装置数智化升级，积极应用先进节能技术，全面提升绿色低碳发展能力和水平，为工业绿色发展和工业领域碳达峰碳中和贡献力量。

Pangang Group Vanadium & Titanium Resources Co., Ltd., committed to achieving green and low-carbon development, has established green factories and continually upgraded equipment and facilities to enhance environmental sustainability. The company has undertaken ultra-low emission transformations, maintained consistent efforts in pollution prevention, and actively promoted the digital upgrade of production facilities. By actively applying state-of-the-art energy-saving technologies, we seek to comprehensively improve our capabilities in green and low-carbon development. In doing so, we are contributing to industrial green development and propelling the industry towards achieving carbon peaking and carbon neutrality.

贡献联合国可持续发展目标
Contribution to UN SDGs



“钛液 MVR 蒸发浓缩系统” 助力节能减排

Promoting energy conservation and emission reduction with the new MVR titanium liquid evaporation and concentration system

在第一套钛液 MVR 蒸发浓缩系统运行一年后，钒钛股份第二套钛液 MVR 蒸发浓缩系统也于 2023 年 7 月正式进行带料试车并成功出料，为公司实现节能减排、优化生产流程做出巨大贡献。

钛液 MVR 蒸发浓缩系统利用蒸汽压缩机压缩二次蒸汽，充分利用废弃的蒸汽、回收潜热，依靠蒸发器自循环实现蒸发浓缩的目的。这套系统能优化蒸汽的使用方式，比传统蒸发器节约 80% 以上的能源和 90% 以上的冷凝水，并减少 50% 以上的占地面积。两套钛液 MVR 蒸发浓缩系统同时投入生产后，吨偏钛酸蒸汽消耗降低约 1.1 立方米，成本节约 200 元，减少生产过程对污循环系统的依赖；同时采用先进工艺控制技术和自动化系统，能提高生产效率和能源利用率，助力钒钛股份实现“低碳、绿色、环保”的生产方式。

After one year of operation of the first MVR titanium liquid evaporation and concentration system, the company's second system of the same kind officially underwent material-feeding trials in July 2023 and successfully completed the operation. The new system has significantly contributed to the company's efforts in energy conservation, emission reduction, and the optimization of production processes.

The MVR titanium liquid evaporation and concentration system utilizes a steam compressor to compress secondary steam, maximizes the utilization of waste steam, and recovers latent heat. It relies on the self-circulation of the evaporator to achieve efficient evaporation and concentration. The system has optimized steam usage, leading to savings of over 80% in energy and more than 90% in condensate compared to traditional evaporators. Additionally, it has reduced the overall footprint by over 50%. Following the operation of both systems, the steam consumption for each ton of metatitanic acid has decreased by approximately 1.1 cubic meters, resulting in a cost saving of 200 yuan and a reduced dependency on the wastewater circulation system in the production process. The simultaneous adoption of advanced process control technology and automation systems has enhanced production efficiency and energy utilization, enabling the company to realize a “low-carbon, green, and environmentally friendly” production mode.

严格环境管理

Conducting Rigorous Environmental Management

钒钛股份严格落实生态环境保护工作要求，健全环境管理体系并有效运行，压实环境保护主体责任，夯实环境基础管理。

The company has diligently adhered to requirements concerning ecological and environmental protection. We have consistently enhanced the environmental management system while ensuring its effectiveness. We also prioritize fulfilling primary responsibilities for environmental protection to strengthen the foundation of environmental management.

落实环境目标

Enforcing environmental objectives

公司制定年度目标并采取一系列具体措施，全面推进节能减排、资源循环利用和生态环境保护工作，确保各项任务落到实处。2023 年，公司实现环保方面零处罚目标，各项主要污染物排放量均在指标及排污许可证管控范围内。重庆钛业、东方钛业、攀枝花钒制品分公司、钛业公司均被评为省、直辖市级 2022 年度环保诚信企业；国钛科技被评为攀枝花市环保诚信企业。

We establish annual objectives and implement a series of specific measures to comprehensively advance the effective execution of initiatives related to energy conservation, emissions reduction, resource recycling, and environmental protection. In 2023, we successfully met our goals of zero penalties for environmental incidents. Furthermore, emissions of major pollutants were controlled within the specified limits and the scope of pollutant discharge permits. In 2023, Chongqing Titanium Industry, Dongfang Titanium Industry, Panzhihua Vanadium Products Branch, and Titanium Industry Company were all recognized as “Enterprises of Integrity in Environmental Protection” at the provincial or municipality level for the year 2022. Guotai Science & Technology received acknowledgment as an “Enterprise of Integrity in Environmental Protection” in Panzhihua.

单位：吨

Unit: Ton

	化学需氧量 COD	氨氮 Ammonia nitrogen	二氧化硫 SO ₂	氮氧化物 NOx	颗粒物 Particulate matter	备注 Notes
2023 年排放量 Total discharge in 2023	55.37	3.79	351.06	296	218.48	不含阳润科技 Yangrun Technology not included
2023 年管控量 Permissible pollutant discharge for 2023	160	21	500.073	475	290	不含阳润科技 Yangrun Technology not included
2022 年排放量 Total discharge in 2022	46	4	364	294	203.89	不含阳润科技 Yangrun Technology not included

健全环保制度

Improving environmental protection systems

以环保法律法规为核心，每月动态识别国家、省、市生态环境主管部门发布的法规、政策、标准，组织各单位贯彻学习，适时更新公司环境保护相关管理办法，2023年修订《危险废物管理办法》《核与辐射管理办法》《绿化管理办法》《环境保护责任制》。

Complying with environmental laws and regulations, we dynamically identify regulations, policies, and standards issued by national, provincial, and municipal ecological and environmental authorities on a monthly basis, and coordinate with various units to facilitate the study and implementation of these documents. Meanwhile, we ensure timely updates to management measures associated with environmental protection. In 2023, revisions were made to the *Management Measures for Hazardous Waste, Management Measures for Nuclear and Radiation, Greening Management Measures, and Environmental Protection Responsibility System*.

项目环保管理

Environmental management of projects

严把项目环保准入关，做好新、改、扩建设项目产业政策符合性分析、环境影响评价及竣工环保验收工作，保障建设项目合法开工建设、合规生产经营。

We rigorously manage the environmental approval process for projects, conducting analyses of industry policy compliance, environmental impact assessments, and environmental acceptance for new construction, renovation, and expansion projects. This ensures that all projects commence and operate in accordance with regulations.

环保信息化平台

Environmental information platform

充分利用环保信息化平台做好法规识别与应用、环保设施运行、环境监测记录、环保税核算等环保基础管理工作，提升环保管理的及时性、有效性、精准性、规范性。

Through comprehensive utilization of the environmental information platform, we enhance the fundamentals of environmental management, including regulatory identification and application,

operation of environmental facilities, monitoring and record-keeping of environmental data, and environmental tax accounting. This is aimed at improving the timeliness, effectiveness, precision, and standardization of our environmental management.

监督检查及应急管理

Supervision, inspection, and emergency management

开展危险废物管理专项督查，建立问题清单，已全部完成整改；各单位均按计划开展突发环境事件专项演练；北海铁合金、国钛科技完成《突发环境事件应急预案》修订及备案。

We have conducted a specialized inspection focused on hazardous waste management and compiled a list of identified deficiencies. All identified problems have been rectified. In addition, each unit has conducted specific drills for unexpected environmental incidents as per the schedule. Beihai Ferroalloy and Guotai Science & Technology have completed the revision and filing of the *Emergency Response Plan for Unexpected Environmental Incidents*.

环保能力建设

Enhancing environmental protection capabilities

开展危险废物标志管理、在线监测管理知识等培训；组织参与生态环境主管部门组织的危险废物物联网建设、在线监测知识培训，增强各单位环境保护主体责任意识；与攀枝花市生态环境局联合开展“六五”世界环境日公益宣传活动，发放宣传海报 2000 余张，宣传公司环境保护工作的同时，提升公众的环保意识。

We have conducted training on hazardous waste labeling management and online monitoring, etc. And we have participated in training initiatives by ecological and environmental authorities regarding the development of the hazardous waste Internet of Things (IoT) and online monitoring. These efforts have enhanced the awareness of all company units in fulfilling their primary responsibilities for environmental protection. In additional, we have collaborated with the Panzhihua Bureau of Ecology and Environment to organize a publicity event for World Environment Day, distributing more than 2,000 posters to citizens. While promoting the company's environmental efforts, we have also increased public awareness of environmental conservation.

应对气候变化

Addressing Climate Change

应对气候变化是高质量发展和绿色发展的应有之义。钒钛股份为降低能源消耗，促进低碳发展，积极开展“三控、两降、一落实、五推进”降碳减排工作，极致提高能源利用效率，加快建设绿色低碳企业。2023 年公司碳排放量较 2022 年同口径降低 41406 吨。

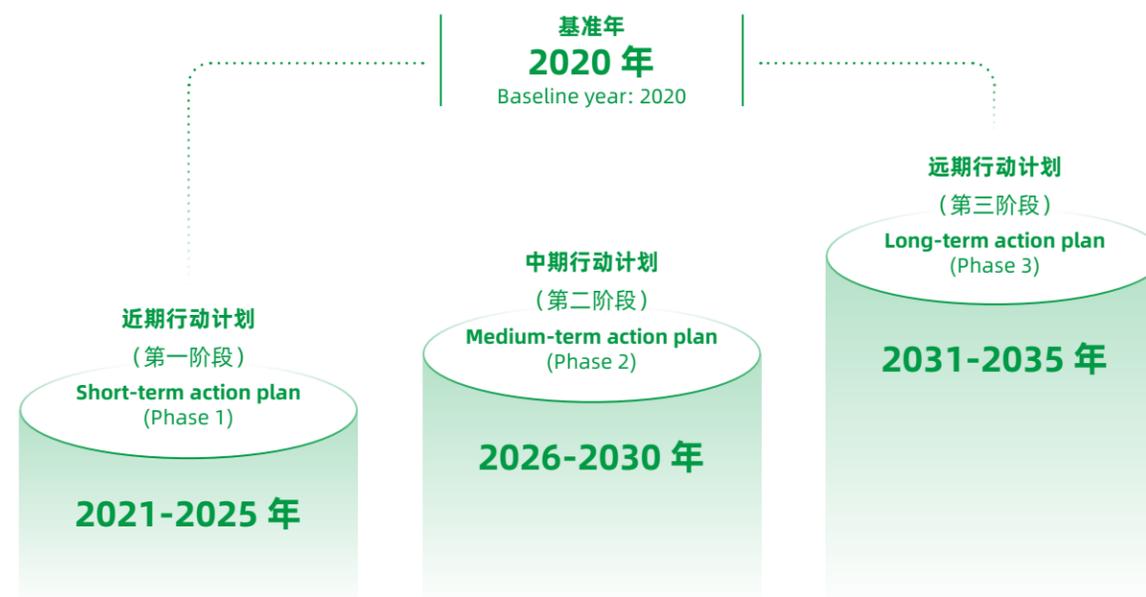
Responding to climate change is essential for achieving high-quality and sustainable development. To decrease energy consumption and advance low-carbon development, Pangang Group Vanadium & Titanium Resources Co., Ltd. has proactively undertaken systematic initiatives to reduce carbon emissions. The goal is to substantially enhance energy efficiency and accelerate the company's transformation into a green and low-carbon enterprise. In 2023, the company recorded a reduction of 41,406 tons in carbon emissions compared to 2022, as calculated using the same parameters.

深化双碳战略

Striving for carbon peaking and carbon neutrality

公司推进落实“双碳”目标，制定《碳达峰及低碳发展专项规划（2021-2035 年）》，以控制二氧化碳排放为目标，以产业结构优化调整、技术装备升级为主线，以生产效率极致化、传统能源减量化、清洁能源规模化为抓手，以科技创新和技术进步为支撑，积极推进绿色制造，加快企业绿色低碳转型。

The company has actively pursued initiatives to contribute to China's 30·60 Decarbonization Goal, and has devised the *Special Plan for Carbon Peaking and Low-Carbon Development (2021-2035)*. According to this plan, our objective is to control carbon dioxide emissions, with a focus on promoting the optimization and adjustment of industrial structure and upgrading technological equipment as the main tasks. To achieve this objective, we have concentrated efforts on maximizing production efficiency, reducing reliance on traditional energy sources, and increasing the proportion of clean energy through technological innovation and technical progress. Through these measures, we have advanced green manufacturing and accelerated the company's green and low-carbon transformation.

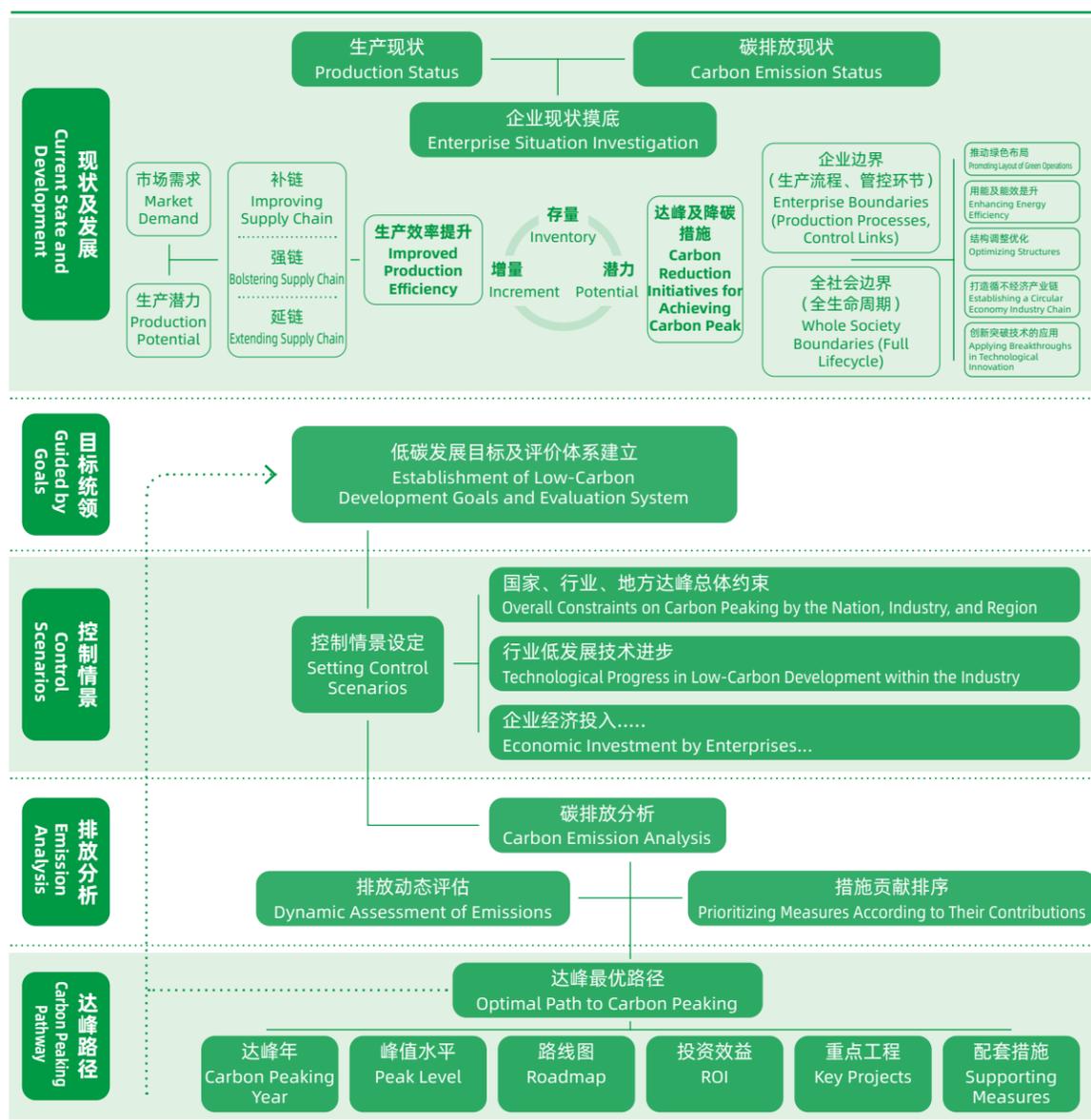


碳达峰行动计划研究框架

Carbon peaking action plan research framework

为系统研判碳排放达峰时间、峰值以及达峰实现路径，钒钛股份构建包含现状及发展研究模块、目标及评价体系模块、控制情景模块、排放分析模块、达峰路径模块的研究框架，对不同阶段企业发展情景和碳排放变化趋势进行预测分析，用以支撑企业碳排放达峰行动方案的制定。

To systematically assess and determine the timeline, peak emissions, and the pathway to achieve peak carbon emissions, the company has established a research framework that comprises modules for current status and development research, goal setting, evaluation systems, control scenarios, emission analysis, and the pathway. Utilizing this framework enables us to analyze and forecast development scenarios and trends in carbon emissions at various stages, aiding in the formulation of the carbon peaking action plan.



低碳发展目标

Low-carbon development objectives

为衡量企业低碳发展水平，公司建立低碳发展目标体系。预计碳排放总量于 2030 年达峰，峰值约 430 万吨，之后呈现下降趋势，考虑应用绿电情况下，到 2035 年降至 375 万吨，相比峰值下降 12.8%。

In gauging our progress in low-carbon development, we have implemented a set of low-carbon development objectives. We project that the overall carbon emissions will reach a peak of approximately 4.3 million tons by 2030, followed by a subsequent decline. Factoring in the utilization of green electricity, our carbon emissions are anticipated to decrease to 3.75 million tons by 2035, reflecting a 12.8% reduction compared to the peak.

企业低碳发展指标体系

Low-carbon development indicator system

目标 Target	单位 Unit	2020	2025	2030	2035
碳排放总量 Total carbon emissions	10 ⁴ tCO ₂	224.07	337.33	430.47	375.24
钒产品二氧化碳 排放强度 CO ₂ emission intensity of vanadium products	tCO ₂ /t	9.90	8.99	8.83	7.60
钛白粉产品二氧化碳 排放强度 CO ₂ emission intensity of titanium dioxide products	tCO ₂ /t	4.00	4.25	4.31	3.26
钛渣产品二氧化碳 排放强度 CO ₂ emission intensity of titanium slag products	tCO ₂ /t	1.77	1.71	1.66	0.87

温室气体减排

Greenhouse gas reduction

公司切实贯彻落实“绿色低碳”转型发展要求,持续完善碳排放管理体系建设,根据公司碳达峰及低碳发展规划,制定吨产品碳排放强度指标,助力低碳可持续发展。

Adhering to the requirements for transitioning to “green and low-carbon,” Pangang Group Vanadium & Titanium Resources Co., Ltd. has consistently enhanced the carbon emissions management system. In alignment with the plan for carbon peaking and low-carbon development, we have introduced carbon emission intensity indicators per ton of product.

低碳技术研发

Low-carbon R&D

公司积极践行低碳发展战略,加大前沿节能低碳技术探索和应用研究。引进 MVR 钛液浓缩、连续结晶等先进节能技术,积极推动水泵节能改造、EBT 炉搬迁等装备升级改造,加大余热余能回收利用效率,减少碳排放量。

Proactively implementing the low-carbon development strategy, the company has intensified efforts in researching and applying cutting-edge energy-saving and low-carbon technologies. For example, we have introduced advanced technologies like MVR titanium liquid concentration and continuous crystallization, and have actively conducted energy-saving upgrades for pumps and the relocation of EBT furnaces. Furthermore, we have improved the efficiency of recovering and utilizing waste heat and energy, leading to a reduction in carbon emissions.

碳排放核查

Carbon emission verification

重庆钛业配合第三方核查机构开展碳排放核查,核定碳排放配额,完成 2021-2022 年度全国碳市场碳排放履约工作。

Chongqing Titanium Industry collaborated with a third-party verification organization to conduct carbon emission verification. The company validated its carbon emission quota, and fulfilled its carbon emission compliance obligations in the national carbon market for the 2021-2022 period.

2023 年

范围一排放量

1380200 tCO₂e

(含阳润科技)

Scope 1 emissions:

1,380,200 tCO₂e (including Yangrun Technology)

范围二排放量

728107 tCO₂e

(含阳润科技)

Scope 2 emissions:

728,107 tCO₂e (including Yangrun Technology)

碳排放量较 2022 年
同口径降低

41406 吨

The total carbon emissions decreased by **41,406** tons compared to 2022, using the same parameters

加强能源管理

Strengthening energy management

公司进一步提升重点用能岗位标准化、精细化管控水平,夯实能源基础管理工作,提高能源使用效率。8 月底完成本年度能源管理体系再认证审核工作,公司总部、西昌钒制品、北海铁合金、重庆钛业、钛业公司分别取得能源管理体系认证证书,11 月组织完成各生产单位能源管理体系内审员培训及取证。

The company has intensified the standardized and meticulous management of crucial energy-consuming positions, and has strengthening the foundational aspects of energy management. This concerted effort has offered substantial support in achieving the ultimate energy efficiency goal. By the end of August, we concluded the re-certification audit of the energy management system for 2023. The company's headquarters, Xichang Vanadium Products Technology, Beihai Ferroalloy, Chongqing Titanium Industry, and Titanium Industry Company have all secured energy management system certifications. In November, internal auditor training and certification processes for the energy management systems of each production unit were successfully completed.

制定节能降耗专项工作方案,按月组织检查方案落实情况并评价实施效果。

Developing a specialized plan for energy conservation and consumption reduction, conducting monthly inspections of the plan's implementation, and evaluating its effectiveness.

结合分时用电政策,制定电力降本专项工作方案,按月评估用电成本。

Formulating a specialized plan to reduce electricity costs in alignment with the time-of-use electricity policy and assessing electricity costs on a monthly basis.

梳理能源计量设施,分单位和能源管理系统建设两部分建设,完善计量设施。

Reviewing energy metering facilities, and enhancing them through unit-specific improvements and energy management system construction.

做节能诊断,梳理节能环节,制定诊断计划,准备开展和实施。

Conducting energy-saving diagnostics, analyzing energy-saving processes, and developing and implementing diagnostic plans.

能源监控指标 37 项,2023 年累计完成 30 项,较 2022 年进步 29 项,进步率 78.38%。

In 2023, the company achieved 30 out of 37 energy monitoring indicators, marking a 29-indicator increase from 2022 and representing a 78.38% improvement.

能源消耗量为

494067 tCE

(含阳润科技**16252**tCE)

the company's total energy consumption amounted to **494,067** tCE, inclusive of **16,252** tCE from Yangrun Technology

清洁能源占比

61.36 %

The share of clean energy was **61.36%**

实施节能项目

8 项

8 energy-saving projects were executed

节能创效

974 万元

yielding economic benefits of **9.74** million yuan

节能量

4060 tCE

saving **4,060** tce

清洁绿色生产

Clean and Green Production

钒钛股份以建设绿色工厂为抓手，推进生产模式绿色低碳转型，成为绿色发展标杆。重庆钛业获得 2023 年度重庆市级绿色工厂称号。钒钛股份加强三废管理，深入推进大气、水、土壤污染综合防治和固体废物资源综合利用，推动公司生态环境保护实现新进步，绿色可持续发展迈上新台阶。

Pangang Group Vanadium & Titanium Resources Co., Ltd. has propelled the green and low-carbon transformation of the production mode through the construction of green factories, with the goal of becoming a benchmark for green development. Chongqing Titanium Industry was honored the title of "Green Factory in Chongqing in 2023. Furthermore, we have strengthened the management of wastewater, waste gas, and solid waste, actively promoting the comprehensive prevention and control of air, water, and soil pollution, and enhancing the comprehensive utilization of solid waste. These endeavors have propelled the company to new heights in environmental protection, marking a significant stride in our pursuit of green and sustainable development.



水资源管理

Water management

为进一步强化水资源管理，2023 年公司组织重庆钛业、东方钛业、钛业公司氯化钛白产线制定并实施废水减量方案。其中，东方钛业吨钛白外排水量 51.4 吨，较 2022 年降低 0.2 吨；重庆钛业吨钛白外排水量 42.3 吨，较 2022 年降低 4 吨；钛业公司吨钛白排水量 10.9 吨，较 2022 年降低 1.5 吨。2023 年外排废水总量同比降低 37.82 万立方米，吨钛白取、排水成本降低约 16 元，创效约 36.8 万元。

In 2023, to reinforce water management, the company mandated Chongqing Titanium Industry, Dongfang Titanium Industry, and Titanium Industry Company to formulate and execute wastewater reduction plans for their chloride-process titanium dioxide production lines. In the same year, Dongfang Titanium Industry achieved a wastewater discharge of 51.4 tons per ton of titanium dioxide, marking a reduction of 0.2 tons from 2022. Chongqing Titanium Industry recorded a wastewater discharge of 42.3 tons, representing a year-on-year reduction of 4 tons. Titanium Industry Company achieved a discharge of 10.9 tons, reducing by 1.5 tons compared to 2022. Overall, the company's total discharged wastewater decreased by 378,200 cubic meters year-on-year. The cost of water usage and wastewater discharge per ton of titanium dioxide production decreased by approximately 16 yuan, resulting in an economic benefit of about 368,000 yuan.

企业运营总耗水量

Total water consumption for enterprise operation

2023 年

17303852 吨

2022 年

17937727 吨

水资源循环利用率

Water recycling rate

2023 年

94.08%

2022 年

93.45%

固废管理

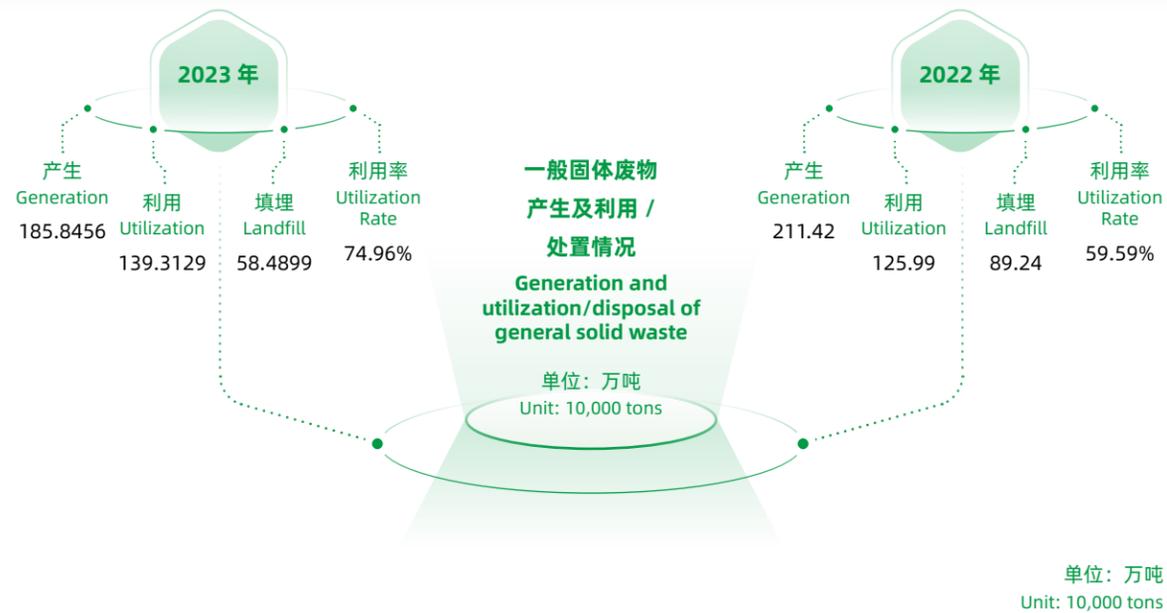
Solid waste management

2023 年，公司一般固体废物产生量 185.8456 万吨（其中综合利用 139.3129 万吨，外委合规填埋 58.4899 万吨），综合利用率 74.96%。攀枝花钒制品硫酸钠、尾渣、刚玉渣，重庆钛业钛石膏、煤灰、煤渣，东方钛业煤渣，西昌钒制品尾渣、炉渣、耐火材料、浸出净化渣，国钛科技除尘灰均实现 100% 资源化利用。

公司开展危险废物管理专项督查，对照《危险废物管理计划和管理台账制定技术导则》和《危险废物识别标志设置技术规范》开展专项督查，共查出问题 19 项，建立问题清单并已全部完成整改。开展危险废物全过程物联网建设，并于 2023 年 11 月中旬完工。

In 2023, the company generated a total of 1.858456 million tons of general solid waste. Out of this, 1.393129 million tons were comprehensively utilized, and 584,899 tons were lawfully landfilled through third-party organizations. The comprehensive utilization rate of solid waste reached 74.96%. Specifically, Panzhihua Vanadium Products Branch achieved a 100% reuse rate for sodium sulfate, tailings, and corundum slag. Chongqing Titanium Industry accomplished a 100% reuse rate for titanium gypsum, coal ash, and coal slag. Dongfang Titanium Industry reused 100% of its coal slag. Xichang Vanadium Products Technology achieved a 100% reuse rate for tailings, slag, refractory materials, and leaching purification residue. Guotai Science & Technology achieved a 100% reuse rate for dust ash.

In 2023, we conducted a specialized inspection of hazardous waste management guided by the Technical Guideline for Deriving Hazardous Waste Management Plans and Records and the Technical Specification for Setting Identification Signs of Hazardous Waste. We identified a total of 19 deficiencies, compiled a list of issues, and successfully rectified all of them. Simultaneously, we completed the construction of an Internet of Things (IoT) system for the entire hazardous waste management process in mid-November 2023.



硫酸钠和钛石膏产生及利用情况
Generation and utilization of sodium sulfate and titanium gypsum

固废名称 Types of solid waste	产生量 Solid waste generated	处置量 Solid waste disposed	降库 Reduction in stockpiles
硫酸钠 Sodium sulfate	4.5224	6.4730	1.9506
烘干钛石膏 Dried titanium gypsum	22.0064	23.2652	1.2588
湿钛石膏 Wet titanium gypsum	27.0375	35.0475	8.01

废气管理

Waste gas management

我们致力于不断改进与完善废气处理工艺，改善项目周边空气质量。2023 年开展氯化尾渣排渣扬尘治理、矿浆排渣烟气治理等多个废气治理项目，重点推进氯化钛白烟气无组织治理，通过开展“矿浆烟气治理项目”烟气无组织排放取得明显效果。

We are dedicated to the ongoing improvement and optimization of processes for controlling waste gas, aiming to enhance air quality in the vicinity of our projects. In 2023, we undertook several waste gas control projects, addressing issues such as dust control for chloride tailings discharge and fume control for slurry discharge. Particular emphasis was placed on the systematic control of fumes generated during the production of chloride-process titanium dioxide. The “slurry fume control project” has notably enhanced our organized control of fume emissions.

改善生态环境

Improving the Environment

钒钛股份始终坚持绿色发展理念，将绿色、环保理念引入厂区建设中，开展重点项目建设，进一步改善现场环境及厂容厂貌。2023 年，攀枝花钒制品分公司实施绿化带土壤整治项目，钛业公司开展 6 万吨 / 年熔盐氯化法钛白项目现场厂区绿化。

Adhering steadfastly to the principle of green development, Pangang Group Vanadium & Titanium Resources Co., Ltd. has integrated green and environmental concepts into factory construction. The company has undertaken key environmental projects to further enhance the on-site environment and aesthetics of its facilities. In 2023, Panzhihua Vanadium Products Branch initiated a soil treatment project for greenbelt areas, and Titanium Industry Company conducted landscaping in the vicinity of the 60,000 tons/year titanium dioxide production project based on molten salt chlorination method.

案例 CASE



6 万吨 / 年熔盐氯化法钛白项目现场厂区绿化

Landscaping for the 60,000 tons/year titanium dioxide production project based on molten salt chlorination method

2023 年 5 月，攀钢 6 万吨 / 年熔盐氯化钛白项目施工现场开展一期绿化项目，实施绿化种植 5269 平方米，美化生态环境，有效减少施工期裸土面积及扬尘。

In May 2023, the construction site of Pangang Group's 60,000 tons/year chloride-process titanium dioxide production project initiated the first phase of a landscaping project, covering an area of 5,269 square meters. The project enhanced the aesthetics of the surrounding environment and efficiently minimized the exposed soil area and dust during the construction period.





合作共赢 携手伙伴共进

Collaborating with Partners for Mutual Success



我们努力营造公开透明营商环境，打造责任供应链、产业链；积极参加行业交流活动，制定行业标准，助力行业高质量发展。公司在加快建设国内一流、国际知名的钒钛新材料上市公司、推动高质量发展新征程上，携手合作伙伴共荣共进，谱写钒钛行业美好未来。

We have made efforts to create an open and transparent business environment, and build a responsible supply chain and industry chain. Meanwhile, we have actively participated in industry exchange activities and contributed to setting industry standards, aiming to promote the high-quality development of the industry. As we have embarked on a journey to become a domestically leading and internationally recognized listed company specializing in new vanadium and titanium materials, we are dedicated to advancing alongside our partners and creating a promising future for the vanadium and titanium industry.

贡献联合国可持续发展目标
Contribution to UN SDGs



贴心服务客户， 实现钒钛产品出口逆势增长

Offering attentive customer service and realizing a growth in the export of vanadium and titanium products against the prevailing trend

2023 年，国外经济形势持续疲软、产品市场供需矛盾突出，产品出口压力巨大。针对这一情况，公司销售单位不等不靠、迎难而上，竭尽全力抢抓出口订单，实现出口逆势增长，钒产品、钛白粉出口比例分别达到 23.94%、34.1%。

In 2023, the challenging foreign economic conditions persisted, marked by significant disparities in product supply and demand. This created substantial pressure on product exports. In response to this situation, the trading company demonstrated self-reliance and met challenges head-on. The trading company made every effort to secure export orders and accomplished a counter-trend growth in product exports. During the previous year, the export proportions of vanadium products and titanium dioxide reached 23.94% and 34.1%, respectively.



以市场为导向，挖掘潜力

钒钛贸易坚持精准研判市场，敏锐洞察国际形势变化带来的商机，针对不同目标区域确定对应销售模式，重点开拓中西亚等多个新兴潜力市场，不断开拓新渠道，培育新市场。

Exploring export potential through market-oriented approaches

Vanadium & Titanium Trade consistently conducted precise market assessments and keenly observed business opportunities arising from changes in the international landscape. Tailoring sales models to different target regions, the trading company focused on exploring various emerging markets, including Central Asia and West Asia, continuously opening up new channels.

以客户为中心，提升满意度

钒钛贸易做好国外客户开发及维护管理，通过参加国外行业展会、邮件、电话、视频会议等形式加强同国外客户交流频次，提前谋划订单衔接，快速回复客户询盘及处理客户诉求，最大限度地满足客户的需求。

Boosting customer satisfaction with a customer-centric approach

Vanadium & Titanium Trade ensured effective management for the development and maintenance of international clients. The company improved communication through various channels, including participation in international industry exhibitions, as well as emails, telephone calls, and video conferences. Proactive order planning, swift responses to inquiries, and addressing customer concerns were implemented to optimize customer satisfaction.

以高效为原则，跟踪订单执行

钒钛贸易做好产品发运，高效备货、快速发货，及时发现订单衔接、物流发运等销售过程中突发情况，第一时间加以解决，严格防范经营风险，为钒钛产品出口顺行保驾护航。

Efficiently managing order execution

Vanadium & Titanium Trade ensured efficient product stocking and prompt delivery. The trading company promptly addressed unforeseen situations in the sales process, such as order alignment and logistics, and responded immediately to these circumstances. It rigorously guarded against operational risks to guarantee the successful export of vanadium and titanium products.



精益求精生产

Continuously Optimizing Production

产品品质是钒钛股份的立身之本。钒钛股份致力于为客户提供高品质产品，不断强化产品质量管控，保障产品质量，并持续创新，为客户提供更优的产品和服务。

Quality forms the cornerstone of Pangang Group Vanadium & Titanium Resources Co., Ltd.. Hence, we are dedicated to consistently strengthening our product quality control measures to ensure the delivery of high-quality products to our customers. Our focus on ongoing innovation aims to provide customers with superior products and services.

严格质量管理

Realizing stringent quality management

公司严抓原辅料入厂验收、过程精细管理、成品出厂质量把关及过程质量异常纠偏管理，产品质量持续改善，2023年24项质量指标同比提升，提升率85.71%。狠抓顾客反馈问题改进的闭环管理，质量异议下降率41.46%，质量异议损失同比下降60.58%。

公司获评“2023年度钢铁行业质量标准化工作先进单位”；攀枝花钒制品分公司获评“第三届攀枝花市政府质量奖”，6个QC小组获评“四川省优秀质量管理小组”，5个班组获评“四川省优秀质量信得过班组”，提升品牌影响力。

The company has rigorously implemented processes such as acceptance inspection of raw and auxiliary materials upon arrival, refined management during production, quality control before dispatching finished products, and corrective measures for quality anomalies, thereby ensuring continuous improvement in product quality. In 2023, 24 quality indicators showed a year-on-year improvement, with an increase rate of 85.71%. Moreover, we have implemented closed-loop management to address customer feedback. The decrease rate of quality objections from the previous year was 41.46%, leading to a 60.58% year-on-year reduction in losses caused by quality objections.

The company achieved recognition as the “Distinguished Unit for Promoting Quality Standardization Efforts in the Steel Industry in 2023.” In the same period, Panzhihua Vanadium Products Branch was honored with the “3rd Panzhihua Government Quality Award.” Six QC teams were acknowledged as “Excellent Quality Management Teams in Sichuan Province,” and 5 production teams received the title of “Trustworthy Production Teams in Sichuan Province.” These accolades have significantly enhanced the company’s brand influence.



强化精益管理

Strengthening lean management

钒钛股份通过不断强化精益管理，提升收率和交货可靠性，围绕工艺、质量等问题开展精益六西格玛黑带项目26项，7人通过中国质量协会六西格玛黑带注册认证。在西昌钒制品、钛业公司氯化钛白产线试点推行精益管理，运用TPM、样板区打造等精益管理方法，推进精益五星班组建设。

公司将“制度的生命力在于执行”意识贯穿于遵章守制专项行动的筹划、推动和检查全过程，按照“一个专业事项一个管理办法”对规章制度进行整合，2023年度废止28项、完成滚动立改41项。

By consistently strengthening lean management, we have enhanced both product yield and delivery reliability. Simultaneously, we have executed 26 Lean Six Sigma Black Belt projects that focus on production processes, product quality, and various other facets. Seven individuals have obtained the Six Sigma Black Belt Certification from the China Association for Quality. We have also piloted lean management for the chloride-process titanium dioxide production lines at Xichang Vanadium Products Technology and Titanium Industry Company. Throughout this initiative, we have employed methodologies such as Total Productive Maintenance (TPM) and the establishment of model areas to foster the development of five-star teams specializing in lean management.

We have instilled the understanding that “the vitality of a system lies in its implementation” across the planning, execution, and inspection phases of the “special action aimed at strengthening compliance with regulations.” Adhering to the approach of “tailoring targeted management measures for each specific matter,” we have streamlined regulations and systems. Specifically, we repealed 28 regulations and promptly updated 41 others in 2023.



加强设备故障排查，确保生产稳定运行
Enhancing equipment malfunction investigations to ensure production stability



加强设备故障排查，确保生产稳定运行
Enhancing equipment malfunction investigations to ensure production stability



检查氮气消耗情况
Inspection of nitrogen consumption



检查氮气消耗情况
Inspection of nitrogen consumption

提升客户服务

Improving Customer Service

钒钛股份秉持“客户至上”的价值观，将客户体验放在核心位置，致力于为客户提供高品质的产品与贴心的服务，不断提升客户满意度和忠诚度，与客户建立长期良好的伙伴关系，实现双赢。

Adhering to the principle of “Customer First,” Pangang Group Vanadium & Titanium Resources Co., Ltd. consistently prioritizes customer experience. The company is committed to delivering high-quality products and attentive services, continuously working towards improving customer satisfaction and loyalty. At the same time, we strive to forge enduring, mutually beneficial partnerships with our customers.

建立客户服务制度，对客户服务情况每周进行跟踪、汇报，及时全面分析顾客服务相关工作及进展情况，全方位提高客户服务响应速度和服务质量，有效解决了客户特殊需求、产品备货和产品验收规则分歧等方面的问题。

We have established a customer service system to monitor and report on customer service activities weekly. This ensures a prompt and thorough analysis of tasks and progress related to customer service. It has empowered us to enhance our responsiveness to customer needs and service quality comprehensively. Through this approach, we can address special customer requirements and facilitate the resolution of any disputes with customers concerning product stocking and acceptance rules.



对《顾客异议管理办法》进行了修订。营销中心及时跟踪了解客户收货及产品使用情况，并根据客户反馈的信息协同相关单位共同制定解决方案；异议发生后协同基地共同分析查找原因，以最快的速度提出异议处理方案，相关方制订有效的整改措施。

We have updated the *Customer Dissent Management Measures*. Our marketing center promptly tracks customer receipts and product usage, collaborating with relevant units to devise solutions based on customer feedback. In the event of dissent, the marketing center, in coordination with product production bases, conducts a joint analysis to identify the causes and proposes solutions as swiftly as possible. Subsequently, the involved parties work together to develop effective corrective measures.

严格执行公司《企业秘密保护管理办法》、《商业秘密涉密人员管理办法》、《保密管理办法》，强化企业秘密管理，加强涉密人员保密宣传、教育培训和监督管理，明确商业秘密涉密人员保密义务，强化信息系统的防护，保护顾客信息，防止侵犯他人商业秘密，保障企业和顾客利益不受侵害。

Adhering strictly to the Corporate Secrets Management Measures, Measures for the Management of Personnel Involved in Commercial Secrets, and Confidentiality Management Measures, we have bolstered the management of corporate secrets. We have also enhanced efforts in confidentiality awareness, training, and supervision for personnel handling confidential matters, and clearly outlined the confidentiality obligations for those managing commercial secrets. Simultaneously, we have fortified the protection of our information systems to secure customer information and prevent the infringement of others' commercial secrets. This ensures that the interests of both the company and customers remain uncompromised.

打造责任链条

Building a Responsible Supply Chain

钒钛股份秉承“有效竞争、互惠共赢”的公平竞争理念，建立健全供应商管理体系，大力推行阳光采购，致力于打造责任供应链、产业链，构建阳光、诚信、共赢的供应链生态圈。

Embracing the fair competition principles of “effective competition, mutual benefit, and win-win,” Pangang Group Vanadium & Titanium Resources Co., Ltd. has continuously enhanced the supplier management system and actively advocated for transparent procurement. The company is dedicated to developing a responsible supply chain and industry chain, thereby establishing a transparent, trustworthy, and mutually beneficial supply chain ecosystem.

公司通过制定并实施《供应商管理办法》，规范开展供应商管理。
The company conducts supplier management in accordance with the *Supplier Management Measures*.

制定严格的供应商准入管理流程，要求供应商有合法的生产经营资质，具备一般纳税人资格

The company has established a rigorous supplier qualification management process, mandating suppliers to hold legal production and business qualifications, as well as general taxpayer eligibility.

具有相应的质量保证能力，产品质量稳定，符合集团公司质量、安全、环保要求，并能持续改进提高

Suppliers must demonstrate corresponding quality assurance capabilities and ensure stable product quality. They are required to adhere to Pangang Group's standards for quality, safety, and environmental protection, with a commitment to continuous quality improvement.

具有良好的商业信誉和业绩，近3年经营活动中无违法记录

Suppliers should maintain a commendable business reputation and performance, free from any records of illegal activities over the past 3 years.

符合公司逐步降低综合成本的要求，综合性价比在市场上应有较强的竞争能力

Suppliers are expected to align with the company's objectives of gradually reducing overall costs, and their products should exhibit strong market competitiveness in terms of comprehensive cost-effectiveness.

对于存在失信行为和违法违纪行为的供应商，包含有商业贿赂行为记录的企业一律禁止准入

The company strictly prohibits collaboration with suppliers engaged in dishonest behavior or illegal activities, including enterprises with a history of commercial bribery records.

按地区划分的供应商数目 (个) Number of suppliers classified by region	西南 Southwest China	343
	华中 Central China	65
	华北 North China	48
	华南 South China	16
	华东 East China	200
	西北 Northwest China	21
	东北 Northeast China	59
	港澳台及海外 Hong Kong, Macau, Taiwan, and overseas	0
通过管理体系认证的供应 商数目(个) Number of suppliers certified with different management systems	通过 ISO 9001 质量管理 体系 ISO 9001 Quality Management System	252
	通过 ISO 14001 环境管理 体系 ISO 14001 Environmental Management System	128
	通过 ISO 45001 职业健康 安全管理体系 ISO 45001 Occupational Health and Safety Management System	119
签订合同的供应商总数 (个) Total number of contracted suppliers		571
因为社会责任不合规被中 止合作的供应商数量(个) Number of suppliers terminated for non- compliance with social responsibility		0
本地化采购比例 (%) Localized procurement proportion (%)		28.33%

2023 年

签约供应商共

571 家571 contracted
suppliers in total通过 ISO 9001 质量
管理体系**252** 家252 suppliers certified
with ISO 9001 Quality
Management System通过 ISO 14001 环境
管理体系**128** 家128 suppliers certified with
ISO 14001 Environmental
Management System通过 ISO 45001 职业健康
安全管理体系**119** 家119 suppliers certified with
ISO 45001 Occupational
Health and Safety
Management System因为社会责任不合规被中
止合作的供应商**0**No suppliers terminated
due to non-compliance
with social responsibility.

促进行业进步

Driving Industry Development

钒钛股份积极主导并参与科研院所、行业专业展会、博览会以及行业专题会，与同行业各企业分享生产、经营、管理心得，与下游客户共同探讨、论证应用难题的攻克途径、行业未来发展方向，促进国内钒钛行业的规范发展。

公司参加“2023 中国钒钛论坛”等行业会议 8 次，参加人员 40 余人次，做学术报告 4 次。全年与四川大学、有研工程技术研究院、中科院过程工程研究所、黑龙江建龙钒业有限公司、宁波新福、泸州长杰、聚亚环保材料有限公司、常熟研究院等多家科研院所、同行开展钒钛工艺及产品应用技术交流 148 次。

The company actively cooperates with research institutes, and also organizes and participates in industry exhibitions, trade fairs, and industry conferences. At the same time, we share experience in production, operations, and management with peers in the industry, and work with downstream customers to explore solutions to application problems and the development of the industry, in order to promote the sound development of the domestic vanadium and titanium industry.

In 2023, we took part in 8 industry conferences, including the “2023 China Vanadium and Titanium Forum,” with over 40 attendees. During four of these conferences, we delivered an academic presentation. Throughout the year, we conducted 148 technical exchanges on vanadium and titanium production processes and product applications with various universities, research institutes, and industry counterparts. Some of our collaborators included Sichuan University, General Research Institute for Nonferrous Metals (GRINM), Institute of Process Engineering of the Chinese Academy of Sciences, Heilongjiang Jianlong Vanadium Industries Co., Ltd., Ningbo Xinfu Titanium Dioxide Co., Ltd., Luzhou Changjie Filter Equipment Co., Ltd., Juya Environmental Protection Materials Co., Ltd., and CNOOC Changzhou Paint & Coating Industry Research Institute Co., Ltd.



2023 年

参加行业会议

8 次

8 industry conferences

与科研院所、同行开
展技术交流**148** 次148 technical exchanges
with universities,
research institutes, and
industry peers



以人为本 赋能员工成长

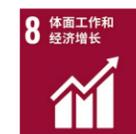
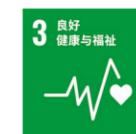
Putting People First and Facilitating Employee Growth



钒钛股份以提升员工幸福感为己任，致力于创建健康安全的工作环境，营造公平公正的成长氛围，全方位构筑人才发展平台，促进员工与公司共同成长，帮助员工成就自身价值。

Taking it as its responsibility to enhance the happiness of its employees, Pangang Vanadium & Titanium is committed to creating a healthy and safe workplace as well as a fair and equitable atmosphere for growth. We comprehensively build a platform for talent development to promote the mutual growth of employees and the company, helping employees achieve their own value.

贡献联合国可持续发展目标
Contribution to UN SDGs



最美巾帼奋斗者

Striving female employees

女员工是钒钛股份企业发展中不可替代、不可或缺的重要力量，在各岗位都活跃着她们的美丽身影，彰显了新时代女性风采。

Female employees are an indispensable and vital force in the company's development. They showcase their capabilities in various roles, demonstrating the charm of women in the new era.

- 攀枝花钒制品分公司王乖宁主持参与《高品质钒氮合金高效制备工艺及装备开发技术》等科研项目，实现双推板窑高氮生产钒氮合金，填补了高氮钒氮合金领域技术空白。2023年，她获得四川省“五一劳动奖章”，被评为攀枝花市“敬业奉献好人”。
- 王乖宁，谁启动了科研项目“Efficient Preparation Process and Equipment Development Technology for High-Quality Vanadium-Nitrogen Alloy” at the Panzhihua Vanadium Products Branch, has successfully produced vanadium-nitrogen alloy with high nitrogen using a double pusher kiln, thereby bridging the technological gap in the high-nitrogen vanadium nitrogen alloy field. In 2023, she was honored with the "May 1 Labor Medal" of Sichuan province and was recognized as a dedicated individual in Panzhihua city.
- 王丽萍是钛冶炼产线的一名科研管理人员，在二号钛渣冶炼电炉开展提高送电功率攻关试验期间，王丽萍和科研团队在现场一待就是三天三夜。正是在科研团队和现场职工共同努力下，攻关试验取得明显成效，保障了钛渣冶炼电炉产量不断创造新纪录。工作以来，王丽萍获得四川省科技进步二等奖1个、三等奖2个，21项发明专利获得国家知识产权授权。
- 王丽萍作为钛冶炼产线的一名科研管理人员，在二号钛渣冶炼电炉开展提高送电功率攻关试验期间，王丽萍和科研团队在现场一待就是三天三夜。正是在科研团队和现场职工共同努力下，攻关试验取得明显成效，保障了钛渣冶炼电炉产量不断创造新纪录。工作以来，王丽萍获得四川省科技进步二等奖1个、三等奖2个，21项发明专利获得国家知识产权授权。
- 运转作业区倒班作业长夏凌云是钛冶炼产线唯一的一位女倒班作业长，她的辛勤工作让她先后获得先进生产（工作）者、三八红旗手、三八红旗班组长等荣誉。
- Xia Lingyun, the shift operation leader in the operating area, is the only female shift operation leader in the titanium smelting production line. Her hard work has earned her honors such as Advanced Production (Work) Worker, March 8 Red Flag Bearer, and March 8 Red Flag Group Leader.

保障员工权益

Protecting the Rights of Employees

合规平等雇佣

Ensuring compliant and equal employment

公司严格遵守《中华人民共和国劳动法》《中华人民共和国劳动合同法》等相关法律法规，按月足额缴纳社会保险及住房公积金，劳动合同签订率保持100%，保障员工合法权益。坚持平等雇佣原则，为不同性别、年龄、宗教信仰和文化背景的员工提供平等就业机会。2023年共有员工3310人，其中女性管理者比例为0.54%。

The company strictly complies with relevant laws and regulations, such as the Labor Law and the Labor Contract Law, and pays social insurance and housing provident fund in full monthly. With the labor contract signing rate maintained at 100%, we ensure employees' legitimate rights and interests. We adhere to the principle of equal employment, providing equal employment opportunities for employees of different genders, ages, religious beliefs, and cultural backgrounds. In 2023, we had 3,310 employees in total, of which 0.54% were female managers.



新入职员工结业典礼
New employee graduation ceremony



开展营销能力提升培训
Marketing skills enhancement training



环厂跑活动
A factory-wide running event

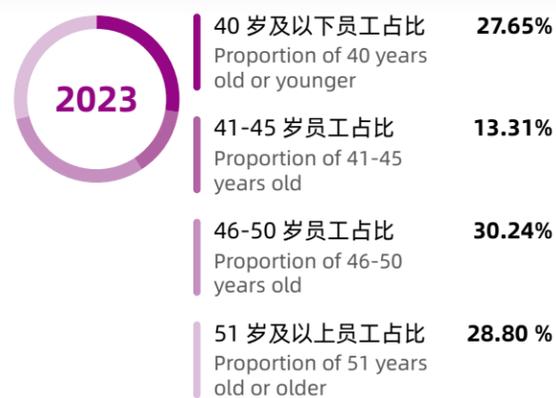


开展职业技能大赛
Organizing a professional skills competition

员工学历结构 Employee Educational Background



员工年龄结构 Employee Age Group



员工专业构成类别 Employee Position Structure



员工性别结构 Employee Gender



深化民主管理

Deepening democratic management

公司深化厂务公开和民主管理工作，保障员工知情权和参与权。规范召开二届一次职代会，完成换届相关工作，审议通过了绩效与薪酬评价考核办法等；组织召开二届二次职代会，选举产生员工董事。

The company has expanded transparency in factory operations and embraced democratic management, safeguarding employees' rights to information and participation. We have standardized the convening of the first session of the second Workers' Congress, completed relevant transitional work, and deliberated on and approved the performance and salary evaluation methods. Subsequently, we have organized the second session of the second Workers' Congress, during which employee directors were elected.

完善薪酬福利

Improving compensation and benefits

绩效薪酬体系

Performance and remuneration system

压实契约化经营责任，两级经营班子按岗位签订 2023 年度经营业绩责任书。优化绩效薪酬 1+N 体系，制定《年度绩效与薪酬评价考核办法》《年度专项考核细则》，引导岗位价值、业绩价值的有机统一。夯实全员岗位绩效管理，制定下发《年度全员岗位绩效管理重点工作安排》《全员安全绩效实施意见》，持续推广公司全员岗位绩效管理案例 2.0 版，逐级落实安全生产等责任到各岗位。坚持同工同酬原则，按时、足额发放员工薪酬，并根据对企业效益的贡献度，合理拉开岗位收入差距，切实做到收入能增能减，调动员工积极性。

To ensure the fulfillment of our contractual management responsibilities, both levels of our management teams signed annual performance responsibility agreements for their respective positions in 2023. Simultaneously, we have optimized the performance-based remuneration system, and developed the *Annual Performance and Remuneration Evaluation and Assessment Methods and Rules for Annual Specialized Assessments* to facilitate the seamless integration of job value and performance value. We have also enhanced performance management for all employees, specifically by formulating and distributing the *Annual Key Work Arrangements for Performance Management for All Employees and Opinions on the Implementation of Safety Performance for All Employees*. Additionally, we have continued to promote the 2.0 version of the Company's performance management cases involving all employees, and have ensured the progressive fulfillment of responsibilities such as work safety by employees at all positions. Furthermore, upholding the principle of equal pay for equal work, we have ensured timely and full payment of employee salaries. Based on their contributions to the Company's profitability, we have reasonably determined the income for different positions. We have effectively safeguarded employees' incomes, allowing for increases or decreases based on performance, thereby motivating their enthusiasm.

福利保障制度

Welfare security system

五险一金按国家规定参保，保险覆盖率 100%。员工享有培训、午餐补助、带薪休假、职业健康体检等福利待遇。

We ensure five social insurance (endowment, medical, unemployment, employment injury, and maternity insurance) and one housing fund are covered according to national regulations, with a 100% coverage rate. Our Employees are entitled to benefits, such as training, meal subsidies, paid leave, and occupational health check-ups.

中长期激励机制

Medium to long-term incentive mechanism

实施关键人才中长期奖励、青年人才成长激励、子企业负责人的任期激励，做好股权激励对象的业绩考评，用好正向激励政策工具，完善多元多层激励体系。

We have implemented medium to long-term incentives for key talents, growth incentives for young talents, and tenure incentives for subsidiary leaders. Concurrently, we have enhanced performance evaluations for equity incentive recipients. We strive to effectively utilize positive incentive policy tools and enhance a diverse, multi-level incentive system.

人才培养与发展

Enhancing Talent Cultivation and Development

钒钛股份按照“十四五”人才发展规划，积极推进人才强企工程，完善人才培养体系、搭建人才培养平台、畅通人才成长通道，优化人才发展环境，按照分级管理模式，落实人才培养规划，着力打造一支素质能力与岗位需求高度匹配的人才队伍。

According to the 14th Five-Year Plan for talent development, Pangang Vanadium & Titanium has vigorously advanced the project of "talent-strengthened enterprises," improved the talent cultivation system, and established a talent development platform with unblocked channels and optimized environment. We have employed a hierarchical management model to carry out talent development plans, striving to build a team of talents with skills and capabilities highly matched to job requirements.

激励员工发展

Motivating employee development

公司以职业等级认定为抓手，持续提升技能水平。一是建立技能提升激励长效机制，鼓励符合条件的员工积极参加职业技能等级认定，完成职业等级申报 253 人；二是创造条件积极推动职业等级新工种的申报，钛白粉制造工完成职业等级认定申报前期准备工作；三是公司建立完善青年人才库，推荐国际化人才、数字化人才等各类人才 130 人。申报鞍钢技术（技能）领军人才 4 人，申报省（市）级各类荣誉人才共计 25 人，目前已获评 9 人。

With a focus on occupational level recognition, the company continues to enhance employees' skill levels. Firstly, we have established a long-term mechanism to incentivize skill improvement, encouraging eligible employees to participate in occupational skill level recognition, with 253 employees completing the occupational level declaration. Secondly, we have created conditions to promote the declaration of new occupational categories, with preliminary preparations for occupational-level recognition declaration completed for titanium dioxide manufacturing workers. In addition, we have established a talent pool consisting of young talents and recommended a total of 130 individuals, including international and digital talents. We have proposed 4 individuals for the title of Ansteel Technology (Skills) Leading Talents and 25 individuals for various provincial and municipal-level honorary titles. Currently, 9 individuals have been awarded provincial and municipal-level honorary titles.



开展职业技能大赛
Carry out vocational skills competitions

培育多元人才

Cultivating diverse talent

着力提升经营管理人员系统管理能力

Emphasizing on enhancing the systematic management capabilities of and managerial personnel

- 选派中高层管理人员、核心人才参加上级公司综合素质能力提升培训，拓展经营管理队伍创新变革、管理实践、系统管控能力。
- 选派优秀青年人才到新建项目、“吃劲”岗位、科研院所、销售领域进行挂职锻炼，促进青年快速成长成才。
- 通过线上+线下+分层送外等方式，开展业财融合培训，打造职业化管理人员，建设复合型经营管理人才梯队。
- We select mid- to high-level management personnel and core talents to participate in comprehensive competency enhancement training provided by superior companies. We also develop innovative, practical, and systematic control capabilities for the managerial team.
- We send outstanding young talents to new projects, challenging positions, research institutes, and sales fields for on-the-job training, accelerating their growth and development.
- Through online, offline, and hierarchical training, we conduct business and financial integration training to cultivate professional management personnel and build a diverse managerial talent pool.

着力提升操作技能人员专业技能水平

Emphasis on enhancing the professional skills of skilled personnel

- 以技能大师工作室为核心，采取实训、名师带徒等方式，加大技师和高级技师培养力度，提高优化操作方式、解决生产难题的能力。
- 深入开展职业技能竞赛活动，使技能竞赛成为调动一线操作人员学技术、练技能的有效手段，全面提升员工技能素质。
- Utilizing the skills of master workshops as a core, we employ methods such as practical training and mentorship from renowned experts and intensify the training of technicians and senior technicians to enhance their ability to optimize operational measures and solve production challenges.
- We thoroughly conduct vocational skills competitions to make them an effective means of motivating frontline operators to learn and practice skills, comprehensively improving the skills of our employees.

着力提升专业技术人员创新与实战能力

Emphasizing on enhancing the innovation and practical capabilities of technical personnel

- 以“酸性钒液沉钒机理、无铵沉钒”等对外合作科研项目为重点，选送技术骨干到高等学院带课题研修，培养技术人员创新能力。
- 深化“项目制”专业技术人才培养工作机制，通过跟项目、师带徒、挂职交流等方式，达到完成一个项目、培养一批专业技术人才的目的，提升专业技术人才实战能力。
- Focusing on cooperative research projects such as "Mechanism of vanadium precipitation in acidic vanadium solution" and "ammonium-free vanadium precipitation," we select technical backbones for advanced studies in higher education institutions to cultivate the innovation capabilities of technical personnel.
- We deepen the mechanism for cultivating technical talents through the "project-based" approach and achieve the goal of completing a project while cultivating a group of talents through project involvement, mentoring, and on-the-job exchanges, thereby enhancing the practical capabilities of technical personnel.

职业健康与安全

Protecting Occupational Health and Safety

钒钛股份坚持“安全第一、预防为主、综合治理”的方针，牢固树立“安全发展”的理念，持续完善职业健康与安全体系建设，防范化解安全风险，推进安全生产，保障员工的生命安全和身体健康。全年实现轻伤及以上安全事故，环保、交通、消防、危化品、相关方事故零目标。

Adhering to the principle of "safety first, prevention-oriented, and comprehensive governance," Pangang Vanadium & Titanium firmly establishes the concept of safe development, continuously improves the occupational health and safety system, prevents and mitigates safety risks, and promotes safe production to ensure the life and health of employees. The company aims to achieve zero incidents of moderate or severe injuries in safety, environmental protection, transportation, fire protection, hazardous chemicals, and related areas throughout the year.

强化顶层设计

Strengthening top-level design

公司严格遵守国家安全生产法规，全面建立职业健康与安全管理体系，严谨执行安全生产责任制度，确保生产安全。2023年，完成对《安全管理办法》《生产安全和火灾事故管理办法》《相关方安全管理办法》《相关方“四统一”管理实施意见》（试行）等7个安全管理制度的修订，确保安全生产工作规范化进行。公司列出安全管理强化年行动工作任务清单共133项任务，按期推动安全工作要点及安全管理强化年部署工作。

The company strictly complies with national work safety regulations, comprehensively establishes an occupational health and safety management system, and rigorously implements the work safety responsibility system to ensure production safety. In 2023, we completed the revision of seven safety management systems, including the "Safety Management Measures," "Production Safety and Fire Accident Management Measures," "Safety Management Measures of Related Party," and the "Opinions on the Implementation of 'Four Unifications' of Related Parties" (trial), ensuring the standardization of work safety work. The company has listed 133 tasks in the annual action plan to strengthen safety management, ensuring the timely promotion of key safety works and the reinforcement of the yearly deployment of safety management.



安全文化长廊
Safety culture corridor

落实安全生产

Implementing work safety

公司各专业部门共同推动安全管理强化年、重大隐患专项整治2023行动等专项工作；各单位深入落实相关方“日统计、日报告”和“一件一案”两项硬措施，持续深化全要素安全风险辨识及员工应知应会培训工作，切实开展“反违章、查隐患”等安全环保基础工作，确保安全环保管理体系有效运行，安全风险总体受控。

The various professional departments of the company jointly promote the annual strengthening of safety management, major hazard special rectification actions in 2023, and other special initiatives. Each department implements two specific measures for related parties: "daily statistics and reporting" and "one case, one file," and continuously deepens the comprehensive safety risk identification and employee training on necessary knowledge and skills. The company effectively carries out fundamental work in safety and environmental protection, such as "combating violations and inspecting hidden hazards," to ensure the effective operation of the safety and environmental management system and overall control of safety risks.

名称 Name	年度目标 Annual Target	完成情况 Results	结论 Conclusion
轻伤及以上生产安全事故（含相关方） Incidents of moderate injuries or above in production safety (including related parties)	0	0	完成 Complete
交通、消防、危化品及核与辐射事故 Incidents related to transportation, fire protection, hazardous chemicals, nuclear and radiation	0	0	完成 Complete
相关方一般及以上事故 General and above incidents involving related parties	0	0	完成 Complete
职业病危害因素定期检测率等六个“100%” Regular inspection rate for occupational disease hazards	100%	100%	完成 Complete
重大事故隐患按期整治率 Timely rectification of major accident hazards	100%	100%	完成 Complete

安全隐患 排查整治 Identifying and rectifying safety hazards

公司及各单位结合中央企业岁末年初安全生产重大隐患专项整治、危险化学品企业装置设备带“病”运行安全专项整治、工贸行业高风险领域安全生产专项整治、检维修安全管理专项整治工作、重大隐患专项整治2023行动等10个专项整治行动，累计排查重大安全隐患34项并已全部完成整改、一般安全隐患和其他问题13318项已整改13253项，整改率99.5%，其余隐患纳入2024年存量隐患。

The company and relevant departments have combined efforts to carry out ten special rectification operations, including the year-end and year-beginning special rectification of major safety hazards in central enterprises, special rectification of safe operation of equipment in hazardous chemical enterprises, special rectification of work safety in high-risk areas of the industrial and trade sectors, special rectification of inspection and maintenance safety management, and the 2023 special rectification action for major hazards. A total of 34 major safety hazards have been identified and rectified, with all 13,318 general safety hazards and other issues having been rectified, accounting for 13,253 items, resulting in a rectification rate of 99.5%. The remaining hazards have been included in the inventory of hazards for 2024.

落实安全生产责任制 Implementing the work safety responsibility system

持续完善全员安全生产责任制及安全生产责任清单，及时更新两级领导班子及部门年度安全生产履职清单，并录入“安全生产信息化系统”，实现按周期推送，管理岗位按清单制履职履责，操作岗位按班制开展岗位风险排查。制定《股份公司全员安全绩效实施意见》，安全生产等责任逐级落实到各岗位，促进安全生产管理绩效提升。

We continuously improve the work safety responsibility system for all employees and the work safety responsibility list, timely update the annual work safety performance list for the two levels of leadership and departments, and enter it into the "work safety information system" to achieve regular posts. Management positions are responsible for performing their duties according to the list, and operational positions conduct position risk assessments according to shift schedules. The "Implementation Opinions on the Overall Safety Performance of the Company" has been formulated, and the responsibilities for work safety have been implemented step by step to all positions, promoting the improvement of work safety management performance.

加强安全监督检查 Enhancing safety supervision and inspection

加强了安全监督检查，严厉查处现场违章，对查出的典型问题进行分析，深入分析原因并严格考核，对典型违章作业进行了问责。

We have strengthened safety supervision and inspection, rigorously cracking down on on-site violations. We conduct in-depth analysis of identified typical problems, thoroughly examining the causes and implementing strict assessments. Accountability measures have been taken for typical violations.

安全生产能力建设 Improving work safety capabilities

以“安全生产月”为契机，积极开展安全知识的普及宣传；组织开展安全环保应急演练专项培训，进一步强化全过程和各环节的安全环保管控，不断提高员工应急处置能力。通过多种形式组织学习习近平总书记关于安全生产的重要论述；组织传达学习全国安全生产电视电话会议精神和各级政府关于安全生产的重要会议精神；开展安全应急知识培训，提升操作人员安全技能，共培训考试 3210 人。

Taking advantage of the "Work Safety Month," we actively promote the popularization of safety knowledge. We organize special training for safety and environmental emergency drills to further strengthen safety and environmental control throughout the entire process and at all levels, continuously enhancing employees' emergency response capabilities. Through various forms, we have organized the study of General Secretary Xi Jinping's important expositions on work safety. We have also disseminated and studied the spirit of the national work safety television and telephone conference and important meetings on work safety organized by governments at all levels. Furthermore, we have conducted safety knowledge training to enhance the safety skills of operational personnel, with a total of 3,210 people trained and tested.

案例 CASE



开展“四化”项目，提升本质安全

Implementing the "four modernizations" project to enhance intrinsic safety

公司持续推进“西昌钒制品智能工厂（一期）基础自动化升级”，建设沉淀剂自动拆包系统、焙烧回转窑结圈料处理机器人、产品智能仓库等“四化”项目，改善员工工作条件，降低劳动强度，提升本质化安全水平。

The company has been consistently advancing the intelligent plant construction of Xichang Vanadium Production (Phase I) - Automatic Upgrading Project, which involves the construction of a precipitant automatic unpacking system, a rotary kiln clinker handling robot, intelligent product warehouses, and other "Four Modernizations" projects. These initiatives aim to enhance employee working conditions, reduce labor intensity, and elevate the level of intrinsic safety.

案例 CASE



开展煤气泄漏较大事故应急救援演练

Conducting a major gas leak emergency rescue drill

2023 年 6 月，钒钛股份在钛冶炼产线开展煤气泄漏较大事故应急救援演练。演练当天，公司迅速启动应急预案，开展事故应急处置、人员救治、消防灭火、环境监测等工作，事故救援处置秩序井然，险情很快得到控制，风险排除。此次演练检验各级应急预案的符合性及可操作性，提高各级人员在事故状态下的应急救援处置能力，促进安全生产总体稳定受控。

In June 2023, Pangang Vanadium & Titanium conducted a major gas leak emergency rescue drill in the titanium smelting production line. On the day of the drill, the company promptly initiated the emergency response plan, carrying out accident emergency handling, personnel rescue and treatment, firefighting, environmental monitoring, and other tasks. The rescue and disposal of the accident were orderly, and the risk was quickly brought under control, effectively eliminating the danger. This drill tested the compliance and operability of emergency response plans at all levels, enhancing the emergency response and disposal capabilities of personnel at all levels in the event of an accident, and promoting the overall stability and control of work safety.



煤气泄漏较大事故应急救援演练
Major gas leak emergency rescue drill

守护职业健康

Guaranteeing occupational health

公司认真贯彻落实《中华人民共和国职业病防治法》等要求，建立完善职业健康管理制度，推进职业病危害源头治理，预防和控制职业病发生，切实保障劳动者职业健康权益。

The company earnestly implements the requirements of the Law of the the *Prevention and Control of Occupational Diseases and other related regulations*. We have established a comprehensive occupational health management system, promote the control of occupational disease hazards at the source, and prevent and control the occurrence of occupational diseases, effectively safeguarding workers' rights and interests of occupational health.

推动职业健康体检工作 Promoting Occupational Health Examinations

组织 3164 名员工参加体检，其中健康体检 1434 人，职业健康监护体检 1730 人。

We organized 3,164 employees to undergo medical examinations, including 1,434 general health check-ups and 1,730 occupational health monitoring examinations.

完成职业卫生建档工作 Completing Occupational Health Records

已完成 3166 名接触职业危害的员工的职业健康监护卡相关信息更新。

We updated occupational health monitoring card information for 3,166 employees exposed to occupational hazards.

开展职业健康培训 Conducting Occupational Health Training

组织主要负责人和职业卫生管理人员进行职业健康培训取证工作；在职业病防治宣传周期间，共开展主题宣讲活动 69 次、专题讲座（网络公开课）11 次、警示教育 27 次，并制作多种宣传材料，宣传受众 3463 人。

We organized key personnel and occupational health management staff to undergo occupational health training certification. During the occupational disease prevention and control publicity period, a total of 69 themed promotional activities, 11 special lectures (online open classes), 27 warning education activities were conducted, and various promotional materials were produced, reaching an audience of 3,463 people.

开展职业病危害因素检测 Conducting Occupational Disease Hazard Factor Testing

应测 2102 点，实测 2090 点（2023 年，国钛科技因 1、2 号炉中控平台停产，每月有 1 个点未测，共计减少 12 个点），合格率 100%。

2,102 factors were scheduled for testing, and 2,090 factors were actually tested (In 2023, due to the shutdown of the control platform for furnaces 1 and 2 at Guotai Science & Technology, one factor was not tested each month, totaling a reduction of 12 points), with a 100% pass rate.

合规配置劳动防护用品 Compliant Provision of Labor Protection Articles

采购发放价值 814.74 万元的劳动防护用品，并通过现场检查等方式督促员工规范佩戴。

We procured and distributed labor protection articles worth 8.1474 million yuan, and supervised employees to wear them correctly through on-site inspections and other means.

抓好防暑降温工作 Ensuring Heatstroke Prevention and Cooling Measures

累计采购并发放了价值 31.91 万元的防暑药品和价值 132.19 万元的防暑物资；开展防暑降温专项检查，确保高温季节防暑降温设备设施安全运行。

We procured and distributed heatstroke prevention medicine worth 319,100 yuan and heatstroke prevention materials worth 1.3219 million yuan in total. We also conducted special inspections for heatstroke prevention and cooling to ensure the safe operation of heatstroke prevention and cooling facilities during the high-temperature season.

加强员工关爱

Strengthening Employee Care

钒钛股份为员工提供良好的工作环境，重视员工的工作与生活平衡，提升员工的幸福感和归属感。精心编制“我为群众办实事”重点民生项目计划清单，确定公司层面项目 10 项、各子分公司层面项目 32 项。2023 年，员工满意度保持 100%。

Pangang Vanadium & Titanium provides employees with a good working environment, values the balance between work and life, and enhances employee happiness and sense of belonging. We carefully formulated a priority list of livelihood projects under the theme "doing practical things for the people", with 10 projects at the company level and 32 projects at each subsidiary level. In 2023, employee satisfaction remained at 100%.

开展文体活动

Organizing recreational activities

公司高度重视员工文化需求，通过开展丰富多彩的文体活动，促进工作与生活平衡。建立文体活动的常态化开展机制，对 5 个文体俱乐部开展活动给予经费补助；组织员工参加攀钢第四届员工气排球比赛，荣获男子组、女子组“双冠军”。

The company attaches great importance to the cultural needs of its employees and promotes work-life balance by organizing a diverse range of cultural and sports activities. We have established a regular mechanism for conducting recreational activities and provided financial subsidies for the activities of 5 cultural and sports clubs. We also organized employees to participate in the fourth Pangang air volleyball competition for employees, where they achieved the "double championship" in the men's and women's groups.



“庆五一 钛精彩”员工篮球赛
Employee Basketball Competition on May Day



在攀钢第四届员工气排球比赛获得“双料冠军”
"Double championship" at the fourth Pangang employee air volleyball competition



西昌钒制品“五一”徒步活动
Xichang Vanadium Production's May Day Hiking Event



北海铁合金开展青年读书分享活动
Beihai Ferroalloy organized a book sharing event

关心关爱员工

Caring for employees

公司持续开展节日慰问等活动，春节期间对困难员工、劳模先进等 20 名员工进行走访慰问，发放慰问金 2 万元。持续开展员工生日慰问和高考子女家庭送关爱活动。

加强对女员工的关心关爱，开展女员工工作先进集体和个人表彰活动，对表现突出的三八集体和三八红旗手进行表彰奖励；积极组织女员工参与鞍钢及攀钢工会第二届“书香女性”读书活动、“贯彻党的二十大精神，巾帼逐梦绽芳华”三八节主题团建活动，女员工维权知识及健康知识答题和趣味健身活动等；持续开展关心关爱女员工健康工作，为女员工办理市妇联“关爱女性保障计划”的参保、续保。

The company consistently organizes holiday visits. During the Spring Festival, 20 employees facing difficulties and outstanding workers were visited and provided with funds totaling 20,000 yuan. We also continues to conduct birthday celebrations for employees and provides care packages for families with children taking the college entrance examination.

The company has strengthened its care and support for female employees by organizing commendation activities for outstanding female workers and teams. We recognize and reward March 8 Red Flag Bearer and March 8 Red Flag Group Leader. Additionally, we actively encourage female employees to participate in various activities such as the reading event organized by the Ansteel and Pangang labor unions, themed team-building activities for International Women's Day, quizzes on women's rights and health knowledge, and fun fitness activities. Furthermore, we continue to provide ongoing support for the health of female employees by facilitating their participation in the "Care for Women Guarantee Plan" organized by the Municipal Women's Federation.



女员工拔河赛

Female employee tug-of-war competition



两产线深化“我为群众办实事”活动

Two production lines deepened the "do practical things for the people" project

钛冶炼产线、氯化钛白产线持续推进“我为群众办实事”实践活动，确立 2 号停车场加装车棚、原料休息室修缮等 8 个重点项目，着力解决员工的“急难愁盼”问题。面对攀枝花炎热天气，两产线陆续开展送清凉活动，为一线员工送去冰棍和绿豆糕，进一步增强了员工的幸福感。

The titanium smelting production line and C.P.TiO₂ Factory have been actively advancing the "do practical things for the people" activities, establishing 8 key projects including the installation of shelters in parking lot 2 and refurbishment of the raw material rest area, focusing on addressing the urgent and pressing concerns of the employees. In response to the scorching heat in Panzhihua, the two production lines have successively organized cooling activities, distributing popsicles and mung bean cakes to frontline workers, further enhancing the employees' sense of well-being.



员工在自动售货机上购买东西

Employees purchasing items from vending machines



高温天气为在岗员工送冰棍

Providing popsicles to on-duty employees during hot weather



同心向善 普惠社会和谐

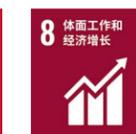
Pursuing Goodness and Benefiting the Society



钒钛股份始终坚持益利并举，回馈社会，响应国家共同富裕的时代号召，积极作为，主动担当，在保障自身经营发展的同时，积极支持地方经济建设，开展乡村振兴、助老助困等活动，与所在地社区共同发展，实现互利共赢。

Pangang Vanadium & Titanium has consistently adhered to the principle of pursuing both economic benefits and social good, giving back to society, and responding to the national call for common prosperity. We have taken an active role, proactively shouldering responsibilities, while ensuring its own business development, actively supporting local economic construction, and engaging in activities such as rural revitalization, and aiding the elderly and the disadvantaged. We work alongside local communities to achieve mutual development and a win-win situation.

贡献联合国可持续发展目标
Contribution to UN SDGs



接棒传递帮扶情， 刺梨金果铺就广阔致富路

Passing on assistance with prickly pear paving the way to prosperity

截至 2023 年，攀钢集团定点帮扶贵州省盘州市已有 13 年。近年来，钒钛股份接棒帮扶盘州刺梨产业，规划振兴路线图，按照“种、产、研、销”全链条发展模式有序推进帮扶工作，让盘州满山沟的“小野果”刺梨，变身成为农户增收致富的“大产业”。

钒钛股份与盘州市相关政府部门组建的刺梨产业专班打好配合，帮助刺梨产业由种植端到消费端形成闭环，有效推动刺梨一二三产业融合发展。2021 年，支援当地国企刺力王公司建设贵州首条刺梨泡腾片工业化生产线，于 2023 年支援建设的无菌纸盒灌装生产线也竣工投产，为新鲜刺梨原液进入全国各大现制饮品店奠定基础，助力产业兴旺、农民增收。

在钒钛股份的支持下，盘州市已建成刺梨“千斤园”基地 5 个共 1102 亩；建设刺梨泡腾片工业化生产线惠及 10 余万农户，钒钛股份的刺梨产业帮扶彰显了乡村振兴中的央企力量。

As of 2023, Pangang Group has been providing targeted assistance to Panzhou city in Guizhou province for 13 years. In recent years, Pangang Vanadium & Titanium has taken over the assistance to the prickly pear industry in Panzhou, planning a revitalization roadmap. The assistance work has been systematically carried out according to the "planting, production, research, and sales" full-chain development model, transforming the "wild fruit" prickly pear of Panzhou's mountains and ravines into a major industry for increasing farmers' income and prosperity.

Pangang Vanadium & Titanium has cooperated closely with relevant government departments of Panzhou city to help the prickly pear industry form a closed loop from the planting end to the consumption end, effectively promoting the integrated development of the first, second, and third industries of prickly pears. In 2021, the company supported the construction of the first industrialized production line for prickly pear effervescent tablets in Guizhou for a local state-owned enterprise, Ciliwang Company. In 2023, the construction of sterile paper box filling production line that we supported was also completed and put into operation, laying the foundation for fresh prickly pear juice to enter various freshly made beverage stores across the country, thus boosting the prosperity of the industry and increasing farmers' income.

With the support of Pangang Vanadium & Titanium, Panzhou City has established five "thousand-jin gardens" for prickly pears, covering a total of 1,102 acres. The construction of the industrialized production line for prickly pear effervescent tablets has benefited more than 100,000 households. The assistance provided by the company in the prickly pear industry showcases the strength of central enterprises in rural revitalization.

助力乡村振兴

Contributing to Rural Vitalization

钒钛股份坚持以习近平新时代中国特色社会主义思想为指导，深入贯彻落实习近平总书记关于“三农”工作的重要论述，始终把定点帮扶作为重大政治任务，坚持“四个不摘”和“三个转向”工作要求，聚焦“五大振兴”，加强组织领导，强化资金、政策、人才等要素保障，创新工作方法，不断巩固拓展脱贫攻坚成果，全面助力乡村振兴。

Pangang Vanadium & Titanium adheres to the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, thoroughly implements General Secretary Xi Jinping's important expositions on rural work, and consistently regards targeted assistance as a significant political task. The company upholds the work requirements of "four unwavering commitments" and "three shifts," focusing on the "five vitalizations." We strengthen organizational leadership, enhance the guarantee of elements such as funds, policies, and talents, innovate work methods, continuously consolidate and expand the achievements in poverty alleviation, comprehensively supporting rural vitalization.

全面推进帮扶工作

Comprehensively advancing assistance work

全年钒钛股份共投入无偿帮扶资金 1221 万元，实施帮扶项目 14 个，消费帮扶购买帮扶地区农特产品价值 183 万元，培训乡村振兴基层干部及各类专业技术人员 1760 多人（次），圆满完成国家、省市定点帮扶和援藏工作目标任务。

Pangang Vanadium & Titanium invested a total of 12.21 million yuan in gratuitous assistance funds throughout the year, implementing 14 assistance projects. The company purchased agricultural and special local products worth over 1.83 million yuan to support local consumption and provided training for over 1,760 grassroots cadres and various professional and technical personnel for rural revitalization. These efforts led to the successful fulfillment of the designated assistance and aid to Xizang work set by the national and provincial governments.



2023 年

投入帮扶资金

1221 万元

12.21 million yuan
invested in assistance
funds

实施帮扶项目

14 个

14 assistance projects

培训乡村振兴基层干部及
各类专业技术人员

1760 多人（次）

Over 1,760 grassroots
cadres and various
professional and technical
personnel for rural
revitalization trained

消费帮扶购买帮扶地区农特
产品价值

183 万元

Agricultural and special
local products purchased
worth over 1.83 million
yuan to support local
consumption

盘州万亩刺梨基地

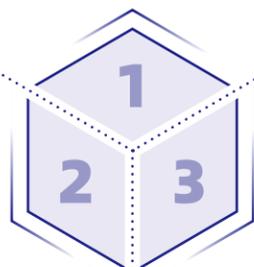
A 10,000 mu (about 666.7 hectares) planting
base of Rosa roxburghii Tratt, known as "Cili"
in Chinese, located in Panzhou

坚持久久为功，发展多元产业激发造血功能。持续投入资金 450 余万元，助力盘州刺梨全产业链发展，2023 年刺力王产线实现营业收入 1.9 亿元以上，带动全市刺梨种植 60 余万亩，覆盖农户 12.69 万户 38.52 万人，同时盘州刺梨帮扶项目入选《2023 中国企业社会责任故事荟》，并在第六届中国国际进口博览会上发布

We persist in making gradual progress and develop diverse industries to stimulate self-sustaining functions. With a continuous investment of over 4.5 million yuan, we supported the overall development of the Panzhou Chinese date industry chain. In 2023, the Ciliwang production line achieved a turnover of over 190 million yuan, driving the cultivation of Chinese dates on over 600,000 acres of land, benefiting 126,900 households and 385,200 people in the entire city. Additionally, the Panzhou Chinese date assistance project was selected as a "2023 China Corporate Social Responsibility Story" and was announced at the 6th China International Import Expo.

开展志智双扶，实施教育帮扶助力人才振兴。围绕全面推进乡村振兴需要，全方位培养帮扶县各类人才，在盘州投入 147 万元改善旧普小学办学条件；突出党建引领，不断凝聚合力助力组织振兴

We carried out targeted assistance to promote education and talent revitalization. Focusing on the comprehensive advancement of rural revitalization, we provided 1.47 million yuan to improve the teaching conditions of the local primary school in Panzhou. Emphasizing the leadership of the Party, we continuously rallied collective efforts to support organizational vitalization.



投入 150 余万元，开展党建联创共建，持续推进花甲山村、簸箕箩村党支部基础设施和文化阵地建设，指导开展“三会一课”、主题党日等活动；推行“一岗一职责、一人一清单”村干部及公益性岗位管理方法，提高基层干部思想水平和服务能力

With an investment of over 1.5 million yuan, we initiated joint construction through Party building, continuously advancing the infrastructure and cultural development of the Party branches in Huajia Mountain Village and Bojiluo Village. We provided guidance for activities such as "Three Meetings and One Class" and themed party days. We also implemented the "one position, one responsibility, one person, one checklist" management method for village cadres and public welfare positions, aiming to enhance the ideological level and service capabilities of grassroots cadres.

持续实施消费扶贫

Continuously implementing consumption-driven alleviation

消费帮扶，是巩固拓展脱贫攻坚成果同乡村振兴有效衔接的重要举措。2023 年，钒钛股份在发放节假日福利物资时，优先选购定点帮扶地区盘州的梯田香米、菌汤包、刺梨产品、木里的野生蘑菇、新疆的沙棘原浆、葡萄干、腰果等价值近 180 余万元的农特产品。此外在“中秋节”临近之际，组织各单位广大党员同志和员工开展“以购代捐”活动，共计 1068 名党员群众积极参与，购买价值 13.4 万元的帮扶物资，以实际行动鼓励了脱贫群众自力更生、勤劳致富。

Consumption-driven alleviation is an important measure that consolidates and expands the achievements of poverty alleviation and effectively connects with rural vitalization. In 2023, Pangang Vanadium & Titanium, when distributing holiday welfare supplies, prioritized the purchase of agricultural products from designated assistance areas in Panzhou, including terraced fragrant rice, mushroom soup packs, Chinese dates, wild mushrooms from Muli, original sea buckthorn juice from Xinjiang, raisins, and cashews, with a total value of nearly 1.8 million yuan. On the eve of the Mid-Autumn Festival, various units organized Party members and employees to participate in the "purchase in place of donation" activity. A total of 1,068 Party members and masses actively participated, purchasing assistance materials worth 134,000 yuan. This practical action encouraged the impoverished population to strive for self-reliance and diligence in becoming prosperous.

聚力公益慈善

Uniting for Charity

钒钛股份持续深化青年志愿服务品牌，组织团员青年积极参与“新年新气象·美化公园行”“跟着郭明义学雷锋，爱心温暖老人心”等志愿服务活动。2023 年，钛冶炼产线生产联合团支部获评 2022 年度“全国五四红旗团支部”。

公司在对口帮扶点盘州市花甲山村，开展“关爱儿童、情暖六一”主题公益活动，在攀枝花市仁和区嘉年康养中心开展“跟着郭明义学雷锋，敬老助老送温暖”志愿服务活动。为进一步深化攀枝花市创建文明城市工作，公司志愿服务队联合向阳社区开展“弘扬志愿服务精神，共创全国文明城市”志愿服务活动。

Pangang Vanadium & Titanium continues to deepen the brand of youth volunteer service activities, organizing young members to actively participate in volunteer service activities such as "New Year, New Outlook: Beautifying the Park" and "Following Guo Mingyi to Learn from Lei Feng, Spreading Love to Warm the Hearts of the Elderly." In 2023, the titanium smelting production line joint Youth League Branch was awarded the title of "National May Fourth Red Flag Youth League Branch" for the year 2022.

The company carried out a public welfare activity with the theme "Caring for Children, Warming the June 1st" in Huajia Mountain Village, Panzhou City, its paired assistance area. Additionally, we organized a volunteer service activity titled "Following Guo Mingyi to Learn from Lei Feng, Respecting and Assisting the Elderly to Bring Warmth" at the Jiannian Health and Wellness Center in Renhe District, Panzhihua City. Furthermore, to further deepen the work of creating a civilized city in Panzhihua City, the company's volunteer service team collaborated with the Yangguang Community to conduct a volunteer service activity titled "Promoting the Spirit of Volunteerism, Creating a National Civilized City".



组织 20 余名团员青年在攀枝花公园开展“新年新气象·美化公园行”志愿服务活动
Organizing more than 20 young members of the Youth League to conduct a volunteer service activity titled "New Year, New Outlook: Beautifying the Park"



攀枝花市仁和区嘉年康养中心开展“跟着郭明义学雷锋，敬老助老送温暖”志愿服务活动
The Jiannian Health and Wellness Center in Renhe District organized a volunteer service activity titled "Following Guo Mingyi to Learn from Lei Feng, Respecting and Assisting the Elderly to Bring Warmth"

责任绩效

ESG PERFORMANCE

类别 Category	关键绩效 Key Indicators	2021	2022	2023
经济 Economics	营业收入 (亿元) Revenue (100 million yuan)	140.60	150.88	143.80
	资产总额 (亿元) Total assets (100 million yuan)	102.11	119.33	153.34
	归属于上市公司股东的净利润 (亿元) Net profit attributable to shareholders of listed companies (100 million yuan)	13.28	13.44	10.58
	纳税额 (亿元) Taxes paid (100 million yuan)	4.13	6.25	4.98
	所有者权益 (亿元) Owner's equity (100 million yuan)	79.44	91.71	125.37
	资产负债率 (%) Debt-to-asset ratio (%)	22.2	23.15	18.24
	研发投入 (亿元) R&D investment (100 million yuan)	6.73	5.76	5.66
	授权专利 (项) Authorized patents	65	63	70
	其中发明专利 (项) Number of invention patents	20	20	20
	申请专有技术 (项) Number of proprietary technology applied	6	6	5
	重要科技奖项 (国家 + 省部级) (项) Important sci-tech awards (national, provincial & ministerial level)	4	3	5
	重大决策法律审核率 (%) Legal review rate of major decisions (%)	100	100	100
	重要制度法律审核率 (%) Legal review rate of important systems (%)	100	100	100
	重大合同法律审核率 (%) Legal review rate of major contracts (%)	100	100	100

类别 Category	关键绩效 Key Indicators	2021	2022	2023
环境 Environment	各类环境污染事件 (件) Environmental pollution incidents in all types	0	0	0
	环境项目投入 (亿元) Investment in environmental protection projects (100 million yuan)	1.94	1.05	1.197
	温室气体排放总量 (万吨) Total GHG emissions (10,000 tons)	181.16	170.20	210.83
	万元产值碳耗 (含发电厂) (tCO ₂ /万元) * Carbon consumption per 10,000 yuan of output value (including power plants) (tCO ₂ /10,000 yuan)	2.34	2.13	2.07
	化学需氧量 (吨) Chemical oxygen demand (ton)	97.45	46	55.37
	氨氮排放总量 (吨) Total emissions of ammonia nitrogen (ton)	16.03	4	3.79
	二氧化硫 (吨) Sulfur dioxide (ton)	547	364	351.06
	氮氧化物 (吨) Nitrogen oxides (ton)	297	294	296
	节能量 (吨标煤) Energy saving (TCE)	6093	10563	4060
	综合能耗 (吨) Comprehensive energy consumption (ton)	509245	484916	494067
	万元产值能耗 (tce/万元) Energy consumption per 10,000 yuan of output value (tce/10,000 yuan)	0.53	0.46	0.49
	年度新鲜水使用量 (百万立方米) Annual fresh water consumption (million m ³)	18.85	17.94	17.30
	V ₂ O ₅ 耗新水 (t/t) New water consumed by V ₂ O ₅ (t/t)	20.68	17.09	16.20
	TiO ₂ 耗新水 (t/t) New water consumed by TiO ₂ (t/t)	64.48	62.37	60.79
	FeV 耗新水 (t/t) New water consumed by FeV (t/t)	2.84	2.42	2.54
	固体废物利用率 (%) Utilization rate of solid waste (%)	55	68	74.96
煤气回收量 (亿立方米) Gas recovery volume (100 million m ³)	0.156	0.32	0.47	
循环水利用率 (%) Circulating water utilization rate (%)	95.22	95.25	94.08	

*备注: 与 2023 年同口径还原数

*Note: The same caliber restoration number as 2023

类别 Category	关键绩效 Key Indicators	2021	2022	2023
员工 Staff	劳动合同签订率 (%) Labor contract signing rate (%)	100	100	100
	在岗职工 (人) Number of in-service staff	3278	3394	3310
	员工流失率 (%) Employee turnover rate (%)	0.5	0.58	0.72
	培训人次 Number of training participants	16600	18423	20170
	培训投入 (万元) Training expenses (10,000 yuan)	480	629	317.28
	培训总学时 (小时) Total training hours	12400	10222	8170
	员工健康体检 (人) Number of employees accepting physical examination	2587	3408	2705
	体检及健康档案覆盖率 (%) Medical and health file coverage (%)	100	100	100
	发放救济金 (包括慰问金、帮扶救助金、助学金) (万元) Relief money (subsidiaries, assistance, student grant) (10,000 yuan)	21.95	52.52	19.07
安全 Security	一般及以上事故 (件) General and serious accidents	0	0	0
	安全环保教育培训 (人次) Participants of safety and environmental protection education and training	9853	9740	11023
	安全培训覆盖 (%) Safety training coverage (%)	100	100	100
	安全生产支出 (万元) Work safety cost (10,000 yuan)	4876	3923	6835
	安全、消防应急演练 (场) Safety, fire emergency drills	108	121	192
供应商 Supplier	供应商总量 (家) Total number of suppliers	1043	942	571
	通过 ISO 9001 质量管理体系的供应商 (家) Number of suppliers who have passed the ISO 9001 quality management system	241	211	252
	通过 ISO 14001 环境管理体系的供应商 (家) Number of suppliers who have passed the ISO 14001 environmental management system	100	98	128
	通过 ISO 45001 职业健康安全体系的供应商 (家) Number of suppliers who have passed ISO 45001 occupational health and safety system	87	90	119
	责任采购率 (%) Responsible procurement rate (%)	100	100	100
	本地化采购比例 (%) Localized procurement proportion (%)	26.46	30.88	28.33

类别 Category	关键绩效 Key Indicators	2021	2022	2023
社会 Society	乡村振兴专项资金投入 (万元) Fund for rural vitalization (10,000 yuan)	1249	1223	1221
	实施乡村振兴项目 (个) Number of rural vitalization projects	8	12	14
	青年志愿者 (人) Number of young volunteers	229	240	340
	青年志愿者服务队 (个) Number of young volunteer teams	5	8	9
	志愿服务活动 (人次) Participants of volunteer activities	200	200	240
	志愿服务活动次数 Number of volunteer activities	12	12	20
	治理 Administer	董事会 (次) Board meeting (times)	12	10
董事会成员 (人) Members of the Board of Directors		9	9	9
独立董事占比 (%) Proportion of independent directors (%)		33.33	33.33	33.33
开展反贪污和商业道德培训 (次) Participants of integrity education		413	529	463
党建 Party Building	下属基层党组织数 (个) Number of primary Party organizations	57	50	57
	党委数 (个) Number of Party committees	6	5	6
	党总支数 (个) Number of general Party branches	6	4	3
	党支部数 (个) Number of Party branches	45	41	48
	党员数 (人) Number of Party members	1220	1123	1451

展望 2024

2024 年是贯彻落实党的二十大精神，也是推动“十四五”规划落实的关键之年。钒钛股份将坚持以习近平新时代中国特色社会主义思想为指导，深入贯彻落实党的二十大和二十届二中全会精神，以创建世界一流“专业领军”领军示范企业为统领，稳中求进、守正创新、善于担当、主动作为，勇当鞍钢集团“第三极”排头兵，全力以赴建设世界一流钒钛新材料企业，坚定不移走绿色低碳可持续发展之路。

技术赋能，增强发展创新力。坚持创新驱动发展，聚焦战略规划落地、现场和市场需求，合理配置科技创新资源，凸显科技攻关对关键领域、重要工序和薄弱环节的支撑力度，全面塑造发展新优势。

绿色低碳，增强发展持续力。以打造“绿色生态型工厂，建设资源节约、环境美好和循环发展的现代化钒钛企业”作为发展目标，加强绿色低碳技术研发，倡导绿色低碳生产方式，布局绿色低碳产业结构。

以人为本，增强发展凝聚力。深入践行以人民为中心的发展思想，全面推进共建共享，实施文化提升工程、人才强企工程、幸福钒钛工程。进一步提高员工队伍的责任感和使命感、获得感和幸福感。

回馈社会，增强发展影响力。积极服务国家战略，全面推动乡村振兴，参与公益慈善事业，关心支持教育、文化、卫生等公共福利事业，积极鼓励员工参与志愿活动，提升民生福祉。

OUTLOOK 2024

The year 2024 marks a critical year for implementing the guiding principles from the 20th CPC National Congress and the 14th Five-Year Plan. Pangang Group Vanadium & Titanium Resources Co., Ltd. will continue to follow the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and fully implement the guiding principles from both the 20th CPC National Congress and the second plenary session of the 20th Central Committee of the CPC. With the goal of building world-class professional leading demonstration enterprise, we will pursue progress while ensuring stability, uphold fundamental principles in breaking new ground, and proactively translate our responsibilities into tangible actions. We will endeavor to lead Ansteel's "third-pole" strategy and spare no effort in establishing a world-class vanadium and titanium new materials enterprise as we steadfastly pursue a path of sustainable development that is green and low-carbon.

Boosting developmental innovation through technological empowerment. We will continue to drive development through innovation, focusing on executing strategic plans and addressing on-site and market demands. We will ensure the optimal allocation of resources for scientific and technological innovation, and highlight the crucial role of technological breakthroughs in strengthening key areas, crucial processes, and weak lines in the technology sector, thereby comprehensively shaping new developmental advantages.

Enhancing the sustainability of development through green and low-carbon initiatives. We will strive to establish green and eco-friendly factories and transition into a modernized vanadium and titanium steel enterprise that prioritizes energy efficiency, environmental responsibility, and circular development. This involves enhancing research and development in green and low-carbon technologies, promoting eco-friendly production methods, and strategically planning the development of green and low-carbon industries.

Bolstering cohesion in development through a people-centered approach. We will persist in embodying the people-centered development philosophy and fostering a culture of mutual construction and sharing. Specifically, we will undertake initiatives such as cultural enrichment programs, employee development projects, and endeavors aimed at cultivating a joyful work environment within the company. These endeavors will serve to deepen the sense of responsibility, mission, accomplishment, and happiness among our workforce.

Strengthening the impact of development through social responsibility initiatives. We will proactively contribute to national strategies, advance rural vitalization across the board, and actively participate in public welfare and charitable initiatives. At the same time, we will continue to support public services such as education, culture, and healthcare, while also encouraging our employees to engage in volunteer activities aimed at enhancing the people's well-being.



指标索引

INDEX OF INDICATORS

标题 Title	GRI 对标 Gri Benchmarking
关于本报告 About this report	2-2/2-3/2-4
董事长致辞 Message from the chairman	2-7/2-22/201-1
走进钒钛股份 About us	2-1/2-6//2-9
ESG 管理 ESG management	2-14/2-16/2-17/2-26/2-29/3-1/3-2/3-3
贡献联合国可持续发展目标 SDGs Contributions to the united nations sustainable development goals (SDGs)	2-17
专业领军，高质高效发展 Striving for high-quality development based on our transition into a Professional Leading Demonstration Enterprise	2-6/203-2
求真务实，奠定发展基石 Establishing the cornerstone of development with diligence and pragmatic endeavors	2-12/405-1
低碳环保，打造绿色钒钛 Pursuing green and low-carbon development	302-1/302-3/302-4/302-5/303-1/303-2/303-5/304-2/305-1/305-7/306-2/306-4
合作共赢，携手伙伴共进 Collaborating with partners for mutual success	201-1/203-1/203-2/308-1/414-1/417-1/418-1
以人为本，赋能员工成长 Putting people first and facilitating employee growth	2-7/2-8/401-1/401-2/401-3/403-1/403-2/403-3/403-5/403-7/404-1/404-2
同心向善，普惠社会和谐 Pursuing goodness and benefiting the society	203-1/203-2/415-1/413-2
责任绩效 Esg performance	201-1/301-3/302-1/302-3/302-4/305-1/305-4/305-7-306-1/401-1/404-1/405-1/415-1
展望 2024 Outlook 2024	2-22