



2022

钒钛股份 ESG 报告  
PANGANG VANADIUM &  
TITANIUM ESG REPORT

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# 关于本报告

## ABOUT THIS REPORT

# 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十四份社会责任(ESG)报告,报告披露了钒钛股份及下属公司 2022 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。

This report is the fourteenth social responsibility (ESG) report issued by Panzhihua Iron and Steel Group Vanadium and Titanium Resources Co., Ltd. (hereinafter referred to as "Vanadium and Titanium", "the company" or "we") in the form of annual report. The report discloses the concept, practice and performance of Vanadium and Titanium and its subsidiaries from January 1 to December 31, 2022, with some contents extended.

### 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)。

### 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)

### 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。

### 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 RMB.

### 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。

### 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.

### 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。

### 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



#### 尊敬的利益相关方：

2022年，面对复杂多变的市场和疫情，我们坚持以习近平新时代中国特色社会主义思想 and 党的二十大精神为指导，全体员工团结一致、沉着应对，牢记“国之大者”之使命，在多个方面取得优秀成绩，为利益相关方创造综合价值！

**实施创新驱动，谋高质量发展。**我们奋力打造新鞍钢高质量发展战略支撑极，加快数字化智能化转型，狠抓创新平台建设，紧盯“卡脖子”技术强力攻关，持续推动钒钛产业链、价值链向高端延伸。全年投入研发经费 5.76 亿元，获得省级科技成果 3 项，实现科技创效 3.48 亿元，实现营业收入 150.88 亿元，同比增加 7.3%。

#### Dear stakeholders,

In 2022, faced with a complex and volatile market and the COVID-19 impact, we followed Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and the guiding principles from the 20th National Congress of the Communist Party of China (CPC). All employees united as one and calmly responded to difficulties. In the past year, we bear in mind the country's most fundamental interests, achieved excellent results in various sectors, and created comprehensive value for our stakeholders!

#### Pursuing high-quality development through innovation.

We spare no effort to provide strategic support for high-quality development of a new Ansteel. For example, we accelerated the company's digitalization and the application of intelligent technologies, and worked to build innovation platforms, in order to achieve breakthroughs in technologies that seriously constrained our development and promote the extension of the vanadium and titanium industry chain and value chain to the higher levels. In 2022, we invested 576 million yuan in R&D, obtained three provincial-level scientific and technological achievements, created an economic benefit of 348 million yuan through advances in science and technology, and achieved a revenue of 15.088 billion yuan, a year-on-year increase of 7.3%.

**助力绿色低碳，守护碧海蓝天。**我们制定《碳达峰及低碳发展专项规划（2021-2035年）》，坚持加快推进清洁制造、绿色升级与低碳发展，开展新能源储能合作。全年环保项目投入 1.05 亿元，实施环保综合治理和现场环境提升。实施节能减排，节约标准煤 1.06 万吨，减少温室气体排放量 10.96 万吨。下属五家企业获评四川省“绿色制造示范单位”，四家企业获评省级“环保诚信企业”。

**携手伙伴共赢，创造多元价值。**我们延伸产业链条、强化质量控制、提升产品品质，深耕攀西钒钛资源，持续发挥攀西国家级战略资源创新开发试验区核心企业的引领作用，以开放的胸怀携手合作伙伴，聚力打造共建共享、稳定可持续的全球钒钛价值链。2022年，公司获评“四川省工业质量标杆”。

**增进民生福祉，打造美好社区。**我们坚持“人才是核心竞争力”理念，全力推进“人才兴企”工程，充分激发人才创新创造活力。安全生产投入 3923 万元，持续推进安全生产专项整治三年行动，落实“我为群众办实事”重点民生项目，致力于营造健康生活、健康工作的氛围。乡村振兴投入 1223 万元，在定点帮扶地区创造就业岗位 70 个，带动就业人数 1200 余人。快速响应有序开展疫情防控工作，各生产基地均经受住了疫情考验；积极支援社区抗疫，获得属地政府和人民的肯定。

新的征程上，钒钛股份将踔厉奋发，推动高质量发展，以“建设国内一流、国际知名的钒钛新材料上市公司”为己任，为攀枝花建强中国钒钛之都、打造世界级钒钛产业基地作出积极贡献，用更好的经营业绩回馈员工、回报股东、造福社会。

钒钛股份董事长 谢俊勇

**Promoting low-carbon development to protect the environment.** We have developed the Special Plan for Carbon Peaking and Low-Carbon Development (2021-2035) to accelerate clean manufacturing, green upgrading, and low-carbon development, and initiated cooperation in new energy storage. In 2022, we invested a total of 105 million yuan in environmental projects, and carried out comprehensive environmental governance and on-site environmental improvement. We also implemented energy-saving and emission reduction measures, saving 10,600 tons of TCEs and reducing 109,600 tons of GHG emissions. Five subsidiaries of Pangang Vanadium & Titanium were awarded the titles of Paradigm of Green Manufacturing in Sichuan Province, and four subsidiaries received the provincial “Enterprises of Integrity in Environmental Protection” award.

**Working with partners to create value in multiple areas.** We have extended the industry chain, strengthened quality control, and continued to develop the vanadium and titanium resources in the Panxi region. As a leading company in the Panxi Strategic Resources Innovation and Development Pilot Area, we have worked with partners on an inclusive basis to build a shared, stable, and sustainable global vanadium and titanium value chain. In 2022, the company was awarded the title of Industrial Quality Benchmark in Sichuan Province.

**Improving the people's well-being and building a better community.** Upholding the concept that “talent is the core competitiveness,” we have pressed ahead with our project aimed at developing a quality workforce to fully stimulate the creativity and vitality of employees. In 2022, we invested 39.23 million yuan in work safety, and continued to implement the three-year special action plan on work safety; we implemented key livelihood projects of “do practical things for the people”, and worked to create a healthy environment for people to live and work. We invested 12.23 million yuan in rural vitalization, creating 70 jobs in targeted areas and helping more than 1,200 people find jobs. Through rapid response and orderly implementation of pandemic containment measures, all production bases of the company withstood the pandemic. In addition, we actively supported the fight against COVID-19 in local communities, and won high recognition from the local governments and people.

Along the new journey, Pangang Vanadium & Titanium will remain true to the mission of “building a domestic first-class and internationally famous listed company specialized in new vanadium and titanium materials” and promote high-quality development to contribute to Panzhihua's ambition to consolidate its position as the “city of vanadium and titanium” in China and build a world-class vanadium and titanium industrial base. We will give back to employees, shareholders, and society with better business performance.

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

# 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). Headquarters 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 Pangang’s vanadium and titanium products.

#### 公司愿景

建设国内一流、国际知名的钒钛新材料上市公司

#### Our vision

Building a domestic first-class and internationally famous listed company specialized in new vanadium and titanium materials

#### 公司使命

让攀钢钒钛产品惠及千家万户

#### Our mission

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

#### 发展战略

协同资源 做强基体 做大产业 绿色发展

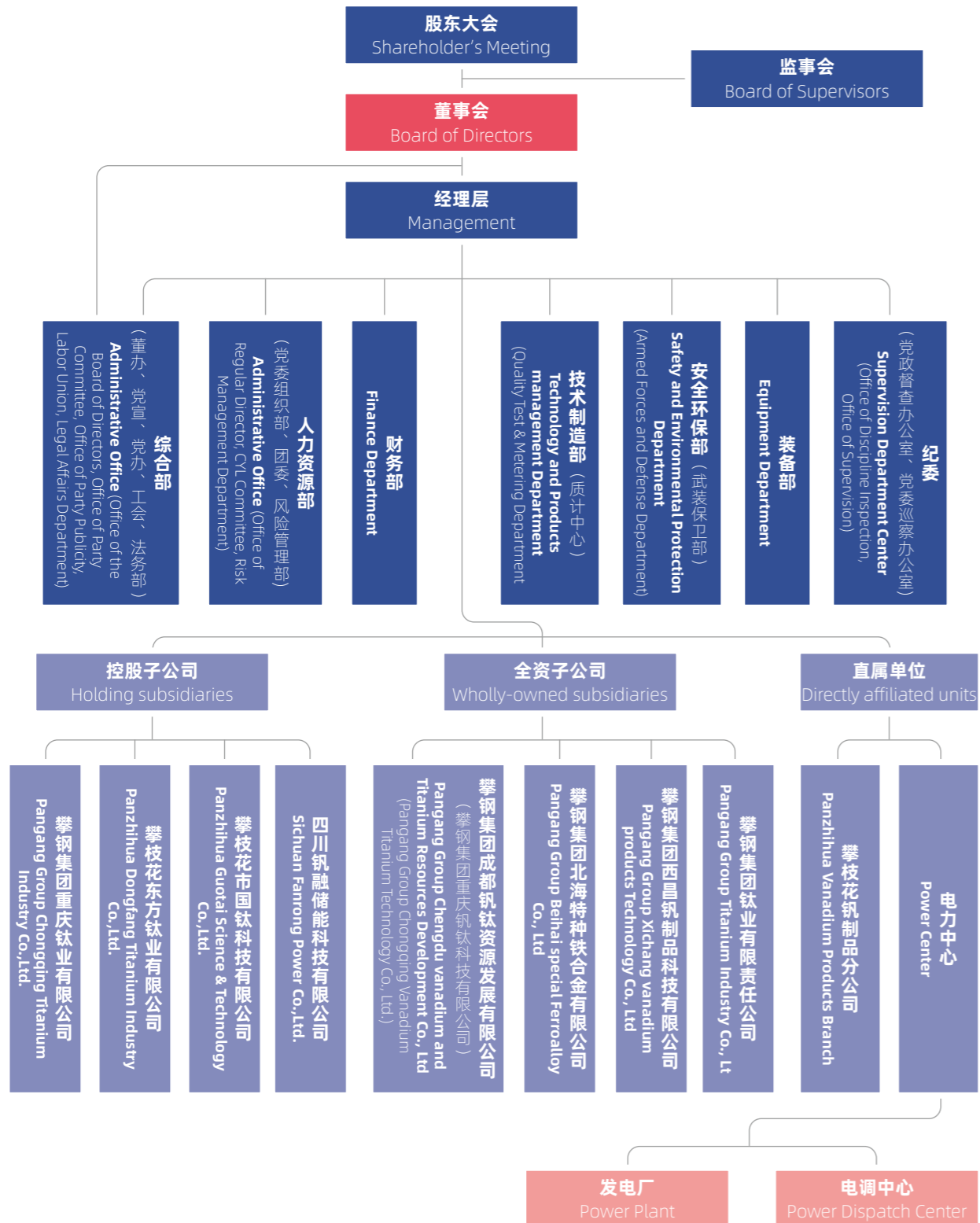
#### Our strategy

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<br>Product Type   | 主要产品<br>Main Products                             | 产品特点<br>Product Features   | 代表产品<br>Representative Products   |
|------------------------|---|--|---|
| 钒系列<br>Vanadium Series | 氧化钒<br>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<br>Vanadium trioxide, high purity-vanadium pentoxide, vanadium pentoxide powder and flakes                                   |
|                        | 钒合金<br>Vanadium Alloy                             | 产品质量优良，供货稳定，化学成分稳定，杂质含量低，表面质量好。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<br>Vanadium-aluminum alloy, vanadium-nitrogen alloy, ferrovanadium   |
|                        | 其他<br>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<br>Electrolyte for all-vanadium redox flow batteries (VRFBs)   |
| 钛系列<br>Titanium Series | 钛精矿<br>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<br>Titanium concentrate PTK20A, PTK10A, PTK20, PTK10  |
|                        | 钛渣<br>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<br>Titanium dioxide slag PTZ85, PTZ78<br>Acid-dissolved titanium slag PTZ74   |
|                        | 硫酸法钛白<br>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<br>Titanium dioxide R-288, PTA110, R-298, R-248+, R-248, R-249, R-278, PTA121, PTA1201 |
|                        | 氯化法钛白<br>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<br>Titanium dioxide CR-340, CR-350  |
|                        | 功能性钛白<br>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<br>Titanium dioxide PGNR-318G, PGNR-328 series, PGNR-B508 series, PGNR-508 series                  |

## 2022 年资质荣誉

Certificates & honors in 2022

钒钛股份  
Pangang Vanadium & Titanium



被认定为  
Be identified as  
**国家级高新技术企业**  
National high-tech enterprise

钒铁产品成功获评  
Ferrovanadium products were evaluated successfully  
**“制造业单项冠军产品”**  
"Single champion product of manufacturing industry"

钒氮合金产品成功获评  
Vanadium-nitrogen alloy products were successfully evaluated  
**“制造业单项冠军产品”**  
"Single champion product of manufacturing industry"

EcoVadis  
(埃科瓦迪斯)  
**企业社会成就铜奖**  
Bronze Award for Corporate Social Achievements

连续 3 年获得  
Obtained for 3 consecutive years  
**“中国上市公司投资者关系天马奖‘最佳董事会奖’”**  
"Tianma Award for Investor Relations of Listed Companies in China"

荣获  
have the honour to get or win  
**“四川省工业质量标杆”**  
"Sichuan Industrial Quality Benchmark"  
**“攀枝花市东区第三届政府质量奖”**  
"Panzhihua East District Third Government Quality Award"

荣获  
have the honour to get or win  
**“攀枝花钒钛企业 20 强”第二名**  
The second place of "Panzhihua Vanadium and Titanium Enterprise Top 20"  
**“攀枝花企业纳税 30 强”第五位**  
The fifth place of "Top 30 enterprises in Panzhihua"

**“四川企业社会责任百强榜”前三名**  
"Sichuan Top 100 Corporate Social Responsibility List" Top 3

获得  
Acquire

**“央企 ESG· 社会价值先锋 50 指数”**  
"Central Enterprise ESG · Social Value Pioneer 50 Index"

**“四川企业责任治理先锋”**  
"Pioneer of corporate responsibility governance in Sichuan"

**“四川企业社会贡献先锋”**  
"Sichuan Enterprise Social Contribution Pioneer"

**“四川企业绿色发展先锋”**  
"Green development pioneer of Sichuan enterprises"

下属企业  
Subsidiaries



西昌钒制品荣获国资委  
Xichang vanadium products won the title of SASAC  
**“国有重点企业管理标杆创建行动标杆企业”**  
"Management benchmarking of key state-owned enterprises and establishment of action benchmarking enterprises"

重庆钛业被评为  
Xichang vanadium products won the title of SASAC  
**国家专精特新“小巨人”企业**  
National specialized new "small giant" enterprise

攀枝花钒制品分公司钒氮作业区煅烧班荣获  
Panzhihua Vanadium Products Branch Vanadium and Nitrogen Operation Area Calcination Class won  
**2022 年“四川省工人先锋号”**  
"Sichuan Pioneer Worker" in 2022

北海铁合金公司连续 6 年荣获  
Beihai Ferroalloy Co., Ltd. won the award for the sixth consecutive year  
**“安全生产先进单位”**  
"Advanced unit of safe production"

## 党建强企

Empowering the company through Party building

### 2022 年

党委理论中心组集体学习

8 次

8 collective study sessions for the study group formed by leading officials of the Party Committee organized

两级领导班子成员带头宣讲党的十九届六中全会精神

50 余场

50 lectures on the guiding principles of the sixth plenary session of the 19th Party Central Committee given by members of the Party leadership groups at two levels

“七一”专题党课听课

1400 余人次

1,400+ participants attended the “July 1” special Party lectures

召开党委会

21 次

21 Party committee meetings convened

钒钛股份党委深入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，坚持两个“一以贯之”，进一步巩固拓展党史学习教育成果，切实做到知史爱党、知史爱国，把党史学习教育成效转化为干事创业的动力和举措，推动党建与生产经营深度融合，在打造鞍钢集团第三极排头兵征程上迈出坚实步伐。

**把方向强引领，提升领导力。**发挥把方向、管大局、保落实作用，深刻领悟“两参一改三结合”精髓，领导参加蹲点、骨干参加攻关、党员参加挑战、全员参加创新，快速推进重难点工作。基层党组织和广大党员硬核担当，在抗疫前线挺身而出，取得 40 天封控、960 小时抗疫保产攻坚战的胜利。

**抓基层打基础，提升组织力。**以“五个进一步规范”为切入点，全力实施党支部“强基固本”“晋位升级”“示范引领”三大工程，系统构建“1+10+X”党支部工作制度体系，强化“一支部一品牌”建设。党组织书记领办“实事求是”、定期督办；班子成员履行“一岗双责”，压实党建责任。扎实推进“喜迎二十大、建功新鞍钢”主题实践活动，开展共产党员工程 29 项，“揭榜挂帅”创新创效项目 28 项。

**强化作风建设，提升保障力。**组织召开党风廉政建设和反腐败大会，协助党委制定《2022 年股份公司党委党风廉政建设和反腐败工作任务分工》，部署公司党风廉政建设和反腐败重点工作。组织开展“重温两书，诵读红色经典”系列活动。开展“以案为鉴 警钟长鸣”读书警示教育。抓实抓细七个“第一课”，集中观看警示教育片。设置举报信箱，公布举报电话，畅通监督渠道。

The Party Committee of Pangang Vanadium & Titanium has thoroughly 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 always upheld the significant political principle of the Party's leadership over state-owned enterprises, and regarded the establishment of a modern enterprise system as the direction of SOE reform. We have consolidated what we have gained from the initiatives to study the history of the CPC to foster love for the Party and the country, and transformed the achievements from those initiatives into the impetus and measures for our endeavors. Meanwhile, we have promoted the deep integration of Party building and our production and operations, and have taken solid steps on the journey toward building the third-pole vanguard for Ansteel.

**Setting the right direction and enhancing leadership.** The Party Committee has played its role in setting the right direction, keeping in mind the big picture, and ensuring the implementation of Party policies and principles. Fully comprehending the essence of “officials participating in labor, workers participating in management, reforming unreasonable rules and regulations, and combining workers, leaders, and technicians,” the Committee has required leaders to work in the front line of production, key personnel to tackle key problems, Party members to address challenges, and all personnel to seek innovation, and quickly advanced key and difficult tasks. In 2022, primary-level Party organizations and their members worked hard in the front line of the fight against COVID-19, successful withstanding the virus and ensuring production during the 40-day lockdown.

**Consolidating foundation and strengthening organization.** Starting from the “five areas to be further standardized,” we have done our



学习党的二十大  
Learn from the 20th CPC National Congress

best in implementing the three major projects of “strengthening the foundation,” “pursuing promotion and upgrading,” and “building models,” systematically constructed the “1+10+X” working mechanism for Party branches, and strengthened the construction of “one branch, one brand.” Secretaries of Party organizations are responsible for the resolution of “practical and difficult matters” and regular supervision; and other Party official are required to take responsibility in performing their duties and ensure the fulfillment of Party building responsibilities. We also achieved steady progress with the practical activity with the theme of “welcoming the 20th National Congress and building a new Ansteel,” and carried out 29 projects for Party members, as well as 28 projects for innovation and efficiency improvement where the open competition mechanism for selecting the best candidates are adopted.

**Improving Party conduct to enhance its role in guaranteeing corporate development.** We have convened the conference on improving Party conduct, upholding integrity, and fighting corruption, and assisted the Party Committee in formulating the Division of Tasks of the Party Committee on Improving Party conduct, Upholding integrity, and Fighting corruption in 2022. We have organized activities where participants reviewed the Party membership application and the application form, and read classics about the Party's history, as well as reading activities on cases about misconduct and corruption. Moreover, we have meticulously carried out the seven “first lessons,” and required Party members to watch educational films together. We have set up whistle-blowing mailboxes and disclosed reporting hotlines to improve supervision channels.

### 2022 年

研究审议事项

154 项

154 issues studied and deliberated

开展廉洁教育

529 次

529 education sessions on anti-corruption launched

受教育人数达

1.6 万人次

16,000 participants



# 公司治理

## CORPORATE GOVERNANCE

### governance

### 治理结构

#### Governance structure

#### 2022 年

召开股东大会

**3** 次

3 Shareholder's Meetings held

审议通过

**25** 项议案

25 proposals passed after deliberation

召开董事会

**10** 次

10 meetings of Board of Directors held

审议通过

**60** 项议案

60 proposals passed after deliberation

召开监事会

**10** 次

10 meetings of Board of Supervisors held

审议通过

**24** 项议案

24 proposals passed after deliberation

钒钛股份始终坚持党的领导不动摇，把加强党的领导和完善公司治理有机统一，建立健全党委会把关定向、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”。完成公司第九届董事会换届选举，董事会由 9 名董事组成，其中独立董事 3 名。持续推进完善董事会制度建设工作，制定董事会授权制度及清单、外部董事履职保障制度。

Pangang Vanadium & Titanium always adheres to the Party leadership and improves corporate governance in parallel to strengthening Party leadership. We work to establish a sound organizational structure in which the Party Committee directs the orientation, the Board of Directors makes decisions in accordance with laws and regulations and the management is responsible for implementation, so as to constantly improve the standardized and effective company operation. To include Party building into the constitution efficiently, the company has developed the list of the main responsibilities of the Party committee to implement full and strict governance over the Party, the list of "three importance and one greatness" decision-making principle, and the list of matters for pre-study and discussion by Party committee. The election of the ninth session of the company's Board of Directors has been completed, which consists of nine directors, including three independent directors. Besides, we continuously improve the system of the Board of Directors, and have formulated the system and list of authorization by the Board of Directors, as well as the guarantee system for outside directors' performance.



召开专门委员会会议

**13** 次

13 meetings of Special Committee held

审议通过

**25** 项议案

25 proposals passed after deliberation

### 风险管控

#### Risk management

钒钛股份贯彻习近平法治思想，强化风险管理。2022 年，开展防范化解重大生产经营风险专项工作，动态辨识评估重大风险 5 项 + 重要风险 6 项，印发《年度全面风险管理报告》，建立重大重要风险管控台账，设置风险预警指标 17 项，分别设定黄色、红色预警值，制定风险防范措施 32 条。制定公司重大重要风险管控清单，实行季度“责任覆盖、动态跟踪、超前预警、有效防控、整改提升、考核追责”风险管理运行机制。

围绕领导离任经济责任、财务管理、费用管理、经营管理、工程项目管理、合同管理等方面开展审计工作，实行月跟踪、季例会、年总结的审计管理运行机制，强化审计成果运用。

Upholding Xi Jinping Thought on the Rule of Law, Pangang Vanadium & Titanium strengthens risk management. In 2022, the company carried out special work to prevent and defuse major production and operation risks, in which 5 major and 6 key risks were dynamically identified and assessed. While issuing the Annual comprehensive risk management report, we established a major and key risk control ledger with 17 risk warning indicators in yellow and red, and 32 risk prevention measures. Based on our major and key risk control list, we implemented a quarterly risk management operation mechanism to ensure responsibility coverage, dynamic tracking, early warning, effective prevention and control, rectification and improvement, assessment and accountability.

The audit focuses on cost management, bidding management, safety and environmental protection management, commission management, debt management, and term-end accountability, with the help of audit management operation mechanism of monthly tracking, quarterly meeting and annual summary, which strengthens the application of audit results.

#### 2022 年

开展内部审计项目

**20** 个

20 internal audit projects carried out

完成审计报告

**12** 个

12 audit reports completed

审计发现问题

**9** 项

9 audit errors found

整改率

**100%**

Rectification rate 100%

# 责任管理

## CSR MANAGEMENT

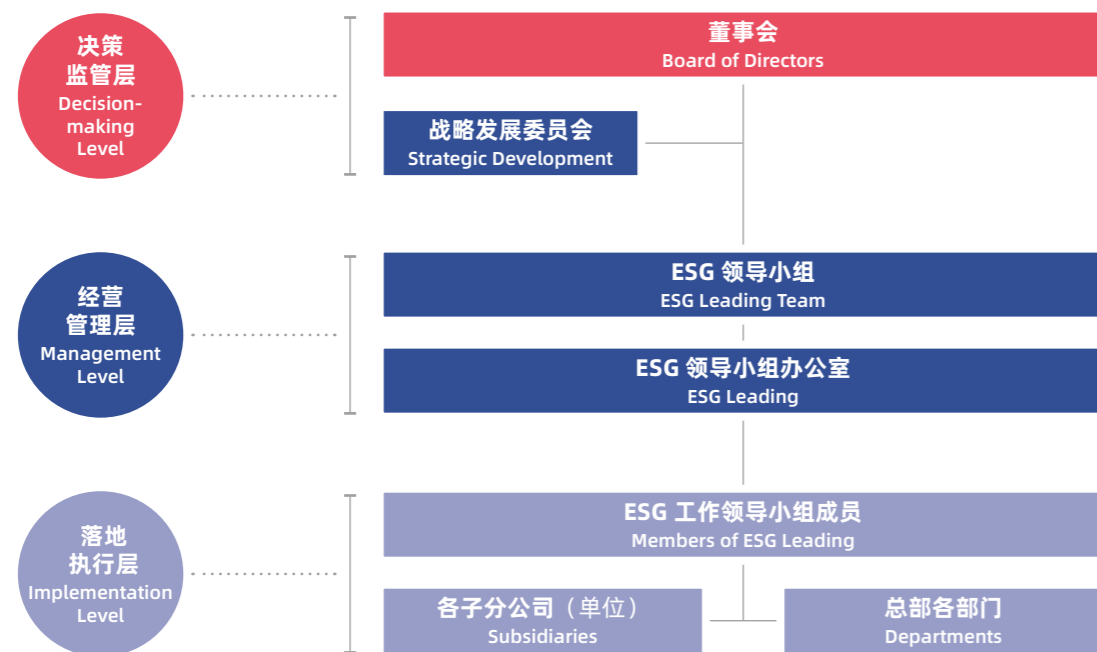
# Management

2022 年，钒钛股份披露中英双语《2021 年度 ESG 报告》并开展报告审验工作，积极发挥 ESG 报告在合规管理、绩效改善及声誉提升等方面的功能价值，获得较好反响。制定《钒钛股份环境、社会和公司治理管理办法》，将 ESG 管理纳入公司战略发展委员会职责，建立决策监管层、经营管理层和落地执行层三级管理架构，搭建了 ESG 指标管理体系，包括战略与治理、股东 / 投资者等 8 个主题、160 个指标，明确了 ESG 日常管理、案例管理、报告编制发布流程。

In 2022, the company disclosed the bilingual 2021 Annual ESG Report and passed the report assurance, so that the ESG report can play its role in compliance management, performance improvement and reputation enhancement, which received a good response. By formulating the Measures on Environmental, Social and Governance Management of Vanadium & Titanium, we incorporated ESG management into the responsibilities of the company's Strategy Committee and established the three-tier management structure consisted of decision-making and supervision, management and execution. Meanwhile, an ESG indicator management system is established, including 8 themes and 160 indicators on strategy and governance, shareholder or investors. It clarifies the ESG daily management, case management, report preparation and publication process.

战略发展委员会协助董事会的 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 Strategic Development Committee assists the Board of Directors in ESG management. The Board has established the ESG Leader Team, which includes ESG Leading Team Office and members of ESG Leading Team, pushing the management of ESG indicators from top to bottom.

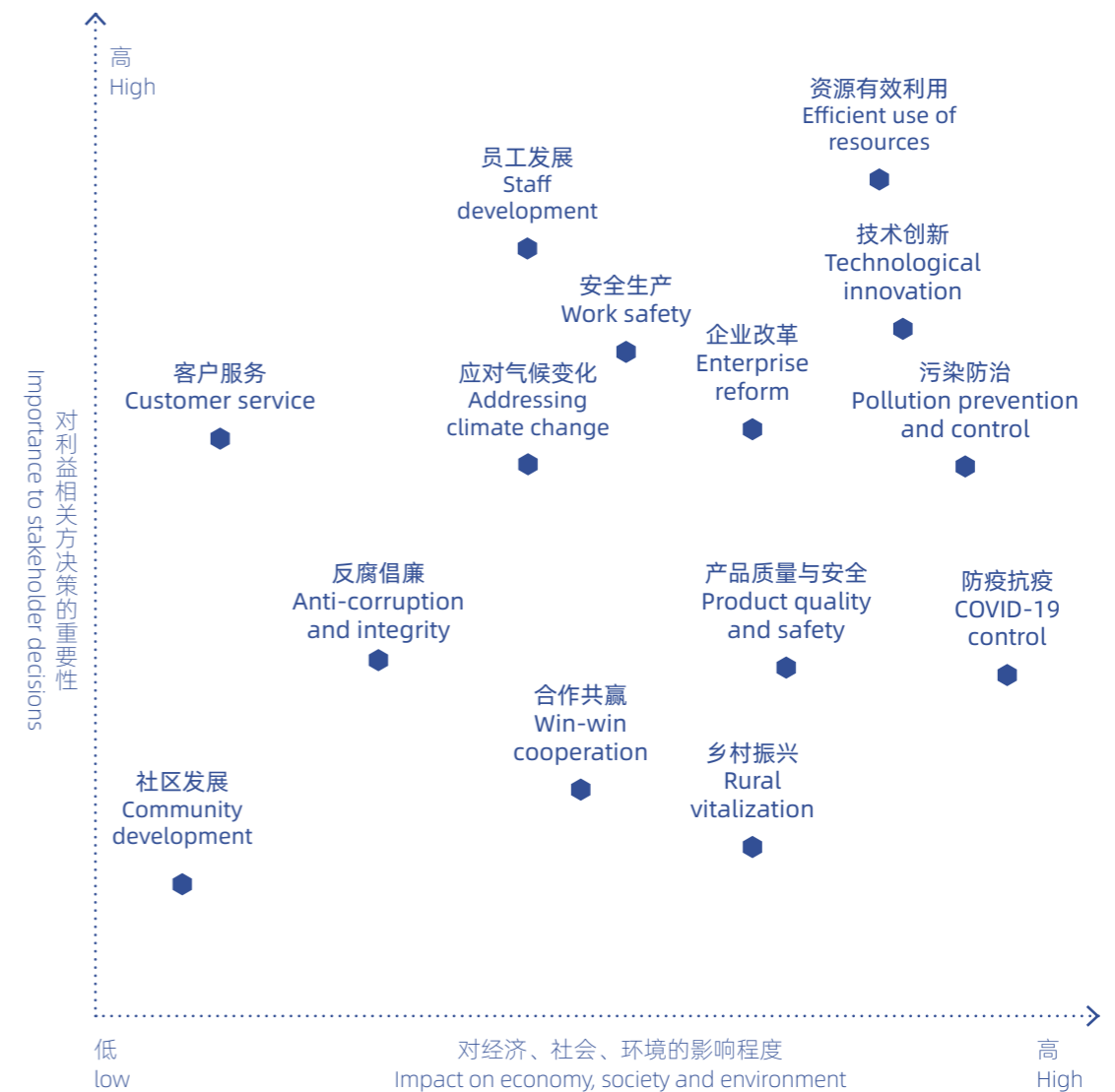


# 实质性议题识别

## Identification of materiality issues

我们根据公司战略重点、行业特点、社会责任标准，梳理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、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<br>Stakeholders   | 期望与要求<br>Expectations and requirements  | 沟通方式<br>Communication mode   | 我们的回应<br>Our response   |
|---|---|--|---|
|  <p><b>政府<br/>及监管机构</b><br/>Government<br/>and regulatory<br/>agencies</p> | <ul style="list-style-type: none"> <li>• 促进就业<br/>Promoting employment</li> <li>• 守法合规<br/>Ensuring legal compliance</li> <li>• 贡献地方经济发展<br/>Contributing to local economic development</li> </ul>  | <ul style="list-style-type: none"> <li>• 高层会晤<br/>High-level meeting</li> <li>• 交流会<br/>Exchange meeting</li> <li>• 信息报送<br/>Information submission</li> <li>• 地企专职联络机构<br/>Full-time liaison organization of local enterprises</li> </ul> | <ul style="list-style-type: none"> <li>• 主动纳税<br/>Active tax payment</li> <li>• 增加就业岗位<br/>Job creation</li> <li>• 依法合规治企<br/>Law-based governance</li> </ul>   |
|  <p><b>股东<br/>及投资者</b><br/>Shareholders<br/>and investors</p>            | <ul style="list-style-type: none"> <li>• 提高企业盈利能力<br/>Improving profitability</li> <li>• 提高投资项目回报率<br/>Increasing the return rate of investment projects</li> <li>• 提质增效<br/>Improving quality and efficiency</li> <li>• 安全生产<br/>Securing work safety</li> </ul> | <ul style="list-style-type: none"> <li>• 股东大会<br/>Shareholder's Meeting</li> <li>• 信息披露<br/>Information disclosure</li> <li>• 经营业绩考核<br/>Business performance assessment</li> <li>• 投资者沟通交流<br/>Investor communication</li> </ul>          | <ul style="list-style-type: none"> <li>• 保障股东权益<br/>Protecting shareholders' rights</li> <li>• 加强审计与风险管控<br/>Strengthening audit and risk control</li> <li>• 提高创新能力<br/>Improving innovation ability</li> <li>• 信息化建设<br/>Informatization</li> <li>• 加强安全生产管理<br/>Strengthening work safety management</li> </ul> |

| 利益相关方<br>Stakeholders  | 期望与要求<br>Expectations and requirements   | 沟通方式<br>Communication mode  | 我们的回应<br>Our response  |
|--|--|---|--|
|  <p><b>员工</b><br/>Employees</p>   | <ul style="list-style-type: none"> <li>• 薪酬福利保障<br/>Compensation and benefit guarantee</li> <li>• 职业发展<br/>Career development</li> <li>• 人文关怀<br/>Humanistic concern</li> <li>• 安全与权利保护<br/>Safety and rights protection</li> <li>• 沟通与民主管理<br/>Communication and democratic management</li> </ul> | <ul style="list-style-type: none"> <li>• 职工代表大会<br/>Workers' Congress</li> <li>• 座谈会<br/>Seminar</li> <li>• 网络沟通<br/>Online communication</li> <li>• 合理化建议<br/>Feasible proposal</li> <li>• 信息公开<br/>Information disclosure</li> </ul>                          | <ul style="list-style-type: none"> <li>• 提供有竞争力的薪酬<br/>Providing competitive compensation</li> <li>• 开展职业教育培训<br/>Carrying out vocational education and training</li> <li>• 建立职业发展通道<br/>Establishing career development channels</li> <li>• 关爱员工<br/>Caring for employees</li> <li>• 提供防护设备设施与安全培训<br/>Providing protective equipment and safety training</li> </ul>            |
|  <p><b>客户</b><br/>Customers</p> | <ul style="list-style-type: none"> <li>• 信守承诺<br/>Honoring commitments</li> <li>• 质高价优的产品和服务<br/>Providing high-quality products and services with better price</li> <li>• 个性化服务<br/>Offering personalized services</li> <li>• 信息保密<br/>Guaranteeing confidentiality of information</li> </ul>     | <ul style="list-style-type: none"> <li>• 销售代表日常联络<br/>Daily contact with marketing representatives</li> <li>• 展销会<br/>Exhibition</li> <li>• 客户大会<br/>Customer Conference</li> <li>• 定期走访<br/>Regular visits</li> <li>• 征求意见<br/>Opinion solicitation</li> </ul> | <ul style="list-style-type: none"> <li>• 关注客户需求<br/>Focusing on customer needs</li> <li>• 强化质量管理<br/>Strengthening quality management</li> <li>• 提高服务能力<br/>Improving service capability</li> <li>• 产品创新<br/>Realizing product innovation</li> <li>• 加强与客户沟通交流<br/>Strengthening communication with customers</li> <li>• 重视客户信息保护<br/>Protecting customer information</li> </ul> |

| 利益相关方<br>Stakeholders  | 期望与要求<br>Expectations and requirements  | 沟通方式<br>Communication mode   | 我们的回应<br>Our response  |
|--|---|--|--|
| <br><b>环境</b><br>Environment  | <ul style="list-style-type: none"> <li>节约资源<br/>Saving resources</li> <li>污染防治<br/>Pollution prevention</li> <li>减少废弃物排放<br/>Reducing waste discharge</li> <li>应对气候变化<br/>Tackling climate change</li> <li>保护生态环境<br/>Protecting the environment</li> </ul> | <ul style="list-style-type: none"> <li>环境管理<br/>Environmental management</li> <li>资源再生与利用<br/>Resource recycling and utilization</li> <li>落实节能减排<br/>Energy conservation and emission reduction</li> <li>加强生态建设<br/>More efforts on ecological protection</li> </ul> | <ul style="list-style-type: none"> <li>开展能源管理<br/>Energy management</li> <li>开展水资源管理<br/>Water resources management</li> <li>进行污染防治<br/>Pollution control</li> <li>提高废弃物利用率<br/>Improvement of waste utilization rate</li> <li>创新绿色工艺及产品<br/>Innovative green technology and products</li> <li>推进厂区绿化<br/>Plant greening</li> <li>践行绿色办公<br/>Green office</li> </ul> |
| <br><b>供应商</b><br>Suppliers | <ul style="list-style-type: none"> <li>诚实守信<br/>Integrity</li> <li>政策稳定<br/>Policy stability</li> <li>公开、公平、公正<br/>Open, fair and just principle</li> <li>互利共赢<br/>Win-win cooperation</li> </ul>   | <ul style="list-style-type: none"> <li>现场考察<br/>On-site visit</li> <li>合同谈判<br/>Contract negotiation</li> <li>定期走访<br/>Regular visits</li> <li>招标会议<br/>Tender meeting</li> <li>征求意见<br/>Soliciting opinions</li> </ul>  | <ul style="list-style-type: none"> <li>信守合同<br/>Contract fulfillment</li> <li>平等协商<br/>Equal consultation</li> <li>实施阳光采购<br/>Transparent procurement</li> <li>公开采购信息<br/>Public procurement information</li> <li>合规采购<br/>Compliant procurement</li> </ul>  |

| 利益相关方<br>Stakeholders   | 期望与要求<br>Expectations and requirements  | 沟通方式<br>Communication mode   | 我们的回应<br>Our response  |
|---|---|--|--|
| <br><b>行业与协会组织</b><br>Industry associations                | <ul style="list-style-type: none"> <li>公平竞争<br/>Fair competition</li> <li>行业发展与进步<br/>Industry progress</li> </ul>  | <ul style="list-style-type: none"> <li>加入协会并担任职务<br/>Joining an association and holding a post</li> <li>参与同行研讨、交流<br/>Participating in peer discussion and exchange</li> </ul>   | <ul style="list-style-type: none"> <li>参与标准制定等活动<br/>Participating in standard formulation and other association activities</li> <li>参加展会、交流会<br/>Attending exhibitions and exchange meetings</li> <li>开展政企、校企等多方合作<br/>Launching government-enterprise cooperation and university-enterprise cooperation</li> </ul> |
| <br><b>社区、公众与媒体</b><br>Communities, the public and media | <ul style="list-style-type: none"> <li>支持社区发展<br/>Supporting community development</li> <li>成为履行社会责任的模范<br/>Being a CSR model</li> <li>信息公开、透明<br/>Offering open and transparent information</li> </ul> | <ul style="list-style-type: none"> <li>社区共建<br/>Contribution to community development</li> <li>共同开发项目<br/>Joint development of projects</li> <li>定期交流<br/>Regular communication</li> <li>媒体沟通<br/>Media communication</li> </ul> | <ul style="list-style-type: none"> <li>投身社区建设<br/>Engagement in community development</li> <li>支持文化建设<br/>Support for cultural progress</li> <li>参与公益志愿活动<br/>Participation in voluntary activities</li> <li>及时发布相关信息<br/>Release of relevant information of the company in time</li> </ul>                          |

# 创新驱动

## 响应国家战略

### Pursuing Innovation-Driven Development in Response to National Strategies

# 01

## 新时代召唤 The Call of the New Era

完善科技创新体系，坚持创新在我国现代化建设全局中的核心地位，健全新型举国体制，强化国家战略科技力量，提升国家创新体系整体效能，形成具有全球竞争力的开放创新生态。

——中国共产党第二十次全国代表大会报告

We will improve systems for technological innovation. Innovation will remain at the heart of China's modernization drive. We will improve the new system for mobilizing resources nationwide to make key technological breakthroughs. We will boost China's strength in strategic science and technology and the overall performance of China's innovation system, and create an open and globally-competitive innovation ecosystem.

— Report to the 20th CPC National Congress

## 钒钛股份新发展 New Development of Pangang Vanadium & Titanium

作为国家高新技术企业，钒钛股份十分重视科技研发，强化创新驱动高质量内涵式发展。我们以市场需求和科技进步为导向，以工艺技术升级优化、重大产品开发、装备升级等为切入点，优化科技创新机制，完善技术创新体系平台，全力抓好科技创新技术研究与攻关工作，提升公司技术竞争优势和利润增长点，以实际行动助推社会主义现代化强国建设。

As a national high-tech company, Pangang Vanadium & Titanium always attaches great importance to research and development, and strives to promote high-quality development driven by innovation. Oriented toward market demand and technological progress, we optimize our technological innovation mechanism and improve the technological innovation platform by upgrading and optimizing process technology, developing major products, and upgrading equipment. We are committed to conducting innovative technology research for technological breakthroughs, so as to enhance the company's competitive advantages in technology and profit growth, and contribute to China's efforts to build a great modern socialist country with concrete actions.

贡献联合国可持续发展目标  
Contribution to UN SDGs



### 2022 年新成就 New Achievements in 2022

研发总投入

**5.76** 亿元  
576 million yuan invested in R&D

获得省级科技成果

**3** 项  
3 provincial-level scientific and technological achievements

实现科技创效

**3.48** 亿元  
348 million yuan of profits created by advances in science and technology

授权专利

**63** 项  
63 newly authorized patents  
其中发明专利

**20** 项  
including 20 invention patents

形成自有知识产权 (专有技术)

**6** 个  
6 self-owned intellectual property rights (proprietary technology)

## 筑牢创新基础

### SOLID FOUNDATION OF INNOVATION

# Foundation of Innovation

公司凝心聚力做好科技创新工作，夯实创新发展基础。2022 年获得省部级以上科技成果奖 3 项，授权专利 63 项，发明专利 20 项，形成一批拥有自主知识产权的专有技术。其中，获得冶金科学技术奖一等奖 1 项，获得省科技进步三等奖 1 项，钒铁和钒氮合金两项产品获评“制造业单项冠军产品”称号。

The company strives for technological innovation to solidify the foundation of innovation-driven development. In 2022, we won three provincial and ministerial-level awards for scientific and technological achievements as well as 63 authorized patents (including 20 invention patents), and obtained a number of proprietary intellectual property rights. We won one first prize of the Metallurgical Science and Technology Award, and one third prize of the provincial award for scientific and technological progress. Our two products, ferrovandium and vanadium-nitrogen alloy, were rated as "Single-champion Products in the Manufacturing Industry."

## 优化 科技创新管理

### Optimizing the management of technological innovation

公司修订科技创新管理办法，完善科技创新激励机制，持续提升科技创新能力，充分发挥专家在重大技术研发、科技成果评价、工程项目方案决策的重要作用。

We have revised the management methods for technological innovation, and improved the incentive mechanism for innovators to continuously enhance the company's technological innovation capabilities and fully leverage the important role of experts in major technological research and development projects, evaluation of technological achievements, and decision-making of engineering project plans.

### 成立“钒钛专家组” Establishing an “vanadium and titanium expert group”

“钒钛专家组” 共由62名专家组成，包含钒专家组和钛专家组。专家组主要负责组织对本专业领域内的中长远战略发展规划及产品规划、重大科研项目、重大科技成果、工程项目方案等进行评议并形成意见建议。

The “vanadium and titanium expert group” is composed of 62 experts. The group is mainly responsible for evaluating and offering opinions on the medium and long-term strategic development plans and product plans, major scientific and technological research projects, major technological achievements, and engineering project proposals in their respective fields.

### 制定工作计划 Developing work plans

公司印发《2022 年度科技工作计划》，明确科技工作总体思路、工作目标、重点工作及保障措施，并分解、落实到各单位。下达年度科研项目计划，分为政府项目、鞍钢集团、攀钢集团、股份公司四个层级，共 75 项科研项目。

The company released the *Annual Plan for Science and Technology Work in 2022*, clarifying the overall thinking, objectives, key tasks, and supporting measures for science and technology work, and assigned specific tasks to relevant departments. We have also issued the annual research project plan, including 75 research projects at four levels: government projects and projects of Ansteel, Pangang Group, and Pangang Vanadium & Titanium.

### 实施“拓荒牛”专项奖励 Implementing the “Pathfinder” incentive mechanism

公司建立“拓荒牛”专项奖励机制，鼓励各职能部门、各单位或工作团队创新发展，为公司赢得好的效益和声誉。2022 年对获评“环境诚信企业”“制造业单项冠军产品”“2022 年四川省质量标杆”等 11 个项目团队或个人给予奖励 27.64 万元。

The company has developed the “Pathfinder” incentive mechanism to encourage various functional departments, subsidiaries, and work teams to pursue innovation-driven development and win economic benefits and reputation for the company. In 2022, we awarded a total of 276,400 yuan in rewards to 11 project teams and individuals who received honors such as “Enterprises of Integrity in Environmental Protection,” “Single-champion Products in the Manufacturing Industry,” and “Industrial Quality Benchmark in Sichuan Province in 2022.”

### 组建科技攻关队 Setting up R&D teams

成立 3 个科技攻关队，开展新产品攻关、低温氯化示范线达产达效攻关、工艺升级及质量提升攻关，明确科技攻关目标，制定奖励办法，建立例会、检查推进机制。

The company has established three R&B teams responsible for conducting research on new products, improving the low-temperature chlorination demonstration lines, upgrading processes, and improving quality. We have clarified the goals for scientific and technological breakthroughs, established incentives, and developed regular meeting and inspection mechanisms.

#### 奖励范围 SCOPE OF REWARDING

获得各级政府专项资金支持、税收优惠、电价优惠等

Receiving special financial support, tax incentives, electricity price discounts, etc., from governments at all levels

获得政府资质和名优品牌，例如各类生产经营资质证书和品牌形象证书等

Obtaining government-approved credentials and famous brand qualifications, such as various qualification certificates for production and operations and brand image certificates

成功选树省级或国家级劳动模范，获得五一劳动奖章，创建省级或国家级技能大师工作室、青年创新工作室

Having employees who have been officially awarded the title of provincial or national model workers and won the May 1st Labor Medal, and having built provincial or national skill master workshops and youth innovation workshops

解决重大事项等 Resolving major issues, etc

## 丰富科技创新成果

### Making scientific and technological advances

公司按照“预研一批、试制一批、转产一批”的策略，持续开展一系列新产品开发科研攻关项目，推动中国钒钛产业向更高端发展延伸。重视关键技术研发，积极参与国际、行业等标准的制（修）订，全力开展技术攻关。

公司围绕“第三代技术体系”构建、“两大创新平台”建设，结合“十四五”钒钛产业及产品发展规划，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，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撑。开展在钒氮合金、高钒铁生产，大型电炉冶炼钛渣，钛白粉新产品的开发及应用性能研究。低温氯化关键装备长寿化、高端钒铝合金坩埚冶炼工艺等关键技术取得突破，钒精细化工产品、钒铝合金推广量分别同比提高 114%、44%；R-249、CR-340 钛白粉实现转产，推广量分别同比提高 273%、134%。获得省部级科技成果奖 3 项，新增发明专利 20 项、实用新型专利 43 项，实现科技创效 3.48 亿元。

Following the strategy of “conducting research and development, trial production, and production of a batch of new products,” the company has continued to carry out a series of new product R&D projects to upgrade China’s vanadium and titanium industry. We attach great importance to the research and development of key technologies and also actively participate in the formulation and revision of international and industry standards.

Centering around the establishment of “third-generation technology systems,” the construction of the “two major innovation platforms,” and the development plan of the vanadium and titanium industry and products during the 14th Five-Year Plan period, we focus on the four directions of “green, efficiency, high value, and intelligence” while carrying out research on key technologies in major fields, process optimization, product quality improvement, and new product development. Through these efforts, we will build the optimal brand and technological capabilities that will provide strong technical support for the company’s production, operations, and development. We have conducted research on the development and application performance of vanadium-nitrogen alloy and FeV80 production, smelting of titanium slag using large electric furnaces, and new titanium dioxide products, and have made breakthroughs in prolonging the service life of low-temperature chlorination key equipment and optimizing the crucible smelting process for high-end vanadium-aluminum alloys. The mass production of vanadium fine chemical products and vanadium-aluminum alloys has increased by 114% and 44% year on year, respectively. We have also achieved mass production of R-249 and CR-340 titanium dioxide, with their mass production increasing by 273% and 134% year on year respectively. In 2022, we won 3 provincial and ministerial-level awards for scientific and technological achievements, obtained 20 invention patents and 43 utility model patents, and created an operating income of 348 million yuan through technological progress.



### CASE | 案例

## 公司获国家发明专利证书

### Winning a national patent certificate

《钒渣浅氧化焙烧分离钒的方法》获得国家知识产权局颁发的发明专利证书。该专利解决了空白焙烧提钒工艺存在的钒转浸率波动大，对原料适应性差以及难以实现工业应用等生产问题。

*The Method for Recovering vanadium Through Mild Oxidation Roasting of Vanadium Slag has been awarded an invention patent certificate by the China National Intellectual Property Administration (CNIPA). The patent solves large fluctuations in the leaching efficiency of vanadium in the process of recovering vanadium through blank roasting, as well as the technique’s poor adaptability to raw materials and difficulty in industrial application.*



### 开展技术攻关 Seeking breakthroughs in technology

公司将行业标杆值、历史最优值、全年目标值等作为攻关目标，工程技术人员扎根现场，积极进行各类实验，不断突破瓶颈、破解难题。

The company has set industry benchmark values, historical best values, and annual target values as its goals, and required technical personnel to be stationed at project sites to conduct experiments and break through bottlenecks.

### CASE | 案例

## 关键指标再创最好水平

### Achieving historical best levels in key indicators

2022 年，西昌钒制品确定了降低高钒铁小结晶率、还原窑温度控制研究等 8 个重点攻关项目，制订攻关计划清单 98 条，开展试验 40 多次，探索出钙钒比、熟料配比等 10 多项最佳工艺控制参数。与合作伙伴共同探索钙化提钒控磷技术研究，开展钙化焙烧熟料控磷浸出工业化试验，在降低氧化钒产品杂质的同时，实现月度增产 6%，氧化钒收率、钒铁收率等多项关键指标均创历史最好水平。

In 2022, Xichang Vanadium Production developed 8 key scientific research projects such as the reduction of the small crystallization rate of FeV80 and temperature control of the reduction kiln. The subsidiary developed 98 planning lists, conducted more than 40 experiments, and obtained more than 10 optimal process control parameters such as calcium-to-vanadium ratio and raw material ratio. The company and its partners jointly conducted research on the phosphorus removal technique for vanadium extraction through calcification roasting and the industrial experiments on the phosphorus control of clinker leaching after calcification roasting. While reducing impurities in the vanadium oxide product, the company achieved a monthly production increase of 6%, and achieved historical best levels in key indicators such as vanadium oxide recovery rate and ferrovandium recovery rate.

## 培育 创新人才队伍

Supporting the  
development of  
innovative personnel

公司注重科技创新人才培养，激发全员创新创效活力，将业绩和对公司科技创新工作所做贡献作为激励评价依据，让参与技术创新者各得其所。创建了重庆钛业黄永富劳模创新工作室、攀枝花钒制品分公司任晓明·赵宾点检创新工作室、攀枝花市级薛平技能大师工作室等，培养一大批优秀的生产、技术人才队伍，为钒的深加工和钛白生产研发提供领军人才。

The company values the development of technological personnel, and is committed to stimulating the vitality of all employees in pursuing innovation and progress. Therefore, we have set personal performance and their contributions to the company's technological innovation as evaluation criteria, allowing those who participate in innovation to receive deserved rewards and compensation. We have also established the Huang Yongfu Model Worker Innovation Workshop at Chongqing Titanium Industry, the Ren Xiaoming and Zhao Bin Spot Inspection and Innovation Workshop at Panzhihua Vanadium Products Branch, etc., and trained a large number of outstanding production and technical personnel, some of whom have become leading talents for the deep processing of vanadium and the production of titanium dioxide. The Xue Ping Skills Master Workshop has been recognized as a Skills Master Workshop in Panzhihua City.

CASE | 案例

### 成立第一家点检专业类技能创新工作室

Establishing the first spot inspection and innovation workshop

2022年9月，攀枝花钒制品分公司“点检创新工作室”正式成立，该工作室也是钒钛股份第一家点检专业类的技能创新工作室。点检创新工作室团队成员33人，涵盖机械、电气、仪控等专业点检及相关设备管理人员，团队成员共获得15项国家授权实用新型专利，参加多项重大技改项目和工程项目建设。

In September 2022, the "Spot Inspection and Innovation Workshop" was officially established at Panzhihua Vanadium Products Branch. It is also the company's first skill innovation workshop that focuses on spot inspection. The workshop has a team of 33 members responsible for inspection of machinery, electricity, and instrument control as well as equipment management. The team members have obtained a total of 15 national utility models, and have participated in a number of major technology transformation projects and engineering projects.



点检创新工作室授牌  
Inauguration of the Spot Inspection and Innovation Workshop

## 推动数字化创新

DIGITAL INNOVATION

# Innovation

钒钛股份加快“数字化、智能化”转型，推动智能产线建设，开发智能生产工艺，打造智慧工厂，降低人工成本，提高生产效率。2022年，钒钛股份推进数字化网络化应用项目20项，在国内硫酸法钛白行业率先运行MES系统、实现钛冶炼产线“大集控”，优化3D岗位8个、减少操作室15个。

By accelerating digitalization and the application of intelligent technologies, promoting the construction of intelligent production lines, developing intelligent manufacturing processes and smart factories, Pangang Vanadium & Titanium has realized lower labor costs and higher production efficiency. In 2022, we made significant progress in 20 digitalization and IT application projects, and became the first in the sulfuric acid method-based titanium dioxide industry to introduce the MES system for centralized control of the titanium smelting production line. We optimized eight 3D positions and eliminated 15 control rooms.

CASE | 案例

### 持续推进 MES 系统建设

Facilitating the establishment of the MES system

MES系统有利于调节生产过程和分析优化指标。重庆钛业在流程复杂的硫酸法钛白生产线上，行业内首家建成并运行MES系统，创新MES系统内容和管理方法，突破MES系统功能模式。在工序过程管理、工序成本管理、质量跟踪管理、产成品及外部仓储管理等方面取得显著成效，实现了全流程信息共享、产品过程质量追溯，优化了业务与管理流程等，为其余生产单元智能工厂建设提供良好示范。

The MES system can help regulate production processes and analyze optimization indicators. Chongqing Titanium Industry has introduced and put into use the first MES system in the industry for the sulfuric acid method-based titanium dioxide production line, which features complex processes. The system has innovative content and management approaches, and makes breakthroughs with both its functions and operation modes. In terms of process management, process cost management, quality tracking management, finished product and external warehousing management, Chongqing Titanium Industry also made significant achievements, realizing full-process information sharing and product process quality tracing. The company has also optimized its business and management processes, setting a good example for other production departments in the construction of smart factories.

### 钛冶炼产线公辅系统集中管控项目上线运行

Launch of the centralized control project for the public auxiliary system in the titanium smelting production line

钛冶炼产线公辅系统集中管控项目充分应用自动控制与通信网络技术，对原有分散的区域公辅设施进行集中管控化升级改造，较好解决现场装备自动化不足、操控集成度低、视频监控有限、人工耗费多、劳动强度较大等问题，实现钛冶炼产线“大集控”，生产集中管控效能明显提升。

By fully applying automatic control and communication technologies, the centralized control project for the public auxiliary system in the titanium smelting production line realizes centralized control of once scattered regional auxiliary facilities. This makes up for low-level equipment automation, decentralized control systems, insufficient security cameras, and high labor costs and intensity, contributing to centralized control of the titanium smelting production line and boosting the efficiency of centralized control of production processes.



# 科学稳健

## 创造股东价值

### Creating Value for Shareholders Through Scientific and Reliable Ways

# 02

#### 新时代召唤 The Call of the New Era

将能源安全、资源安全作为推进国家安全体系和能力现代化、坚决维护国家安全和社会稳定的重要内容，为相关产业的发展提出新要求、注入新动力。

——中国共产党第二十次全国代表大会报告

Taking energy and resource security as the main content in the cause of modernizing China's national security system and capacity and safeguarding national security and social stability, and putting forward new requirements and creating new drivers for the development of related industries.

——Report to the 20th CPC National Congress

#### 钒钛股份新发展 New Development of Pangang Vanadium & Titanium

大力发展钒钛产业是提升国家战略资源保障能力的“战略工程”，是推动我国钒钛产业高质量发展的“强链工程”。钒钛股份坚持不懈做深做强钒钛主业，始终把公司发展融入国家发展战略大局，对标世界一流企业，提高产量规模、优化技经指标、压降变动费用，持续为经济社会发展作出更大贡献。

Vigorously developing the vanadium and titanium industry is a “strategic project” in enhancing China's strategic resource security and key to a stronger supply chain of the industry. The company is committed to developing and strengthening its main business in the vanadium and titanium industry and integrating the company's development into the overall national development strategy. Benchmarking against world-class enterprises, we continuously increase the production scale, optimize technical and economic indicators, and reduce variable costs, aiming to make greater contributions to economic and social development.

贡献联合国可持续发展目标  
Contribution to UN SDGs



#### 2022年 New Achievements in 2022

营业收入  
**150.88** 亿元  
Revenue of **15.088** billion yuan

同比增加

**7.3%**  
A year-on-year increase of **7.3%**

实现利润  
**14.6** 亿元  
Profit of **1.46** billion yuan

归属于上市公司股东的净利润  
**13.44** 亿元  
Net profit attributable to shareholders of the listed company: **1.344** billion yuan

# 稳健经营 STEADY AND PRUDENT MANAGEMENT

钒钛股份坚持“均衡、稳定、经济、高效”组织生产。钒生产方面，攀枝花钒制品分公司、西昌钒制品开展技经指标提升攻关，实现氧化钒收率、钒铁收率和钒产品产量均创历史新高。钛生产方面，东方钛业、重庆钛业控制关键指标精度，加强生产工序过程监管，刚性执行工艺操作制度，提高生产操作精准性和稳定性，TiO<sub>2</sub>收率实现历史新高。

着力落实鞍钢集团“第三极”发展战略，加快“6万吨/年熔盐氯化法钛白项目”“五氧化二钒提质升级改造项目”“钒氮合金原料系统升级改造”“钒渣提钒迭代升级”等重点项目建设。

Pangang Vanadium and Titanium adheres to “balanced, stable, economical, and efficient” organization and production. In terms of vanadium production, Panzhihua Vanadium Products Branch and Xichang Vanadium Production strive to improve the technical and economic indicators significantly, achieving historical highs in the output of vanadium oxide, vanadium iron, and vanadium products. For titanium production, Dongfang Titanium Industry and Chongqing Titanium Industry effectively controlled the accuracy of key indicators, tightened supervision of production processes and procedures, and rigidly implemented processes and operations, thereby improving the accuracy and stability of production and achieving historical highs in TiO<sub>2</sub> output.

In an effort to implement the “third-pole” development strategy of Ansteel, we facilitated the progress of key projects such as the “60,000 tons/year titanium dioxide production project based on molten salt chlorination method,” the “V<sub>2</sub>O<sub>5</sub> quality improvement and upgrading project,” the “vanadium nitrogen alloy raw material upgrading and renovation project,” and the “upgrading of vanadium extraction from steel slag.”



## CASE | 案例

### 实施五氧化二钒提质升级改造项目

#### The V<sub>2</sub>O<sub>5</sub> quality improvement and upgrading project

攀枝花钒制品分公司新建一条年产 1000 吨高纯五氧化二钒产线，充分发挥资源优势、技术优势和成本优势，延伸产业链，开拓高纯五氧化二钒市场，拓展钒产品在非钢领域的高端应用（宇航级铝合金、钒催化剂、钒功能材料等），进一步改善电池级、化工级和钒铝级高纯五氧化二钒的品质，满足用户对产品质量的更高要求。

Panzhihua Vanadium Products Branch has built a new production line with an annual output of 1,000 tons of high-purity V<sub>2</sub>O<sub>5</sub>. The production line, giving full play to the company's advantages in resources, technologies, and cost control, helps extend the industry chain, explore the high-purity V<sub>2</sub>O<sub>5</sub> market, and expand high-end applications of vanadium products in non-steel sectors (such as aerospace-grade vanadium-aluminum alloy, vanadium catalysts, vanadium functional materials, etc.). The project further improves the quality of battery-grade, chemical-grade, and vanadium-aluminum-grade high-purity V<sub>2</sub>O<sub>5</sub>, meeting customers' higher requirements for product quality.

## CASE | 案例

### 开展“揭榜挂帅·创新创效”活动

#### Launching the “Open Competition for Candidate Selection, Innovation for Higher Efficiency” campaign

钒钛股份围绕安全生产、质量提升、操作优化、装备升级、节能降耗等开展“揭榜挂帅·创新创效”活动，28个项目“揭榜”，28名领军人才“挂帅”，200名员工参与攻关，取得突出成效。

Around the goals of work safety, quality improvement, operation optimization, equipment upgrade, energy saving and consumption reduction, Pangang Vanadium & Titanium held the “Open Competition for Candidate Selection, Innovation for Higher Efficiency” campaign. The campaign involved 28 projects, with 28 project leaders selected and a total of 200 employees participating, achieving outstanding results.



“揭榜挂帅·创新创效”活动  
The “Open Competition for Candidate Selection, Innovation for Higher Efficiency” campaign

## 2022 年

每股社会贡献值

**0.3028** 元

Social contribution value per share:  
**0.3028** yuan

所有者权益

**91.71** 亿元

Owner's equity:  
**9.171** billion yuan

资产负债率

**23.15%**

Debt-to-asset ratio:  
**23.15%**

利润总额

**14.6** 亿元

Total profit: **1.46** billion yuan

钛精矿经营量

**151.89** 万吨

The operating volume of titanium concentrate:  
**1518900** tons

钛白粉产量

**24.35** 万吨

The output of titanium dioxide: **243500** tons

钒制品产量 (以 V<sub>2</sub>O<sub>5</sub> 计)

**4.69** 万吨

The output of vanadium products (V<sub>2</sub>O<sub>5</sub>): **46900** tons

钛渣产量

**18.72** 万吨

The output of titanium slag: **187200** tons

## 深化改革

### DEEPENING REFORMS

钒钛股份对标先进，深化改革提效，建立领导干部成员包保基层单位改革联系点工作机制，压机构、压总量、强队伍、强激励，完成 14 项改革目标，全员劳动生产率同比增长 2.44%。西昌钒制品入选“国有重点企业管理标杆创建行动标杆企业”，重庆钛业成为 2022 年国家专精特新“小巨人”企业。

深化三项制度改革，持续不断完善“四能”机制。完成钛业公司、园区电力等专业化整合，优化厂级机构 2 个、科级机构 7 个；深化“赛马”机制，管理岗位公开招聘率 60%，末等调整和不胜任退出率 6.7%，市场化退出率 2%；推行职业经理人制度，建立适应现代企业制度要求和市场竞争需要的选人用人机制，2022 年新聘职业经理人 7 人；实施股权激励，对 95 名核心员工授予限制性股票 1328 万股，进一步激发了员工干事创业的激情。

Following the example of outstanding industry peers, Pangang Vanadium & Titanium has been improving efficiency through reforms. We appointed members of the leadership to act as reform liaison officers at the grassroots, aiming to reduce the number and scale of departments, strengthen the workforce, and implement more efficient incentives. The company achieved 14 reform targets and realized a year-on-year increase of 2.44% in labor productivity. In addition, Xichang Vanadium Production was selected as a benchmark enterprise in the management benchmark setting action among key SOEs, while Chongqing Titanium Industry was rated as a “Little Giant” enterprise in 2022.

The company has pressed ahead with the reform of the three systems and continuously enhanced the four key capabilities. We integrated the professional capabilities of Titanium Industry Company and industrial parks' power supply system, and optimized two factories and seven divisions. Fully implementing the open competition mechanism, we realized a 60% competition-based recruitment rate for management positions, with termination rates of underperforming staff at 6.7% and voluntary exits at 2%. We also implemented a professional manager system, aiming to establish a personnel selection and appointment mechanism that adapts to the requirements of modern corporate governance and market competition. In 2022, we hired seven professional managers. Through stock incentive schemes, we granted 13.28 million restricted shares to 95 core employees, further inspiring their entrepreneurial spirit.

#### CASE | 案例

### 三项制度改革让氧化钒作业区成品班尝到甜头

#### Granting rewards to the finished product team of the vanadium oxide production line through the reform of three systems

成品班制定了《绩效分配考评实施细则》和“一人一表”绩效单，将绩效与产量、质量、安全等核心指标挂钩，充分体现“收入凭贡献”，职工工作更有劲头；按照“应放能放的权力全部放”原则，赋予组长选用组员、薪酬分配、生产组织的权力，实现人岗匹配，激发班组活力；各小组之间开展“指标赛马”和“一人一表评分赛跑”，形成“比、拼、赶、超”良好氛围。

We have compiled *Rules for Performance Distribution Evaluation* and built a performance checklist for each member of the finished product team to link their performance to core indicators such as output, quality, and safety. This complies with the principle of “contributions determine income,” and urges employees to work harder. In accordance with the principle of “delegation of maximum authority,” we allow team leaders the autonomy to select team members, allocate income, and organize production activities, thus ensuring perfect matches between the employee and his/her position and stimulating the vitality of the team. By comparing the performance indicators of different teams, we have realized healthy competition among teams.

## 降本增效

### COSTS REDUCTION AND EFFICIENCY IMPROVEMENT

抓实“稳产、提质、降本、增效”工作，深化低成本经营发展战略，制定《2022-2025 年降本增效方案》，坚持“一切成本皆可降”，突出“分类管控、分级管控”降本特色，以行业对标为抓手，以全员、全要素、全过程成本管控为主线，降本增效贯穿于供、产、销，人、财、物全过程。2022 年实现系统降本 2.87 亿元，超目标 1.23 亿元。

To realize “stable production, better quality, lower costs, and higher efficiency,” the company has further implemented its low-cost operation and development strategy and formulated *the 2022-2025 Cost Reduction and Efficiency Improvement Plan*. Upholding that “all costs can be reduced,” we have implemented typical cost reduction measures including “classified and graded cost control.” Benchmarking against industry peers, we strive to implement cost control among all employees and across all production elements and processes. Cost reduction and efficiency improvement has been integrated throughout the entire process of supply, production, and sales, as well as across all employees, financial departments, and facilities. In 2022, we reduced 287 million yuan in cost, exceeding the target by 123 million yuan.



### 坚持顶层设计， 体系化推进降本增效

**Adhering to the top-level design  
and systematically promoting cost  
reduction and efficiency improvement**

建立体制机制、供销改善、运营改善、科技支持、财务支持等多维度降本增效体系；突出“顶层设计、点面结合、动态调整”，纵向到底横向到底细化量化分解目标；坚持降本增效“全员参与、全线发力、全面渗透”，建立 26 个三级指标，细化 200 项措施；实行“周跟踪、月评估”闭环管理，从成本波动倒查短板、分析差异、及时纠偏。

We have established institutional mechanisms, improved supply-sales relationships and operations, strengthened technological and financial support, etc. to establish a multi-dimensional system for cost reduction and efficiency improvement. Upholding the top-level design, we make dynamic adjustments in accordance with the overall picture while breaking down our cost reduction and efficiency improvement goals into the smallest targets to facilitate the realization of the goals. Believing that cost reduction and efficiency improvement should engage all staff and departments, we have established 26 third-level indicators and refined 200 measures. We implement closed-loop management through “weekly tracking and monthly evaluation,” and identify our shortcomings, analyze differences, and make timely corrections based on cost fluctuations.

### 坚持问题导向， 突出科研降本增效

**Staying problem-oriented approach and  
emphasizing the role of scientific research in  
cost reduction and efficiency improvement**

以“重点突破钒钛产品收率等核心技术经济指标优化”为抓手，强化资源内外统筹，采取“揭榜挂帅”方式，充分发挥科技支撑作用。西昌钒制品实施降低高钒铁小结晶率等 8 个重点攻关项目，精细化管控生产工艺关键点，实现生产成本持续压降；攀枝花钒制品分公司实施“洗涤水系统技术改造”等降本项目，提高钒收率，实现生产成本持续压降。2022 年优化技术经济指标创效 1.7 亿元，超过目标 0.66 亿元。

Focusing on “optimizing core technical and economic indicators such as vanadium-titanium product yield,” we have strengthened the coordination of internal and external resources and adopted open competition in the selection of the best candidates to fully leverage technological support. To achieve sustained cost reduction in production, Xichang Vanadium Production

implemented eight key projects to reduce the small crystallization rate of high-vanadium iron and fine-tune key links of production processes, and Panzhihua Vanadium Product implemented cost reduction projects such as the “technology transformation of the wash water system” to improve vanadium yield. In 2022, we generated 170 million yuan through optimizing technical and economic indicators, exceeding the target by 66 million yuan.

### 坚持政策研究， 抓实节能减排创效

**Carrying out policy research consistently  
and focusing on energy conservation,  
emission reduction, and cost reduction**

研究分时电价政策，制定《生产用电错峰降本专项工作方案》，明确错峰降本评价方法，实施“钛渣冶炼时刻表”“钛精矿球磨夜班运行”“钛渣破碎错峰就谷运行”“检维修工作尽量安排在尖峰时段和峰段实施”等具体措施，全年错峰用电降低电费 1408 万元。

Based on studies of the time-of-use electricity pricing policy, we formulated the *Special Work Plan for Reducing Electricity Cost in Production Through Load Shifting*, which clarifies the evaluation method for load-shifting-based cost reduction. Through specific measures such as implementing a titanium slag smelting schedule, operating titanium concentrate ball mills during night shifts, carrying out the operation of titanium slag crushing machines during valley periods and maintenance work during peak periods as much as possible, we have reduced electricity costs by 14.08 million yuan throughout the year.



# 绿色引领 争做双碳先锋

03

## Pursuing Green Development and Striving to Be a Decarbonization Pioneer

### 新时代召唤 The Call of the New Era

加快发展方式绿色转型，实施全面节约战略，发展绿色低碳产业，倡导绿色消费，推动形成绿色低碳的生产方式和生活方式。深入推进污染防治，打好蓝天、碧水、净土保卫战。

——中国共产党第二十次全国代表大会报告

We will accelerate the transition to a model of green development, implement a comprehensive conservation strategy, and support green development. We will encourage green consumption and promote green and low-carbon ways of production and life. We will intensify pollution prevention and control, and make further efforts to keep our skies blue, waters clear, and lands clean.

--Report to the 20th CPC National Congress

### 钒钛股份新发展 New Development of Pangang Vanadium & Titanium

钒钛股份坚定不移走“生态优先、绿色发展”之路，坚持加快推进清洁制造、绿色升级与低碳发展，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，加快形成绿色发展方式，促进经济发展和环境保护双赢，助力人与自然和谐共生。

The company resolutely follows a green development path that prioritizes ecological protection, accelerates clean manufacturing, green upgrade, and low-carbon development, and strives to stabilize and enhance development through eco-friendly and clean production. We have expedited the transition of our growth model to one of green development, in order to secure progress in economic development and environmental protection, and ensure harmony between humanity and nature.

贡献联合国可持续发展目标

Contribution to UN SDGs



#### 2022 年新成就 New Achievements in 2022

各类环境污染事件

0 件  
0 pollution incidents

环保总投入约

1.05 亿元  
105 million yuan invested in environmental protection

节能

10563 吨标煤  
10563 TCEs saved

清洁能源（电）使用占比达

70.15%  
The proportion of clean energy (electricity) usage up to 70.15%

重庆钛业、东方钛业、钛业公司钛冶炼产线、攀枝花钒制品分公司被评为省级“环保诚信企业”

Chongqing Titanium Industry, Dongfang Titanium Industry, the titanium smelting production line of Titanium Industry Company, and Panzhihua Vanadium Products Branch were rated as “Enterprises of Integrity in Environmental Protection.”

攀枝花钒制品分公司、西昌钒制品、东方钛业、钛业公司、国钛科技获评四川省“绿色制造示范单位”

Panzhihua Vanadium Products Branch, Xichang Vanadium Production, Dongfang Titanium Industry, Titanium Industry Company, and Guotai Science & Technology won the award of “Paradigm of Green Manufacturing” in Sichuan Province.

# 开展环境管理 ENVIRONMENTAL MANAGEMENT

钒钛股份持续加强环境管理，健全环境管理组织体系，坚持碳达峰目标导向，加快绿色低碳发展和环境质量改善，实现节能降耗协作效应。2022 年，公司环境污染事件、核与辐射事故、环保立案调查、环保处罚均为零。

The company has continued to strengthen environmental management and improve the organizational system for environmental management toward the carbon peaking goal. Meanwhile, we work to accelerate green and low-carbon development and the improvement of environmental quality, and achieve collaborative effects of energy conservation and consumption reduction. In 2022, the company did not have any environmental pollution incidents or nuclear and radiation accidents, and did not undergo any environmental investigation or administrative punishment.



## 环境管理架构 Environmental management architecture

公司成立环境保护管理委员会，对公司环境保护、环境监督承担直接领导责任；增设能源及碳管理部门，专职开展碳统计核算、核查、交易、碳足迹认证等管理工作；按照“环保+”的环保理念，构建“党政同责、一岗双责、齐抓共管”环境保护责任体系，层层签订目标责任状，压实各级环保责任。

We have established the Environmental Management Committee, which takes direct leadership responsibility for environmental protection and supervision, and set up the new energy and carbon management department responsible for carrying out carbon accounting, verification, trading, carbon footprint certification, etc. We have developed an environmental protection responsibility system based on the concept of “environmental protection +” as well as the overall requirements that both Party committees and governments are held accountable and that officials take responsibility for environmental protection in performing their duties; in addition, we have signed responsibility statements on environmental protection targets with personnel at all levels to ensure the fulfillment of their responsibilities.

## 开展环境监测 Conducting environmental monitoring

公司制定年度环境监测计划，委托第三方按计划开展监测，并向社会公开监测情况。重点排污单位严格按照生态环境保护主管部门要求安装污染源在线监测设施，对废气和废水主要排放口污染物排放进行在线检测，定期开展比对监测。

We develop annual environmental monitoring plans, entrust third-party organizations to carry out monitoring according to the plans, and disclose the monitoring results to society. Key pollutant-discharging entities are required to install online monitoring facilities for pollution sources in strict accordance with the requirements of ecological and environmental protection authorities. They must carry out online detection of pollutants from main waste gas and wastewater outlets, and conduct comparative monitoring on a regular basis.

## 环境应急预案 Environmental contingency plans

公司制（修）订了突发环境事件应急预案 5 个，组织演练 8 次。

The company has formulated and revised five contingency plans for environmental incidents, and organized eight drills.

## 建设环保信息化平台 Building an environmental information platform

公司利用环保信息化平台抓实法规识别与应用、环保设施运行、环境监测记录、环保核算等环保基础管理工作，提高工作效率。2022 年，公司实现环保信息化平台与重点污染源国控平台有效对接，自动采集国控平台数据，提升了环保管理的及时性、有效性、精准性、规范性。

With the environmental information platform, we have conducted the identification and application of environmental regulations, the operation of environmental facilities, the recording of environmental monitoring data, and the accounting of environmental tax. In 2022, we realized the effective coordination between the environmental information platform and the state control platform for key pollution sources, which allows us to automatically collect data from the national control platform, and improve the timeliness, effectiveness, accuracy, and standardization of environmental management.



环保信息化平台  
The environmental information platform



绿色是钒钛股份的新底色  
Green is the new background of Vanadium and Titanium

### 2022 年

实施环境污染治理项目

9 个

Implement 9 environmental pollution treatment projects

## 降低碳排放

### REDUCTION OF CARBON EMISSIONS

实现碳达峰碳中和是我国高质量发展的内在要求，钒钛股份深入开展“双碳”研究，制定公司“十四五”及中长期规划，助力“双碳”目标实现。公司制定《碳达峰及低碳发展专项规划（2021-2035年）》，2022年温室气体排放目标236万吨二氧化碳，实际排放量170.2万吨，比目标减少排放65.8万吨。

Achieving carbon peak and carbon neutrality are the intrinsic requirements of China's own high-quality development. Therefore, Pangang Vanadium & Titanium has taken further steps to conduct research on "carbon peak and carbon neutrality," and has formulated plans for the 14th Five-Year Plan period and the medium-to-long-term future to make contributions to China's 30-60 Decarbonization Goal. According to the company's "Special Plan for Peaking Carbon Emissions and Low Carbon Development (2021-2035)," our GHG emission target for 2022 was 2.36 million tons CO<sub>2</sub>, but our actual CO<sub>2</sub> emissions were 1.702 million tons, which was 658,000 tons lower than the target.

坚持采用低碳绿色原材料，提升原燃料质量要求，降低高碳燃料使用，启动智慧能源管理信息系统的建设，实施能源精细化管理，稳步推进能源基础管理工作落地。

We use low-carbon and green raw materials, improve the quality requirements of raw fuels, and reduce the use of high-carbon fuels. We have launched the construction of a smart energy management information system, implemented energy refinement management, and steadily promoted the implementation of energy infrastructure management.

邀请第三方机构开展碳足迹核查1家、碳交易专题培训105人次，提升管理人员对“双碳”理念和碳资产管理的认知水平。

We have hired a third-party agency to conduct carbon footprint verification, and provide special training in carbon trading for 105 administrative staff to enhance their understanding of the concepts of "carbon peak and carbon neutrality" as well as carbon asset management.

建立内部碳管理体系，制定碳排放数据统计及碳排放强度计算规则，明确碳排放强度指标，完善一、二、三级能源计量设施，健全考核体系，推进公司节能降碳精细化管理。

We have established an internal carbon management system, formulated rules for carbon emission statistics and carbon emission intensity calculation, and clarified carbon emission intensity indicators. At the same time, we have improved the first, second, and third-level energy metering facilities, improved the assessment system, and promoted the refined management of energy conservation and carbon reduction.

#### 2022年

直接温室气体排放量

**982,451** 吨

Direct GHG emissions:  
982451 tons

间接温室气体排放量

**719,584** 吨

Indirect GHG emissions:  
719584 tons

万元产值能耗

**0.46** 吨标准煤

Comprehensive energy consumption per 10,000 yuan of output value:  
0.46 tons TECs

## 开展节能改造

### Energy conservation projects

公司深入开展能源综合利用和节能技术研究，积极减少生产运营全过程温室气体排放。东方钛业实施钛液浓缩及闪干余热尾气热能利用节能改造，有效降低化石燃料消耗及热能损失；钛业公司开展电炉密闭升级改造，回收煤气再循环利用；西昌钒制品回收利用三步法熔炉余热，提升能源使用效率。

公司通过了能源体系认证，开展能源管理系统建设，采用自动化和信息技术，监测分析数据，提升能源管理水平，助推绿色低碳发展。

The company has further conducted research on the comprehensive utilization of energy and energy-saving technologies to reduce GHG emissions from production and operations. To be specific, Dongfang Titanium Industry has conducted a project to utilize the heat from the concentration of titanium and the flash drying process, which has effectively reduced the consumption of fossil fuels and heat loss. Titanium Industry Company has carried out an upgrading project to make electric furnaces airtight and reuse recycled gas. Xichang Vanadium Production has recycled the waste heat from the three-step melting furnace to improve energy efficiency.

We have passed the energy system certification, and started the construction of an energy management system that applies automation and information technology to monitor and analyze data. Through these efforts, we have optimized energy management, and promoted green and low-carbon development.

| 指标<br>Index  | 计量单位<br>Unit                         | 2022年<br>2022 | 2021年<br>2021 | 较2021年<br>Compared with 2021 |
|--|--------------------------------------|---------------|---------------|------------------------------|
| 氧化钒综合能耗<br>Comprehensive energy consumption of V <sub>2</sub> O <sub>5</sub> | Kgce/t.V <sub>2</sub> O <sub>5</sub> | 3479.5        | 3698          | -218.5                       |
| 氧化钒耗新水量<br>New water consumed by V <sub>2</sub> O <sub>5</sub>               | t/t.V <sub>2</sub> O <sub>5</sub>    | 17.09         | 20.68         | -3.59                        |
| 钛白粉综合能耗<br>Comprehensive energy consumption of titanium dioxide              | Kgce/t                               | 1043.9        | 1091.7        | -47.8                        |
| 高钛渣综合能耗<br>Comprehensive energy consumption of high titanium slag            | Kgce/t                               | 482.35        | 476.00        | 6.35*                        |

注\*：国钛科技1-7月加大云南矿使用比例，入炉品位下降，还原深度增大，导致电耗及焦炭上升，综合能耗上升

Note\*: From January to July, Guotai Science & Technology increased the utilization proportion of Yunnan mine, which reduced the feed grade and increased the reduction depth, increasing the power consumption and coke consumption as well as comprehensive energy consumption.

CASE | 案例

## 节能改造重点工程

### Key energy conservation projects

**MVR 钛液浓缩:** 钛液浓缩改用 MVR 浓缩工艺后, 改单效蒸发浓缩为多效蒸发浓缩, 将一次蒸汽加热后发出的二次蒸汽再压缩提高温度压力, 作为蒸发热源利用, 节约蒸汽。项目投建以来, 共节约标准煤 5051 吨。

**MVR titanium liquid concentration:** The MVR titanium liquid concentration process upgrades the single-effect evaporation concentration to multi-effect evaporation concentration. It compresses the secondary steam generated after the first steam heating to increase its temperature and pressure, and uses it as the heat source for evaporation. Since the project was launched, a total of 5,051 TCEs have been saved.



东方钛业员工查看钛液 MVR 蒸发浓缩系统  
An employee of Dongfang Titanium Industry inspects the MVR titanium liquid evaporation and concentration system

**闪干余热利用项目:** 新增余热回收装置, 回收高温尾气余热用于闪干加热助燃风, 节约天然气消耗量。项目投建以来, 共节约标准煤 459 吨。

**Flash drying waste heat utilization project:** A new waste heat recovery equipment has been installed to recover heat in the high-temperature waste gas for use as combustion-supporting air for flash drying, and for reducing natural gas consumption. Since the project was launched, a total of 459 TCEs have been saved.



东方钛业员工查看闪干余热利用装置  
The flash drying waste heat utilization facility at Dongfang Titanium Industry

**钛渣电炉技术升级改造与煤气回收利用项目:** 对钛渣电炉进行密闭改造, 回收煤气用于干燥湿钛精矿。2022 年, 煤气回收量达到 3200 万 m<sup>3</sup>, 减少二氧化硫排放 70 吨、二氧化碳排放 2.4 万吨; 新增钛精矿干燥产能 46 万吨 / 年。

**Titanium slag electric furnace upgrade and coal gas recovery project:** The company has upgraded the titanium slag electric furnaces to make them airtight, and recovered the coal gas for drying wet titanium concentrate. In 2022, we increased the amount of coal gas recovered to 32 million cubic meters, reducing sulfur dioxide emissions by 70 tons and carbon dioxide emissions by 24,000 tons. In addition, a new titanium concentrate drying capacity of 460,000 tons per year was added.



钛渣电炉煤气回收用于干燥湿钛精矿  
Titanium slag electric furnace gas recovery for drying wet ore in drying kiln

## 开展 新能源储能合作

### Cooperation in new energy storage

构建以可再生能源为主体的新型电力系统是落实低碳转型的关键, 随着新能源发电入网的比例逐步提升, 市场对储能需求日益增加, 全钒液流储能电池迎来了发展机遇。公司秉承协同发展理念, 主动与上下游、同行业开展沟通合作。与大连融科储能集团股份有限公司合资成立钒融科技, 建设年产 2000m<sup>3</sup> 全钒液流电池电解液产线, 推动钒电池前沿关键技术发展、产线建设和商业模式创新, 共同助力我国双碳目标实现和新型电力系统建设。

Developing new electric power systems based on new energy sources is the key to the transformation toward low-carbon development. As more electricity generated from new energy sources are being connected to power grids, the market demand for energy storage is also increasing, bringing development opportunities to all-vanadium redox flow battery. The company, following the concept of coordinated development, actively communicates and cooperates with enterprise on the upstream and downstream as well as those in the same industry. For example, we have established a joint venture Fanrong Power Co., Ltd. with Dalian Rongke Power Co., Ltd. to build a production line with a capacity of producing 2,000 m<sup>3</sup> all-vanadium flow battery electrolyte per year, and accelerate the development of cutting-edge key technologies of vanadium batteries, production line construction, and business model innovation. All these efforts will promote the realization of China's 30·60 Decarbonization Goal and the construction of new electric power systems.



## 推进清洁生产 CLEAN PRODUCTION

# Production

钒钛股份坚持“环保达标就是企业生命线，环保能力就是企业竞争力，环保投入就是企业发展投入”的经营理念，对标国家标准及先进企业，推行“高效、清洁、低碳、循环”的绿色制造体系建设，实现废副资源综合利用，全面提升绿色发展、高质量转型能力。2022年，公司主要污染物排放量均在排污许可证管控范围内。

Pangang Vanadium & Titanium upholds the business philosophy that “environmental compliance is the lifeline of the enterprise, environmental capabilities are the competitiveness of the enterprise, and environmental investment is the investment in development made by the enterprise.” Following national standards and taking leading enterprises as examples, the company has worked to build a “high-efficiency, clean, low-carbon, and circular” green manufacturing system to achieve the comprehensive utilization of waste and by-products, and comprehensively enhance its green development and capabilities of making a high-quality transformation. In 2022, our discharge of major pollutants was all within the scope of the pollutant discharge permit.

### 2022 年公司主要污染物排放情况 Discharge of major pollutants in 2022

| 项目<br>Items                              | 化学需氧量<br>COD | 氨氮<br>Ammonia nitrogen | 二氧化硫<br>SO <sub>2</sub> | 氮氧化物<br>NOx | 颗粒物<br>Particulate Matter |
|--|--------------|------------------------|-------------------------|-------------|---------------------------|
| 排污许可量<br>Permissible pollutant discharge | 379          | 47.41                  | 3411                    | 325         | 691                       |
| 2021 年排放量<br>Total discharge in 2021     | 97.45        | 16.03                  | 547                     | 297         | 229.38                    |
| 2022 年排放量<br>Total discharge in 2022     | 46           | 4                      | 364                     | 294         | 197                       |
| 较 2021 年<br>Comparison with 2021         | -51.45       | -12.03                 | -183                    | -3          | -32.38                    |

## 减少 废气污染

### Reduction of exhaust emissions

公司大力推进环保综合治理。钛业公司实施钛渣电炉技术升级改造与煤气回收利用项目，实现二氧化硫减排 70 吨 / 年；重庆钛业实施转窑氮氧化物治理项目，实现外排氮氧化物折算浓度 < 200mg/m<sup>3</sup>；国钛科技实施钛渣电炉除尘滤袋升级改造，实现外排颗粒物较上年同期减排 0.84 吨。

The company vigorously promotes comprehensive environmental governance. Titanium Industry Company has achieved an annual reduction of 70 tons of sulfur dioxide emissions by implementing the titanium slag electric furnace upgrade and coal gas recovery project. Chongqing Titanium Industry has implemented a rotary kiln nitrogen oxide treatment project, reducing the equivalent concentration of nitrogen oxides in the exhaust gas to below 200mg/m<sup>3</sup>. Guotai Science & Technology has implemented a titanium slag electric furnace dust filter bag upgrade project, achieving a reduction of 0.84 tons of particulate matter in the exhaust gas compared to the same period last year.

## 固体废弃物 管理

### Solid waste management

2022 年

处理废旧资源

**187.3** 万吨

1.873 million tons of waste and used resources were disposed

创效

**2.63** 亿元

creating an efficiency of 263 million yuan

公司按照“分类回收，综合利用、市场化处置”的工作方针，加强固废资源化利用。2022年，产生固体废物 194.78 万吨，处置 133.33 万吨，综合利用率 68%，较 2021 年度提高 13%。

2022年，危险废物处置量 201.36 吨，其中废油 44.06 吨、废包装物 26.24 吨、沾染矿物油废物 48.59 吨、废触媒 79.5 吨、废电池 1.57 吨、在线废液及化验室废液 1.4 吨。

The company has strengthened the recycling and utilization of solid waste following the guidelines of “classified recovery, comprehensive utilization, and market-oriented disposal.” In 2022, we generated 1.9478 million tons of solid waste, 1333300 tons were disposed, and increased its comprehensive utilization rate to 68%, an 13% increase from 2021.

In 2022, 201.36 tons of hazardous waste was disposed of in total, including 44.06 tons of waste oil, 26.24 tons of waste packaging materials, 48.59 tons of waste contaminated with mineral oil, 79.5 tons of waste catalyst, 1.57 tons of used batteries, and 1.4 tons of online waste liquid and waste liquid from chemical laboratory.

## 水资源 管理

### Water resources management

公司重视水资源管理及利用，积极应对水资源短缺危机，采用先进的节水技术，持续提高用水效率和回收利用率。

重庆钛业、东方钛业积极开展洗水复用技术，三洗水用于二洗，二洗水用于一洗，提升洗水复用率。将水质满足工艺要求的废水、反渗透浓水回用为酸解尾气喷淋的补充水，共减少用水量 56 万吨。

国钛科技新增浇渣水二次回水管，实行浇渣水重复循环使用；北海铁合金开展中水处理系统优化升级，提高运行效果；强化废水处理工作，攀枝花钒制品分公司、西昌钒制品、国钛科技持续实现废水零排放。

Pangang Vanadium & Titanium attaches great importance to water resources management and utilization, actively addressing water scarcity issues, and continuously increasing water efficiency and recycling rate through advanced water-saving technologies.

Chongqing Titanium Industry and Dongfang Titanium Industry actively improve wash water reuse technology to improve water efficiency, using water from the third wash for the second wash and water from the second wash for the first wash. They also use wastewater that meets production requirements and water that has been filtered through reverse osmosis as supplementary water for acid exhaust gas spray, reducing water usage by a total of 560,000 tons.

Guotai Science & Technology has installed water returns for slag spray water to improve water reuse. Beihai Ferroalloy has carried out a project to upgrade the recycled water treatment system to improve its operational efficiency. Panzhihua Vanadium Products Branch, Xichang Vanadium Production, and Guotai Science & Technology have achieved zero discharge of wastewater through optimized wastewater treatment.

2022 年

企业运营总耗水量

**17.94** 百万立方米

Total water consumption for enterprise operation 17.94 million m<sup>3</sup>

# 推动生态保护 ECOLOGICAL PROTECTION

钒钛股份认真履行社会责任，始终把环境保护放在第一位，实施堆场复绿工程，举办环保知识专题培训，开展环保宣传，积极推动绿色低碳发展。

Pangang Vanadium & Titanium takes its social responsibility seriously and always puts environmental protection first. The company has implemented vegetation restoration projects in storage yards, and conducted training and publicity on environmental protection to promote green and low-carbon development.

## 堆场 复绿工程

### Storage yard vegetation restoration projects

公司以改善生态环境质量为核心，不断提升生态环境保护能力，全范围加大植树造林力度，共建共享生态绿色家园。2017 年以来，钒钛股份累计投入资金约 1074 万元，种植灌木、乔木及草坪等地被植物，完成绿化整治面积约 18.2 万平方米。

The company focuses on improving the quality of the ecological environment and constantly enhances its ability to protect the environment. We have increased our efforts to plant trees, contributing to the construction of an eco-friendly, green home. Since 2017, we have invested approximately 10.74 million yuan in planting shrubs, trees, lawns, etc., and completed the planting of about 182,000 square meters of vegetation.

CASE | 案例

### 实施钛石膏堆场复绿工程

#### Carrying out vegetation restoration project in the titanium gypsum storage yard

为进一步做好生态环境保护工作，重庆钛业 50 余名干部职工开展“生态环境人人有责呵护，植树复绿建设美丽重钛”义务植树活动，在钛石膏堆场开展植树活动，栽种近百棵桃树、李树、海桐球。助力实现钛石膏堆场 1-14 级子坝复绿、美化，达到堆场山体与周边环境协调融合，增强钛石膏堆场的安全稳定性。

To further enhance environmental protection, more than 50 managers and employees of Chongqing Titanium Industry conducted voluntary tree planting activities in the company's titanium gypsum storage yard. They planted nearly a hundred trees including peach trees, plum trees, pittosporum shrubs, etc. The company has planted trees on sub-dams 1-14 in the titanium gypsum storage yard, restored the integration of the storage yard and the surrounding environment, and enhanced the safety and stability of the titanium gypsum storage yard.



钛石膏堆场复绿植树活动  
Planting trees in the titanium gypsum storage yard



钛石膏堆场 1-14 级子坝  
Sub-dams 1-14 in the titanium gypsum storage yard

## 环保 培训与宣传

### Environmental training and publicity

公司重视环境保护培训和宣传工作，对内引导员工自觉履行环保责任，对外加大环保号召力度，持续增强职工环境保护意识，共同参与环境保护工作。2022 年共计 254 人参加环保专题培训，内容包括环保法律法规、国家碳达峰碳中和战略、企业面临的国内国际环境与市场挑战、企业零碳转型路径、企业碳管理体系建设等。以世界环境宣传活动为契机，采用展板、宣传手册、手机微信等方式，与地方生态环境保护主管部门共同开展环保宣传活动。

The company attaches great importance to environmental training and publicity. We guide employees to consciously fulfill their environmental responsibilities, and continuously enhance their environmental awareness. Externally, we have made greater efforts to advocate environmental protection, and encourage employees and the public to jointly participate in environmental actions. In 2022, a total of 254 people of the company participated in environmental training on environmental laws and regulations, national strategies for carbon peaking and carbon neutrality, domestic and international environmental and market challenges faced by enterprises, enterprises' zero-carbon transformation paths, enterprise carbon management system construction, etc. Taking the opportunity of World Environment Day, we cooperated with local environmental authorities in carrying out publicity activities through exhibition boards, brochures, WeChat, and other means.



环保宣传海报  
Environmental protection posters



环保宣传手册  
Environmental protection brochures

# 合作共赢

## 担当精诚伙伴

### Strengthening Win-Win Cooperation with Partners

# 04

## 新时代召唤 The Call of the New Era

坚持以推动高质量发展为主题，把实施扩大内需战略同深化供给侧结构性改革有机结合起来，增强国内大循环内生动力和可靠性，提升国际循环质量和水平，加快建设现代化经济体系，着力提高全要素生产率，着力提升产业链供应链韧性和安全水平，着力推进城乡融合和区域协调发展，推动经济实现质的有效提升和量的合理增长。

——中国共产党第二十次全国代表大会报告

Pursuing high-quality development as our overarching task, we will make sure that our implementation of the strategy to expand domestic demand is integrated with our efforts to deepen supply-side structural reform; we will boost the dynamism and reliability of the domestic economy while engaging at a higher level in the global economy; and we will move faster to build a modernized economy. We will raise total factor productivity, make China's industrial and supply chains more resilient and secure, and promote integrated urban-rural development and coordinated regional development, so as to effectively upgrade and appropriately expand China's economic output.

---Report to the 20th CPC National Congress

## 钒钛股份新发展 New Development of Pangang Vanadium & Titanium

钒钛股份秉持“倡导责任担当，但更需要协同作战”的价值导向，通过延伸产业链条、强化质量控制、提升产品品质，深耕攀西钒钛资源，持续发挥攀西国家级战略资源创新开发试验区核心企业的引领作用，以开放的胸怀携手合作伙伴，聚力打造共建共享、稳定可持续的全球钒钛价值链。

Pangang Vanadium & Titanium adheres to the values that "joint efforts are indispensable when advocating the fulfillment of responsibility." The company has extended the industry chain, strengthened quality control, improved product quality, and continued to develop the vanadium and titanium resources in the Panxi region. As a leading company in the Panxi Strategic Resources Innovation and Development Pilot Area, we have worked with partners on an inclusive basis to build a shared, stable, and sustainable global vanadium and titanium value chain.

贡献联合国可持续发展目标

Contribution to UN SDGs



### 2022 年新成就 New Achievements in 2022

产品用户

**342** 家  
342 product users

签订供应商

**942** 家  
942 suppliers signed contracts

获评

“2022年四川省工业质量标杆”

"2022 Sichuan Provincial Industrial Quality Benchmark"

“攀枝花市东区第三届政府质量奖”

"Panzhihua East District Third Government Quality Award"

钒铁产品获评

“制造业单项冠军产品”

Ferrovandium products were rated as the sixth batch of "single champion products" in the manufacturing industry by the Ministry of Industry and Information Technology

钒氮合金产品获评

“制造业单项冠军产品”

Vanadium-nitrogen alloy won the "seventh batch of single champion products in manufacturing industry"

# 与客户共成长 GROWTH WITH CUSTOMERS Customers

公司始终关注客户需求，运用“高品质、高水平、高黏度、高效率”工作标准，打造“理念建设、人才培养、顾客互动、产研销协同”四个服务平台，全面提升顾客服务水平。

公司坚持“精益求精，品质优先，顾客满意”的质量工作方针，高度重视质量管理体系建设及产品质量管控，完成了 QMS、GJB、AS 质量管理体系年度监督审核，将钒钛贸易经营贸易类产品纳入公司质量管理体系范围并通过认证；严抓原辅料入厂验收、过程质量精细化管理、成品出厂质量把关，通过检化验系统、MES 系统等信息化系统实现质量信息及时传递和跟踪，采用 SPC（统计过程控制）、工艺纪律检查等方法及时识别、纠正过程异常，提高生产操作精准性和产品质量稳定性；通过六西格玛项目、攻关项目、QC 小组活动等持续改进产品质量。

To comprehensively improve customer service, Pangang Vanadium & Titanium always pays attention to customer needs, and builds the four service platforms for “concept construction, employee development, customer interaction, as well as collaborative production, research, and sales” according to the “high quality, high level, high stickiness, and high efficiency” work standards.

The company adheres to the quality guideline of “continuous improvement, quality first, and customer satisfaction,” and attaches great importance to the construction of the quality management system as well as product quality control. We have completed the annual supervision and audit of the QMS, GJB, and AS quality management systems, and obtained certification for including vanadium and titanium products in the company’s quality management system. We have strictly implemented the inspection and acceptance of raw materials entering the factory, detailed process quality management, and inspection of finished products. Through information systems such as the inspection and analysis system and the MES system, we are able to transmit and track quality information in a timely manner. We also use methods such as statistical process control (SPC) and process discipline inspection to identify and correct process abnormalities in a timely manner, thereby improving the accuracy of production operations and the stability of product quality. In addition, we improve product quality through Six Sigma projects, R&D projects, QC team activities, etc.



## CASE | 案例

### 质量创优创奖再获佳绩

#### Reaching new heights of quality improvement

钒钛股份 1 个 QC 小组获评第五届中央企业 QC 小组成果发表赛二等奖、2 个 QC 小组获评四川省优秀质量管理小组、2 个班组获评四川省质量信得过班组；11 人通过 2022 年六西格玛注册黑带初审认证，通过率达 73.3%，远超全国平均通过率。

One QC team of Pangang Vanadium & Titanium was awarded the second prize at the 5th Central SOE QC Team Achievement Presentation Competition, and two other QC teams were rated as “Excellent Quality Management Teams in Sichuan Province.” Additionally, two production teams were evaluated as “Trustworthy Production Teams in Sichuan Province.” Eleven employees of the company passed the initial review of the Six Sigma Black Belt Certification in 2022, with a pass rate of 73.3%, which greatly exceeded the national average pass rate.

## CASE | 案例

### 抓质量管理

#### Strengthening quality management

钒钛股份组织员工参加全国“质量月”活动，开展全面质量管理知识培训，提升员工质量意识及管控技能；优化过程质量控制方法，提升产品实物质量；开展走访用户，积极收集用户意见和建议。通过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，产品质量及稳定性提升明显。多个产品质量改善明显，创历史最优水平。

We have organized employees to participate in the national “Quality Month” campaign, and conducted comprehensive training on quality management knowledge to enhance employees’ awareness of quality and quality control skills. We have optimized our process quality control methods to improve the physical quality of our products, and conducted customer surveys to collect their opinions and suggestions. Thanks to the inspection of raw materials entering the factory, detailed process management, quality inspection of finished products, and rectification of process quality abnormalities, the quality and stability of our products have been significantly improved. The quality of multiple products has been significantly improved, reaching the best level in history.



检查外发产品外观质量  
Check the appearance quality of outsourced products



攀枝花钒制品分公司员工核对成品入库信息  
The staff of Panzhihua Vanadium Products Branch checks the warehousing information of finished products

## CASE | 案例

### 抓产品提质

#### Increasing efforts to improve product quality

重庆钛业通过优化中粉工艺，调整高温袋滤器操作方式，稳定气粉负压参数等，R-298 水分散性合格率稳定提升，2022 年下半年较 2021 年提升 18.54 个百分点；优化不同领域产品粒径控制，调整转窑 A、B 线 SCX 控制范围，R-298 遮盖力合格率同比提升 10 个百分点。

By optimizing the intermediate powder process, adjusting the operation mode of the high-temperature filter, and stabilizing the powder negative pressure parameters, Chongqing Titanium Industry has achieved a stable increase in the qualified rate of R-298 water dispersibility, which has increased by 18.54% year on year. The company has also optimized the particle size control of products in different fields, adjusted the SCX control range of rotary kiln lines A and B, and increased the covering power qualification rate of R-298 by 10% compared to last year.

CASE | 案例

### 收获大批“铁杆”客户

#### Harvesting a large number of loyal customers

公司组建“营销+技术”服务团队，多维度做好客户服务，与多家行业龙头企业建立长期稳固的战略合作关系。公司营销部门协同生产企业共同制定解决方案，全方位提高客户服务响应速度和服务质量；积极推进数智化营销项目建设，为客户提供问题解答、在线下单、自助提货等一站式协同服务。公司还加强开发和推广 R-249 钛白粉、“粒化生铁”、全新贝氏体耐磨特殊钢等新产品，不断满足客户需求。

The company has set up “marketing + technology” service teams to enhance customer service from multiple dimensions, and has established long-term and stable strategic partnerships with a number of industry leaders. Our marketing department has worked with production companies to develop solutions and comprehensively reduce the response time of customer service and improve its quality. We have also actively developed digital marketing projects, providing customers with one-stop collaborative services including problem-solving, online ordering, self-service pickup, etc. Furthermore, we have strengthened the development and promotion of new products such as R-249 titanium dioxide, “iron granules,” and new bainitic wear-resistant special steel to meet customer needs.



钛营销中心钛白粉高级经理贾琨（左）到客户工厂就产品应用情况进行交流  
Jia Kun, Senior Manager of Titanium Dioxide at the Titanium Marketing Center, discusses the application of products with clients in their factory

## 打造责任供应链

### BUILDING A RESPONSIBLE SUPPLY CHAIN

钒钛股份秉持“合作共赢、共同发展”责任供应链理念，坚持“开放合作、创新机制，优势互补、互利共赢”原则，维护和保障供应商权益，签约供应商共 942 家，确保向客户交付高质量的产品，打造上下游高效协作、合作共赢的供应链体系。

钒钛股份在合规管理、阳光采购、供应商管理、反腐倡廉等方面开展了大量细致、有效的工作。着力打造责任供应链，加强供应商准入、审核、评估管理，实行问题供应商退出机制，严禁与攀钢 A、B 类违纪违法行为主体发生业务往来，2022 年清退违纪违法主体供应商 10 家。

Upholding the concept of “win-win cooperation and common development” and following the principles of “open cooperation, innovative mechanisms, mutual complementarity and mutual benefits,” Pangang Vanadium & Titanium is committed to protecting the rights and interests of suppliers, with 942 contracted suppliers, ensuring the delivery of high-quality products to customers, and building an efficient and cooperative supply chain system among upstream and downstream players for mutual benefits.

We have conducted a large amount of meticulous and effective work in compliance management, transparent procurement, supplier management, and anti-corruption, and have put forth efforts to build a responsible supply chain by strengthening the management of supplier access, review, and evaluation, and implementing a mechanism for terminating business ties with problematic suppliers. We strictly prohibit business dealings with entities who have broken discipline and laws identified in categories A and B of Pangang Group. In 2022, we terminated cooperation with 10 suppliers who violated discipline and the law.

| 区域<br>Area            | 供应商数量 (个)<br>Number of suppliers |
|-----------------------|----------------------------------|
| 西南<br>Southwest China | 487                              |
| 华中<br>Central China   | 70                               |
| 华北<br>North China     | 46                               |
| 华南<br>South China     | 33                               |
| 华东<br>East China      | 234                              |
| 西北<br>Northwest China | 20                               |
| 东北<br>Northeast China | 52                               |
| 合计<br>Amount To       | 942                              |

## 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。

2022 年度，钒钛股份参与修订了《木器涂料及其制品气味评价》团体标准，积极为国内木器涂料指标提供宝贵建议；组建“储能委员会”，加强全钒液流电池产业链上下游的沟通，推动钒在储能领域的应用；建立“钒数据库”，为钒技术应用推广提供基础数据服务，为钒合金钢企业、技术研发机构在基础数据积累、数据应用等方面提供支撑。累计与四川大学、重庆大学、大连理工、中科院等大专院校、科研院所，大连融科储能装备有限公司、金世利航空材料有限公司、上海羽迪新材料科技有限公司等企业针对钒钛新技术、新产品开发及产品应用等共开展技术交流 76 次。

Pangang Vanadium & Titanium 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 2022, we participated in the revision of the group standard - *the Odor Evaluation of Wood Coatings and Related Products*, to provide suggestions for the development of domestic wood coatings indicators. We established the "Energy Storage Committee" to strengthen communication between the upstream and downstream of the all-vanadium flow battery industry, and promote the application of vanadium in the energy storage field. We also established the "Vanadium Database" to provide basic data services for the extensive application of vanadium technology, and support vanadium alloy steel enterprises and research institutions in basic data accumulation and data application. We also conducted 76 technical exchanges with universities and research institutions such as Sichuan University, Chongqing University, Dalian University of Technology, Chinese Academy of Sciences, as well as companies such as Dalian Rongke Energy Storage Equipment Co., Ltd., Chongqing Kingsley Aeronautical Materials Technology Co., Ltd., and Shanghai YuDi New Material Technology Co., Ltd. on the development and application of new technology, new product development and product application related to vanadium and titanium.

## 助力地方发展

### SUPPORT FOR LOCAL DEVELOPMENT

钒钛股份作为攀西国家级战略资源创新开发试验区核心企业和龙头企业，以培育发展新兴产业为己任，担负引领试验区高水平建设重任，打造“钒钛股份产业生态圈”。助力攀枝花市创建钒钛高新技术产业园区和省级钒钛制造业创新中心，助力攀枝花市形成全世界产业链最完整的全流程钒钛资源综合开发体系，助力北海、重庆、成都、攀枝花、西昌五大区域地方经济发展。

As a leading company in the Panxi Strategic Resources Innovation and Development Pilot Area, Pangang Vanadium & Titanium is committed to promoting the development of emerging industries, undertaking the significant task of leading the high-level construction of the pilot area, and building an "industry ecosystem." We provide support for the development of the Panzhihua Vanadium and Titanium High-Tech Industrial Development Zone and the provincial-level vanadium and titanium manufacturing innovation center, assisting the city in its endeavor to build the world's most complete full-process vanadium and titanium resource development system. We also commit ourselves to promoting the economic development of Beihai, Chongqing, Chengdu, Panzhihua, and Xichang.

2022 年度，公司参与的全国性、行业性的重要社会组织名称及担任职务包括

In 2022, Pangang Vanadium & Titanium joined the following important national and industrial organizations

| 协会名称<br>Association   | 等级<br>Membership level     |
|---|----------------------------|
| 中国上市公司协会<br>China Association for Public Companies  | 会员<br>Member               |
| 四川上市公司协会<br>Sichuan Association for Public Companies  | 会员<br>Member               |
| 国际钒技术委员会<br>Vanitec   | 副会长<br>Vice president      |
| 中国钢铁工业协会钒业分会<br>China Vanadium Association  | 轮值会长<br>Rotating president |
| 四川省钒钛钢铁产业协会钒（钛）业分会<br>Vanadium (Titanium) Branch of Sichuan Vanadium Titanium Iron and Steel Industry Association | 会长<br>President            |
| 攀枝花市钒钛产业协会<br>Panzhihua Association of Vanadium Titanium Industry   | 会长<br>President            |
| 中国涂料工业协会<br>China National Coatings Industry Association  | 常务理事<br>Executive member   |
| 中国涂料工业协会钛白粉行业分会<br>Titanium Dioxide Industry Branch of China National Coatings Industry Association               | 理事长<br>Executive director  |
| 四川国际商会<br>Sichuan Chamber of Commerce   | 理事<br>Director             |
| 北海市应急管理协会<br>Beihai Emergency Management Association  | 理事<br>Director             |
| 四川省危险化学品协会<br>Sichuan Hazardous Chemicals Association   | 会员<br>Member               |
| 重庆市高新技术企业协会<br>Chongqing High-Tech Enterprises Association  | 会员<br>Member               |
| 重庆市名牌协会<br>Chongqing Association for Topbrands  | 会员<br>Member               |
| 重庆市标准化协会<br>Chongqing Institute of Quality and Standardization  | 会员<br>Member               |
| 重庆市安全生产协会<br>Chongqing Association of Work Safety   | 会员<br>Member               |
| 重庆市环境与生态监测协会<br>Chongqing Ecological Environmental Monitoring Association   | 会员<br>Member               |

### 区域纳税 Tax payment for areas (million yuan)



# 建功立业

## 打造奋斗团队

### Building a Team Striving for Achievement

# 05

#### 新时代召唤 The Call of the New Era

深入实施人才强国战略。培养造就大批德才兼备的高素质人才，是国家和民族长远发展大计。功以才成，业由才广。完善人才战略布局，坚持各方面人才一起抓，建设规模宏大、结构合理、素质优良的人才队伍。

——中国共产党第二十次全国代表大会报告

We will implement the workforce development strategy. Cultivating a large workforce of high-quality talent who have both integrity and professional competence is of critical importance to the long-term development of China and the Chinese nation. A wealth of talent is vital to the success of a great cause. We will improve the strategic distribution of human resources and make concerted efforts to cultivate talented people in all fields, so as to create a large, well-structured, and high-quality workforce.

---Report to the 20th CPC National Congress

#### 钒钛股份新发展 New Development of Pangang Vanadium & Titanium

钒钛股份秉持“员工通过自己的有效劳动过上美好生活”的价值理念，保障员工合法权益，关爱员工职业健康，重视员工职业发展，注重员工与公司共同成长，不断增强员工的凝聚力、归属感和幸福感。

Upholding the value of “employees live a better life through their own effective work”, the company safeguards the legitimate rights of employees. We care for employees’ occupational health and value their career development as well as the common growth with the company, aiming to enhance the cohesion, sense of belonging and happiness of employees.

贡献联合国可持续发展目标

Contribution to UN SDGs



#### 2022 年新成就 New Achievements in 2022

安全生产支出

# 3923

 万元

39.23 million yuan invested in work safety

“揭榜挂帅”创新项目

# 28

 项

28 innovative projects under the open competition mechanism

## 培育与发展

### CULTIVATION AND DEVELOPMENT

钒钛股份坚持“人才是核心竞争力”理念，树立强烈的人才意识，重视人才培养，致力于人才队伍建设，建立规范的职级体系，提供资源优渥、前景广阔的发展平台。通过建立灵活的高层次人才引进使用机制、建立“1+1”人才培养模式、建立分层级的技术人才库等方式，公司不断强化高层次人才“领头羊”作用，充分激发人才创新创造活力。

In line with the concept of “talent is the core competitiveness”, the company establishes a strong sense of talent. Committed to talent team building with talent training, we establish a standardized job rank system to provide employees with rich resources and a broad career development platform. By putting in place flexible mechanism for the introduction and use of high-level talents, “1+1” talent training mode, and technical talent pool at different levels, we continue to strengthen the leading role of high-level talents and fully unleash the innovation and creativity of talent.

## 保障 员工权益

### Protecting the rights of employees

公司依法保障员工的合法权益，把控入职和续约流程，完善劳动用工管理制度，建立规范的用工秩序，维护员工和公司的合法权益。劳动合同签订率 100%。严格执行国家社会保险和福利规定，按月足额缴纳社会保险及住房公积金，实现员工人均带薪年假 11.2 天，确保员工及时享受相关待遇。

公司致力于构建和谐、公平、公正的就业环境，禁止雇佣童工，实行“男女平等、民族平等”原则，特殊工种或岗位对性别、民族等有特别规定的从其规定。2022 年员工总人数 3394 人。

The company protects the legitimate rights of employees by controlling the entry and renewal process, improving the labor management system, and establishing standardized employment order. Through these efforts, our labor contract signing rate reaches 100%. In strict compliance with the national social insurance and welfare regulations, we pay social insurances and housing fund in full monthly, and achieve 11.2 days of paid annual leave per employee, and to ensure that employees can enjoy relevant benefits without delay.

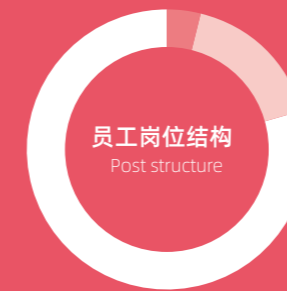
Committed to creating a harmonious, fair and just working environment, the company prohibits child labor and implements the principle of “gender equality and ethnic equality” for employees. If there are special regulations on gender and ethnic for special types of work or positions, the regulations shall be followed. In 2022, we had 3,394 employees in total.



|  |        |
|--|--------|
| 硕士及以上学历员工占比<br>Proportion of master's degree or higher   | 2.12%  |
| 本科学历员工占比<br>Proportion of bachelor's degree              | 15.67% |
| 专科学历员工占比<br>Proportion of college's degree               | 29.94% |
| 高中及以下学历员工占比<br>Proportion of high school degree or lower | 52.27% |



|  |        |
|--|--------|
| 40 岁及以下员工占比<br>Proportion of 40 years old or younger | 26.61% |
| 41-45 岁的员工占比<br>Proportion of 41-45 years old        | 15.85% |
| 46-50 岁的员工占比<br>Proportion of 46-50 years old        | 33.91% |
| 51 岁及以上的员工占比<br>Proportion of 51 years old or older  | 23.63% |



|  |        |
|--|--------|
| 经营管理人才占比<br>Proportion of management personnel               | 4.06%  |
| 专业技术人才占比<br>Proportion of technical personnel                | 16.71% |
| 生产操作人才占比<br>Proportion of production and operation personnel | 79.23% |



|  |       |
|--|-------|
| 男性员工占比<br>Proportion of male employees     | 79.2% |
| 女性员工占比<br>Proportion of female employees   | 20.8% |
| 其中女性管理者比例<br>Proportion of female managers | 0.4%  |



|  |        |
|--|--------|
| 本省员工占比<br>Proportion of employees in the province      | 71.21% |
| 外省员工占比<br>proportion of employees from other provinces | 28.79% |



## 健全 培养体系

### Establishing a sound training system

全力推进“人才兴企”工程，持续健全完善“选育用管”的人才培养机制，建立后备人才库，畅通通道、搭建平台、优化环境、激发活力，大力提升人才专业能力和综合素质，助力公司高质量发展。

To advance the project of “talent-empowered enterprises”, the company endeavors to improve the talent training mechanism of “selection and management”. We have established the reserve talent pool with unblocked channels, more platforms, and optimized environment, which stimulates staff vitality, greatly improves their professionalism and comprehensive quality to help the company develop in high quality.



#### 管理型人才 Management talents

加强人才复合培养，强化实践锻炼，选派15名优秀人才到重要项目、“吃劲”岗位磨炼，提升综合素质，采取一切措施营造人才成长环境

We strengthen the compound training based on hands-on practices, 15 excellent talents are appointed to important projects and posts with difficult conditions to improve their comprehensive quality. All measures are taken to create a growth environment for talents.



#### 技术型人才 Technical talents

畅通技术人才成长通道，健全培养机制，注重发挥高层次技术人才引领作用，引进成熟人才1人。将核心技术、营销、技能人才纳入中长期激励计划，提升钒钛产业高质量发展

We unlock channels with improved training mechanism to play the leading role of high-level technical talents. One mature talent has been introduced. Talents with core technology, marketing and skills are incorporated into the medium and long-term incentive plan to promote the high-quality development of the vanadium and titanium industry.



#### 技能型人才 Skilled talents

大力开展技能型人才培训，鼓励职工提升学历、技能等级。健全技能、点检人才序列，注重解决现场问题能力培养，推行技术技能人才“传帮带”，不断提升岗位员工技能水平。培训管理、技术、技能各类人员1.8万余人次，参加职业技能竞赛275人次

We vigorously train and encourage them to improve their academic qualifications and skills. The talent sequence is improved to focus on the cultivation of solving on-site problems. Besides, mentoring technical talents is introduced for better skill improvement. We have offered 18,000 training opportunities to management, technical and skilled personnel, and 275 people participated in vocational skills competitions.

## 激励 员工发展

### Motivating staff development

尊重人才、尊重创新，实施关键技术人才中长期激励，是公司加快人才队伍建设的重要举措。公司充分发挥优秀员工在职工思想引领、党员精神传承和劳模政策宣传普及等方面的作用，高度重视劳模培育选树工作，通过对汪超等劳模同志的先进事迹宣传，厚植劳模先进的成长基础，进一步营造崇尚劳动、辛勤劳动、诚实劳动、创造性劳动的浓厚氛围，动员和激励职工群众为推动经济和社会发展积极工作。

公司全面加强人才队伍建设，建立年轻核心管理团队、科技领军人才队伍，利用“四大平台”提升人才队伍综合素质和业务能力。健全完善人才等级序列，科技人员学历、专业、年龄结构明显改善，“第一资源”的作用充分发挥。2022年本科及以上学历人员占比17.79%，比2021年增加0.15个百分点。

Respecting talents and innovation and implementing medium and long-term incentives for key technical talents is crucial for the company to strengthen talent team building. Setting examples by model workers, we fully leverage the role of outstanding employees in thinking, the spiritual inheritance of Party members, and the publicity of model workers' policies. By publicizing the advanced deeds of model workers such as Wang Chao, we have laid a solid foundation for model workers that strongly advocates hard work, honesty and creativity to motivate staff to work for economic and social development.

To strengthen talent team building on all fronts, the company has established a young core management team and a leading technological talent team to improve their overall quality and business capabilities with the help of four platforms. Besides, thanks to our better grading sequence of talents, the educational background, major and age structure of technological personnel has been significantly improved, and the role of “the primary resource” has been fully leveraged. In 2022, our employees with a bachelor's degree or above accounted for 17.79%, increasing by 0.15 percentage points compared with 2021.

#### 2022年

本科及以上学历人员  
占比

# 17.79%

The proportion of  
personnel with  
bachelor's degree or  
above is **17.79%**

比2021年增加

# 0.15%

**0.15%** more than  
2021



班组成员负责推板窑运行管理  
The team members are responsible for the operation management of the pusher kiln

# 职业健康与安全

## OCCUPATIONAL HEALTH AND SAFETY

钒钛股份高度重视员工职业与健康安全，持续健全职业健康安全管理制度，常态化抓实抓细各项工作措施，主动预防、控制和消除职业危害风险，致力于为员工打造健康、安全的工作环境，全力确保疫情防控和生产经营两不误。

Employees' occupational and health safety is highlighted at our company. Committed to creating a healthy and safe workplace for employees, we continue improving the relevant management system, and break down the work measures on a routine basis to prevent, control and eliminate the risk of occupational hazards. And we went all out to ensure both COVID-19 control as well as production and operation.

### 扎实 安全管理

#### Consolidating safety management

公司恪守国家安全生产法律法规，建立健全职业健康安全管理体系，严格落实安全生产领导责任、全员安全生产责任制、安全生产考核机制。

持续推进安全生产专项整治三年行动，集中攻坚难点问题；持续强化相关方安全管理，落实相关方安全标准化管理体系，狠抓专项督导；深入开展隐患排查及整治、反违章工作，全面压实安全生产责任，强化安全履职管理；持续开展危险化学品安全风险集中治理、燃气安全排查整治等专项领域的安全管控，消除系统性安全风险；持续推进业务与信息化深度融合，提升安全管理效能。

除常规化安全生产意识培训外，公司在“安全生产月”广泛宣传、学习和领会安全生产十五条硬措施，通过安全信息化系统，将安全生产技术知识和安全事故案例推送给全体职工学习，并开展安全知识竞赛和有奖答题，采用寓教于乐的方式，进一步丰富广大职工的安全知识，增强安全意识，提升安全技能。

Abiding by the national laws and regulations on work safety, the company works to establish sound occupational health and safety management system and strictly implements the work safety leadership responsibility system, the work safety responsibility system of all employees and the work safety responsibility assessment mechanism.

To advance the three-year special action plan on work safety, the company focuses on solving the key and difficult problems. We strengthen the safety management of relevant parties based on safety standardization management system, with a focus on special supervision. Besides, hidden hazards identification and management, anti-violation and the work safety responsibility system are further implemented to strengthen safety performance management. Safety control in special fields, such as centralized management of hazardous chemical safety risks, and gas safety identification and management, is enhanced to eliminate systematic safety risks. Moreover, in-depth integration of business and IT-based technology is promoted to improve the safety management efficiency.

In addition to the routine training on work safety awareness, the company widely publicizes and studies the Fifteen Measures for Work Safety during Work Safety Month. The work safety technology knowledge and safety accident cases are pushed to all employees through the safety information system. Safety knowledge contests and award-winning quiz are also carried out, further enriching employees' safety knowledge while improving their safety awareness and safety skills in an entertaining and educational way.

#### 2022 年

较大及以上设备事故

0 次

0 major and above equipment accidents

投入安全生产费用

3923 万元

39.23 million yuan invested in work safety

参保安全生产责任险

3049 人

3049 employees offered the work safety liability insurance

#### 2022 年

开展职业健康安全生产培训

2 次

2 occupational health and work safety training sessions conducted

参加培训人数

292 人次

292 participants trained

开展职业生产技术知识培训

600 余次

600+ occupational production technical knowledge training sessions conducted

参加培训人数

18423 人次

18423 participants trained

排查重大生产安全事故隐患

26 项

26 hidden hazards in major work safety accidents identified

漏雨防洪隐患

56 项

as well as 56 rain leakage and hidden hazards for flood prevention

建（构）筑物隐患整治计划

77 项

77 rectification plans for buildings (structures) implemented

燃气系统问题隐患

11 项

and 11 hidden hazards in gas systems rectified

全部完成整改

CASE | 案例

## 信息化系统助推提升安全绩效

### IT-based system boosts safety performance

钒钛股份优化信息化系统“特殊作业”模块，修改作业票审批程序、申办单位等内容，增设现场拍照、毒害介质阈值自动判断、临时存储等实用性功能，在确保“特殊作业”功能满足新标准要求的情况下，提升信息系统可操作性。

制定《安全生产管理信息化系统管理办法》，规范信息化系统运行。组织 16 次信息化系统操作培训和现场指导服务，提升员工的信息化系统操作能力。班组员工对照风险辨识结果和风险防控措施开展隐患排查，月均班组自查率 19%，超控制指标 10%，排查隐患 3289 条，同比增加 76%，总体风险控制能力明显加强。

通过各级督办，2022 年隐患整改率 99.62%，同比提升 1.51 个百分点，有效解决隐患信息不对称、流转不畅通、处理不及时等问题。系统实时更新预警关键指标，按周发布预警指数和预警分析，并能够有效指导后续工作，提升了安全预警预控水平。

Pangang Vanadium & Titanium has optimized the special operation module of the information system by modifying its contents, including the approval procedure of the work ticket and the application unit. Practical functions such as on-site photos, automatic judgment of toxic medium threshold, and temporary storage were added to improve the operability of the information system while meeting the new standard.

The Management Measures for the Information System of Work Safety Management were formulated to standardize the operation of the information system. We organized 16 times of training sessions on this system operation and on-site guidance services to improve employees' relevant abilities. In accordance with the results of risk identification as well as risk prevention and control measures, the team members conducted hidden hazard identification. The monthly self-examination rate of the team averaged 19%, exceeding the control index by 10%. 3,289 pieces of hidden hazards were identified, a year-on-year increase of 76%, significantly improving the overall risk control.

Through supervision at all levels, the identification rate of hidden hazards in 2022 was 99.62%, a year-on-year rise of 1.51 percentage points, effectively addressing problems such as asymmetric information, poor circulation, and untimely handling of hidden hazards. The system updates the key indicators of early warning in real time, and releases indexes and analyses on a weekly basis, which can effectively guide the follow-up work, improving our safety control.



CASE | 案例

## 提升设备本质安全再上台阶

### Elevating the intrinsic safety of equipment to a new level

钒钛股份进一步规范设备管理工作，修订发布《特种设备管理办法》《设备维修工程管理办法》等制度，强化特种设备、危化品装置的依法合规管理；开展工程、项目“一件一案”和“日报”制度，狠抓设备相关方的资质审核、履职履责和施工过程安全管控工作，降低工程、项目的安全风险；依托点检定修标准化作业，对设备安全隐患实施分级和清单式管控，形成闭环；不定期开展“建构筑物隐患排查”“设备安全联锁装置隐患排查”“电气设备设施防雨隐患排查”等专项行动，提高设备安全重点区域的管理质量；加快钛冶炼产线智能工厂建设、西昌钒制品智能工厂建设（I 期）-自动化升级项目、连续结晶、MVR 浓缩等项目的实施工作，全面提升装备自动化、智能化水平，为提升设备本质安全水平赋能。

To further standardize equipment management, the company revised and released regulations, including the Management Measures for Special Equipment and Management Measures for Equipment Maintenance Engineering. We carried out the “one project for one case” and “daily report” system for projects, focusing on the qualification audit, duty performance, as well as safety control of equipment-related parties during the construction process to reduce the relevant safety risks. Relying on the standardized operation of point inspection, we implemented classification and checklist control on equipment safety hazards to form a closed loop. Besides, special actions such as “hidden hazard identification of buildings and structures”, “hidden hazard identification of equipment safety interlocking devices”, and “rain-proof hidden hazard identification of electrical equipment and facilities” were irregularly carried out to improve the management of key areas in equipment safety. By accelerating the intelligent plant construction of titanium smelting production line, intelligent plant construction of Xichang Vanadium Production (Phase I) - Automatic Upgrading Project, Continuous Crystallization, MVR Concentration and other projects, we comprehensively improved equipment automation and intelligence to empower the intrinsic safety of the equipment.



攀枝花钒制品分公司设备室员工点检设备  
A worker of Panzhihua Vanadium Products Branch checks equipment

攀枝花钒制品分公司点检创新工作室成员现场教学  
Members of Spot Inspection Innovation Workshop of Panzhihua Vanadium Products Branch teaches on the site

## 保障 身心健康

Guaranteeing physical  
and mental health

公司关心关爱职工身心健康，对员工进行健康知识培训。邀请专业人员向员工讲授传染病、慢性病及心理健康等方面的知识，培育员工良好的健康理念，不断提升员工的健康素养。帮助员工认识和正确看待家庭同工作间的关系，举办心理健康团辅活动 1 期，38 人参加。为部分女员工办理特殊投保，同时开展妇科健康知识讲座 1 期，70 人参加。年度员工体检覆盖 3438 人，其中健康体检 922 人、职业健康监护体检 2516 人。

The company provides training on health knowledge. For example, professionals are invited to introduce the knowledge about infectious diseases, chronic diseases, and mental health, cultivating a good health concept among employees and improving their health literacy. To help employees understand and correctly view the relationship between family and work, the company organize a mental health group activity with 38 participants. We handle special insurance for some female employees, and carry out gynecological knowledge health lecture with 70 participants. The physical examination covered 3,438 employees, including 922 for health check and 2,516 for occupational health monitoring.

## 落实 疫情防控

Implementing COVID-19  
control

2022 年

疫情防控。新冠疫苗接种率

98.7%

COVID-19 control. 98.7 % of COVID-19 vaccination coverage of the company's employees

开展疫情防控监督检查。共查验在岗人员（包括相关方）“三码”人数

3014 人次

Carry out supervision and inspection of epidemic prevention and control. A total of 3,014 person-times of "three codes" of personnel on duty (including related parties) were inspected

2022 年，公司严格落实国家、省市、上级公司决策部署，完善应急预案，形成“疫情防控清单”，包含“疫情防控值班和应急值守”“重点人员排查”“人员流动管控”等 14 类防控项目和 29 类防控具体要求，快速响应有序开展疫情防控工作。西昌钒制品、北海铁合金、钒钛贸易、重庆钛业和攀枝花生产基地均经受住了疫情考验。

Following the national, provincial, municipal, and superior company's decisions and deployments in 2022, the company improved the emergency plan. We formed the "COVID-19 response list", including 14 types of related projects and 29 types of specific requirements such as "watchkeeping", "key personnel screening", and "personnel flow control". Thanks to our quick response and corresponding measures, Xichang Vanadium Production, Beihai Ferroalloy, Vanadium & Titanium Trade, Chongqing Titanium Industry, and Panzhihua Production Base all weathered the difficulties of the pandemic.



西昌钒制品防疫保产两不误  
Xichang Vanadium Production ensures both epidemic prevention and production

感染人数

1 人

1 infected employee

## 民主管理与关爱

DEMOCRATIC  
MANAGEMENT AND CARE

Management  
and Care

钒钛股份坚持以人民为中心的思想，加强对员工人文关怀，深入推进民主管理工作，不断提升服务能力和水平，努力解决员工“急难愁盼”问题，致力于营造健康生活、健康工作的氛围。2022年，员工满意度达100%。

Putting people first, the company strengthens humanistic care for employees and advance democratic management to continuously improve its service. We strive to solve emergencies and difficulties of employees, committed to creating a healthy life and work atmosphere. In 2022, our employee satisfaction reached 100%.

2022 年

依托5个文体俱乐部（篮球、气排球、乒乓球、羽毛球、文学艺术）全年已开展活动

100 余次

The company carried out 100+ activities based on its five recreation clubs (basketball, air volleyball, table tennis, badminton, literature, and art)

为重症病职工及困难职工家庭发放公司爱心帮扶金

10.81 万元

The company granted 108,100 yuan of assistance funds for employees' families with severe diseases and in need

为生病住院职工发放慰问金

18.16 万元

providing 181,600 yuan of subsidy for hospitalized employees

节日期间走访慰问一线职工、劳动模范、困难职工，发放慰问金及物资

4.85 万元

During the festival, the company visited front-line employees, model workers, and employees in need, providing 48,500 yuan of subsidy and supplies

员工高考子女家庭送温暖

8.5 万元

We provided 85,000 yuan to employees' children who will take "gaokao" (the national college entrance examination)

## 民主管理 Democratic management

公司持续重视民主管理工作，不断完善员工思想的诉求表达机制以及人文关怀的管理机制。召开公司领导与职工代表民主管理座谈会 1 次，使职工知情、参与、审议、监督与自己利益切实相关的热点、焦点、难点问题，维护员工合法权益。

公司全面落实“全心全意依靠职工办企业”方针，鼓励员工立足岗位提出合理化建议。2022 年，公司累计收到员工合理化建议 4985 条，采纳实施率达 70.05%。

To strengthen democratic management, the company continues to improve the appeal expression mechanism and the humanistic care management mechanism. We held one seminar between company leaders and staff representatives in 2022 to ensure that employees are informed, participate, deliberate and supervise hot spots and difficult issues related to their interests, thus safeguarding their legitimate rights.

Relying on employees wholeheartedly to do business, we encourage employees to make feasible suggestions based on their positions. In 2022, 4,985 feasible suggestions were received from employees, of which 70.05% were adopted.

## 关爱员工 Employee care

公司切实解决员工最关心最直接最现实的问题，全年确立各层级 66 个“我为群众办实事”重点民生项目，包括“建设智慧工厂，降低劳动强度”“修缮一线场所，改善工作条件”“关心关爱职工，提升职工幸福感”“丰富文化生活，激发队伍活力”等 4 个方面的内容。

To solve employees' problems, we have established 66 key livelihood projects of "do practical things for the people" at all levels. The contents include four aspects, such as "building intelligent plants to reduce labor intensity", "repairing front-line workshops to improve working conditions", "caring for employees to improve their happiness", and "enriching cultural life to stimulate team vitality".



员工在图书阅览室内阅读  
Staffs read books in the reading room

## 文体活动 Recreational activities

公司注重员工生活与工作平衡，积极开展一系列职业关怀、节日关怀以及生活关怀活动，公司工会组织开展“美好生活，如花绽放”三八节主题活动、六一节户外亲子活动，重庆钛业 150 余位员工以“奋进新征程，畅想渝钛美”团队环厂跑活动迎接新年的到来；攀枝花钒制品分公司举办了 2022 年度职工篮球赛。

We actively carry out a series of care activities to help employees strike a balance between life and work, such as the "Good Life Likes Blooming Flowers" theme activity on Women's Day, and Outdoor Parent-Child Activity on Children's Day. In 2022, more than 150 employees of Chongqing Titanium Industry celebrated New Year through a team running race around the plant; Panzhihua Vanadium Products Branch held the 2022 annual staff basketball game.



质计中心“争巾帼之优，创岗位佳绩”气排球比赛  
Quality Measurement Center holds an air volleyball competition



重庆钛业举行“奋进新征程 畅享渝钛美”拔河比赛  
Chongqing Titanium Industry holds a tug-of-war competition

# 共同富裕

关注民生福祉

## Pursuing Well-being

for People to Strive for Common Prosperity

06

### 新时代召唤 The Call of the New Era

中国式现代化是全体人民共同富裕的现代化。共同富裕是中国特色社会主义的本质要求，也是一个长期的历史过程。我们坚持把实现人民对美好生活的向往作为现代化建设的出发点和落脚点，着力维护和促进社会公平正义，着力促进全体人民共同富裕，坚决防止两极分化。

——中国共产党第二十次全国代表大会报告

Chinese modernization is the modernization of common prosperity for all. Achieving common prosperity is a defining feature of socialism with Chinese characteristics and involves a long historical process. The immutable goal of our modernization drive is to meet the people's aspirations for a better life. We will endeavor to maintain and promote social fairness and justice, bring prosperity to all, and prevent polarization.

—Report to the 20th CPC National Congress

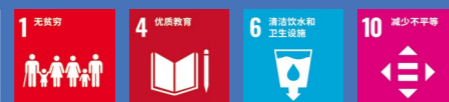
### 钒钛股份新发展 New Development of Pangang Vanadium & Titanium

为彻底落实党中央国务院关于巩固拓展脱贫攻坚成果、实施乡村振兴的总体战略目标，钒钛股份积极履行企业社会责任，关心大众和健康民生，感恩服务社会。立足自身资源，热心参与美好社区共建，增进民生福祉，推动社区发展。

To thoroughly implement the overall strategic goal of the State Council on consolidating and expanding the achievements in poverty alleviation and boosting rural vitalization, the company fulfills its corporate social responsibility, such as, care for public health and livelihood and serve the community with gratitude. Based on our resources, we engage in building a better community to promote people's well-being and community development.

贡献联合国可持续发展目标

Contribution to UN SDGs



#### 2022 年新成就 New Achievements in 2022

乡村振兴投入

1223 万元

12.23 million yuan invested in rural vitalization

在定点帮扶地区创造就业岗位

70 个

70 jobs created in targeted assistance areas

带动就业人数

1200 余人

promoted the employment of 1,200+ people

拥有志愿者

240 名

240 volunteers at present

志愿服务活动

12 次

Volunteer activities 12 times

## 助力乡村振兴

### BOOSTING RURAL VITALIZATION

钒钛股份坚持把乡村振兴作为重大政治任务，强化资金、力量、政策等要素保障，聚焦产业发展和示范点打造，通过捐赠物资、定点帮扶、采购脱贫地区农产品、带动就业等形式开展乡村振兴助力工作。解决定点帮扶村急难问题，与当地共同制定帮扶项目清单和重点任务清单跟踪表，做好项目跟踪，全程参与招标、实施及监督活动，让当地民众受益。2022年，钒钛股份在乡村振兴方面投入1223万元，创造就业岗位70个，带动就业人数1200余人。

Rural vitalization is a major political task of the company, so we strengthen guarantee in capital, manpower, policy and other elements to build industrial development and demonstration site. Rural vitalization assistance is carried out through donating materials, offering targeted assistance, purchasing agricultural products from poverty alleviation areas, and driving employment. To solve the urgent and difficult problems of the targeted villages, we work with the local government to formulate a list of assistance projects and a tracking list of key tasks, ensuring that local people participate in the whole process of bidding, implementation and monitoring. In 2022, we invested 12.23 million yuan in rural vitalization, creating 70 jobs and promoting the employment of more than 1,200 people.

#### CASE | 案例

### 出资实施种植园配套建设，打造花甲山特色田园乡村

#### Investing in the plantation supporting facilities to create a characteristic idyllic village in Huajia Mountain

2022年，公司出资180万元定点帮扶资金，实施“花甲山种植园配套建设”项目。由花甲山党支部牵头，开发利用该村南边600余亩荒芜山坡地，实施万寿菊种植。实施期间克服天气、疫情等因素影响，在荒芜的山坡上新建机耕道3.7公里，解决了种植基地交通难题。帮助该村与云南公司签订万寿菊收购合同，解决了种植、肥料、技术支持、产品收购等保障问题，在产销两方面做出贡献，盘活农村闲置资源，教会老百姓一门致富技术，有效推动该地特色田园乡村建设。

In 2022, the company invested 1.8 million yuan of targeted assistance funds in “Huajia Mountain Plantation Supporting Facility” project. Led by the Party branch of Huajia Mountain, the company developed more than 600 mu of barren hillside land in the south of the village to plant marigolds. During the implementation period, though impacted by weather, COVID-19 and other factors, the company newly built 3.7-km tractor-ploughing roads on the barren slopes to solve the traffic problems of the planting base. By helping the village sign a purchase contract with Yunnan branch for marigolds, the company solved problems in planting, fertilizer, technical support, and product acquisition, contributing to both production and marketing and effectively promoting the construction of a characteristic idyllic village in the area.



花甲山村南山坡 600 余亩万寿菊次第绽放  
More than 600 mu of marigolds bloom on the south slope of Huajia Mountain Village

## 志愿者团队建设

### BUILDING A VOLUNTEER TEAM

公司“阳光钒钛”志愿服务队成立于2019年，下设8个分队，共有志愿者240名。本着“建设、服务、创新、发展”的工作理念，以“践行志愿服务精神，彰显央企青年担当”为目标，不断增强团队建设，踊跃开展形式多样的志愿服务活动。

The company's “Sunshine Vanadium&Titanium” volunteer service team was established in 2019, with 8 sub-teams and 240 volunteers. Based on the work concept of “construction, service, innovation and development”, and committed to “practicing the spirit of volunteerism and demonstrating the role of youth in central SOEs”, the team has been continuously enhancing itself to carrying out various forms of volunteer services.

#### CASE | 案例

### 重庆钛业员工投入森林火灾扑救

#### Chongqing Titanium Industry's employees extinguish forest fire

2022年8月，巴南区界石镇新玉村所辖山林突发火灾，巴南区委、区政府迅速启动应急预案，组织各方力量投入扑救工作。重庆钛业积极响应，组织员工投入到山火歼灭战。重庆钛业员工不畏烈焰和高温、不畏艰险和辛劳，携带物资争分夺秒赶赴火场，按照指挥部统一安排部署迅速展开战斗。在山火全部扑灭后，顶着高温再赴现场开展巡山工作，清理余烬，看守防护，严防复燃，疏通山道，受到当地政府的肯定。

In August 2022, a sudden fire broke out in the mountain forest of Xinyu Village, Jieshi Town, Ba'nian District, Chongqing. The Ba'nian District Committee and District Government quickly launched the emergency plan, organizing all parties to extinguish the fire. In response to the call, Chongqing Titanium Industry immediately organized employees to the battle against the fire. They braved the flames and hardships, carried supplies to the fire scene, and quickly started the actions according to the unified arrangements of the command. Though the fire had been extinguished, they continued the patrol work against the high temperature, cleaned up the remaining ashes, guarded against re-ignition and dredged the mountain road, which received recognition from the local government.



巴南区委对重庆钛业员工进行表彰  
Ba'nian District Committee honors Chongqing Titanium Industry's employees



界石镇新玉村山火扑灭现场图  
Extinguishing fire in Xinyu Village, Jieshi Town

## 参与社区发展

### PARTICIPATING IN COMMUNITY DEVELOPMENT

为进一步深化攀枝花市创建文明城市工作，钒钛股份志愿服务队联合向阳社区开展了“弘扬志愿服务精神，共创全国文明城市”志愿服务活动，与社区联动共创全国文明城市。

To contribute to building Panzhihua as a model city, the company's volunteer service team carries out the targeted volunteer service in partnership with the community to jointly build a national model city.

#### CASE | 案例

### 开展卫生清洁工作，助力文明城市建设

#### Carrying out sanitation work to help build a model city

2022年7月，钒钛股份组织12名青年志愿者，走进攀枝花市东区向阳社区，与社区志愿者一起，对楼梯和墙面小广告进行清理。炎热的天气丝毫不影响志愿者完成任务的决心。经过一个多小时的集中“攻坚”，小区楼道的小广告被清理得干干净净。

In July 2022, the company organized 12 young volunteers to visit Xiangyang Community in the East District of Panzhihua City. They cleaned up the stairs and ads on the wall with the community volunteers. The hot weather did not affect the volunteers' determination to complete the task. After more than an hour of concentrated work, the ads in the community hallway were cleaned up by volunteers.



与向阳社区建立支援服务联动机制  
Cooperating with Xiangyang Community in volunteer services

## 参与社区抗疫支援服务

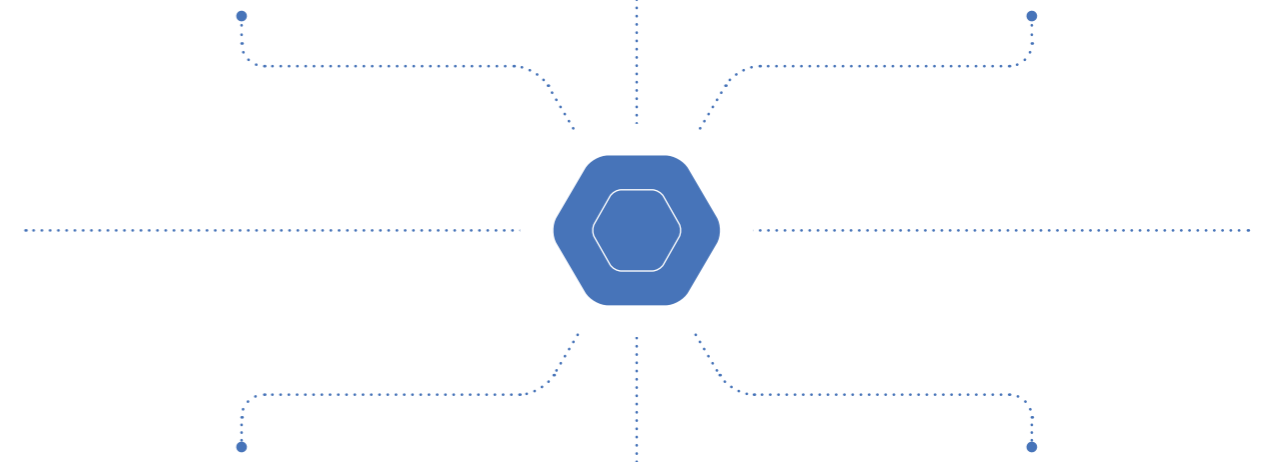
### Participating in community volunteer service to fight COVID-19

公司氯化钛白产线新入职员工积极服务在社区疫情防控第一线，引导社区老人做好登记工作，协助工作人员入户摸排核实常住人口信息

The new employees of C.P.TiO<sub>2</sub> Factory actively participated in community-based COVID-19 control, guiding the elderly to register and assisting community workers in verifying permanent resident population information.

公司攀枝花地区的20余名青年志愿者主动参与社区志愿服务，协助社区开展核酸采样、维护秩序、宣传防疫知识、入户排查登记

More than 20 young volunteers from the Panzhihua area took the initiative to participate in community volunteer services, assisting the community in COVID-19 testing, maintaining order, promoting anti-virus knowledge and having door-to-door registration.



公司西昌地区第一时间成立“防控志愿队”，组织16人志愿者配合医务人员完成职工全员核酸采样

The company set up the COVID-19 Control Volunteer Team in the Xichang area and organized 16 volunteers to support medical staff to complete COVID-19 testing for all employees.

公司成都地区组织志愿者，参与社区组织的值守小区出入口、登记管理、文明劝导等工作，还通过视频连线了解青年生活情况

Employees of the Chengdu region were organized to participate in community works such as guarding neighborhood entrances and exits, and helping registration and persuasion, and also learned about the youth's life through video links.



# 展望 2023

## OUTLOOK 2023

# 2023

2023年是钒钛股份全面贯彻落实党的二十大精神  
的开局之年，是公司开启打造鞍钢集团“第三极”  
排头兵的起步之年，是形成高质量发展新格局的  
重要之年。钒钛股份坚定信心、做好准备，将持续  
发挥攀西国家级战略资源创新开发试验区核心企业  
的引领作用，在重要历史关口占据主动、开辟新局。

**聚焦主业，夯实高质量发展基础。**抓好三大重点攻  
坚，着力推进五个发力突破。坚持钒产业链和钛产  
业链协同发展，加强生产管理，实现技术创新，提  
升运行能力，增强业务效率，实施“科技+管理”  
双轮驱动，推动高品质产品广泛应用于各大领  
域，推动重点发展产业走出国门。

**培育人才，实现关键技术突破。**坚信人才是第一  
生产力，加强员工思想政治建设，持续提升队伍  
建设水平，激发员工干实事，鼓励掌握核心技  
术，拥有自主知识产权，重视科技研发，实现  
国家高新技术企业的科创价值。

**清洁制造，推动低碳发展路径。**全力服务国家  
“3060”战略，落实碳达峰工作举措，加快废  
副资源综合利用技术研发。发展全钒液流储能  
电池，构建以可再生能源为主体的新型电力系  
统，促进环保生产、清洁生产。

**合作共赢，打造行业创新模式。**以采购模式  
引导市场导向，瞄准行业前沿靶向发力，加  
强与利益相关方的沟通，抓牢自主创新发  
展机遇，加快完善科研协同创新机制，上  
下游企业增值提效、共同成就，完善国际  
国内市场架构。

**造福社会，助力美好生活建设。**持续办好  
民生实事，继续在乡村振兴、教育助学、  
灾害救助、文化传承等领域开展慈善公益  
实践，在“救急难”项目上主动担当，积  
极履行社会责任，以自身价值影响外界，  
营造人人向善、人人从善的社会环境。

For Pangang Vanadium & Titanium, 2023 is the first year to  
fully implement the guiding principles of the 20th CPC National  
Congress, the beginning year to create the third-pole vanguard  
for Ansteel, and the crucial year to form a new landscape  
for high-quality development. We will stay confident for the  
preparation, and continue to leverage the role as a leading  
company in the Panxi Strategic Resources Innovation and  
Development Pilot Area, taking the initiative to open up a new  
situation.

**Focusing on primary business for high-quality  
development.** We will make breakthroughs in three  
critical battles and five fields. Adhering to the synergistic  
development of vanadium and titanium industry chains,  
we will strengthen production management and achieve  
technological innovation to improve our operational capacity  
together with business efficiency. Driven by science, technology  
and management, high-quality products will be widely  
applied in various fields, thus pushing the key industries to go  
global.

**Training talents for key technology breakthroughs.**  
Regarding talents as our primary productive force, we will  
enhance employees' awareness and talent team building.  
In this way, staff will be motivated to do practical work and  
master core technologies, including independent intellectual  
property rights. We will focus on technological R&D, aiming to  
realize the value of national high-tech enterprises.

**Promoting clean manufacturing for low-carbon  
development.** Committed to China's 30-60 Decarbonization  
Goal, we will put carbon peak measures in place to expedite  
R&D of the comprehensive utilization of waste and by-  
products. By developing the all-vanadium flow battery  
for energy storage, we will establish a new electric power  
system with renewable energy as the mainstay to promote  
environment-friendly and clean production.

**Pursuing win-win cooperation for industry innovation  
model.** Taking procurement mode as an orientation to  
guide the market and aiming at the industrial frontier, we  
will strengthen communication with stakeholders, and seize  
the opportunity for independent innovation and development,  
working faster to refine the mechanism of collaborative  
innovation in scientific research. With the joint efforts of  
upstream and downstream enterprises, we will establish a  
sound market structure domestically and internationally.

**Bring benefits to society for a better life.** We will serve the  
people's livelihood, conduct public welfare undertakings in  
such fields as rural vitalization, education assistance, disaster  
relief and cultural heritage, proactively undertake the thorny  
projects, fulfill our social responsibility and influence others  
through our actions, thus creating a social environment in  
which everyone does a good deed.

# 责任绩效

## ESG PERFORMANCE

| 类别<br>Category  | 关键绩效<br>Key Indicators   | 2020   | 2021   | 2022   |
|-----------------|--|--------|--------|--------|
| 经济<br>Economics | 营业收入 (亿元)<br>Revenue (100 million yuan)  | 105.79 | 140.60 | 150.88 |
|                 | 资产总额 (亿元)<br>Total assets (100 million yuan)   | 116.49 | 102.11 | 119.33 |
|                 | 归属于上市公司股东的净利润 (亿元)<br>Net profit attributable to shareholders of listed companies (100 million yuan) | 2.25   | 13.28  | 13.44  |
|                 | 纳税额 (亿元)<br>Taxes paid (100 million yuan)  | 2.67   | 4.13   | 6.25   |
|                 | 所有者权益 (亿元)<br>Owner's equity (100 million yuan)  | 97.97  | 79.44  | 91.71  |
|                 | 资产负债率 (%)<br>Debt-to-asset ratio (%)   | 15.9   | 22.2   | 23.15  |
|                 | 研发投入 (亿元)<br>R&D investment (100 million yuan)   | 3.80   | 6.73   | 5.76   |
|                 | 授权专利 (项)<br>Authorized patents   | 74     | 65     | 63     |
|                 | 其中发明专利 (项)<br>Number of invention patents  | 44     | 20     | 20     |
|                 | 申请专有技术 (项)<br>Number of proprietary technology applied   | 3      | 6      | 6      |
|                 | 重要科技奖项 (国家 + 省部级) (项)<br>Important sci-tech awards (national, provincial & ministerial level)        | 6      | 4      | 3      |
|                 | 重大决策法律审核率 (%)<br>Legal review rate of major decisions (%)  | 100    | 100    | 100    |
|                 | 重要制度法律审核率 (%)<br>Legal review rate of important systems (%)  | 100    | 100    | 100    |
|                 | 重大合同法律审核率 (%)<br>Legal review rate of major contracts (%)  | 100    | 100    | 100    |

| 类别<br>Category                                       | 关键绩效<br>Key Indicators   | 2020  | 2021    | 2022    |
|--|--|-------|---------|---------|
| 环境<br>Environment                                    | 各类环境污染事件 (件)<br>Environmental pollution incidents in all types                                       | 0     | 0       | 0       |
|  | 环境项目投入 (亿元)<br>Investment in environmental protection projects (100 million yuan)                    | 1.40  | 1.13    | 1.05    |
|  | 温室气体排放总量 (万吨)<br>Total GHG emissions (10,000 tons)   | /     | 181.16  | 170.20  |
|  | 万元产值温室气体排放量 (吨)<br>GHG emissions per 10,000 yuan of output value (ton)                               | 1.29  | 1.87    | 1.63    |
|  | 化学需氧量 (吨)<br>Chemical oxygen demand (ton)  | 463   | 97.45   | 46      |
|  | 氨氮排放总量 (吨)<br>Total emissions of ammonia nitrogen (ton)  | 50    | 16.03   | 4       |
|  | 二氧化硫 (吨)<br>Sulfur dioxide (ton)   | 575   | 547     | 364     |
|  | 氮氧化物 (吨)<br>Nitrogen oxides (ton)  | 474   | 297     | 294     |
|  | 节能量 (吨标煤)<br>Energy saving (TCE)   | 1,850 | 6,093   | 10,563  |
|  | 综合能耗 (吨)<br>Comprehensive energy consumption (ton)   | /     | 509,245 | 484,916 |
|  | 万元产值能耗 (tce/万元)<br>Energy consumption per 10,000 yuan of output value (tce/10,000 yuan)              | 0.61  | 0.53    | 0.46    |
|  | 年度新鲜水使用量 (百万立方米)<br>Annual fresh water consumption (million m <sup>3</sup> )                         | /     | 18.85   | 17.94   |
|  | V <sub>2</sub> O <sub>5</sub> 耗新水 (t/t)<br>New water consumed by V <sub>2</sub> O <sub>5</sub> (t/t) | 19.25 | 20.68   | 17.09   |
|  | TiO <sub>2</sub> 耗新水 (t/t)<br>New water consumed by TiO <sub>2</sub> (t/t)                           | 71.45 | 64.48   | 62.37   |
|  | FeV 耗新水 (t/t)<br>New water consumed by FeV (t/t)   | 2.39  | 2.84    | 2.42    |
|  | 固体废物利用率 (%)<br>Utilization rate of solid waste (%)   | 76    | 55      | 68      |
|  | 煤气回收量 (亿立方米)<br>Gas recovery volume (100 million m <sup>3</sup> )                                    | 0.15  | 0.16    | 0.32    |
| 循环水利用率 (%)<br>Circulating water utilization rate (%) | 95.21  | 95.22 | 95.25   |         |

| 类别<br>Category  | 关键绩效<br>Key Indicators   | 2020   | 2021   | 2022   |
|---|--|--|--------|--------|
| 员工<br>Staff   | 劳动合同签订率 (%)<br>Labor contract signing rate (%)   | 100  | 100    | 100    |
|   | 在岗职工 (人)<br>Number of in-service staff   | 3,181  | 3,278  | 3,394  |
|   | 员工流失率 (%)<br>Employee turnover rate (%)  | 0.75   | 0.50   | 0.58   |
|   | 培训人次<br>Number of training participants  | 30,476                                       | 16,600 | 18,423 |
|   | 培训投入 (万元)<br>Training expenses (10,000 yuan)   | 275  | 429    | 629    |
|   | 培训总学时 (小时)<br>Total training hours   | 10,386                                       | 12,400 | 10,222 |
|   | 员工健康体检 (人)<br>Number of employees accepting physical examination   | 2,162  | 2,587  | 3,408  |
|   | 体检及健康档案覆盖率 (%)<br>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)<br>Relief money (subsidies, assistance, student grant) (10,000 yuan)                    | 31.35  | 21.95  | 52.52  |
|   | 安全<br>Security   | 一般及以上事故 (件)<br>General and serious accidents | 1      | 0      |
| 安全环保教育培训 (人次)<br>Participants of safety and environmental protection education and training |  | 3,352  | 9,853  | 9,740  |
| 安全培训覆盖 (%)<br>Safety training coverage (%)  |  | 100  | 100    | 100    |
| 安全生产支出 (万元)<br>Work safety cost (10,000 yuan)   |  | 4,741  | 4,876  | 3,923  |
| 安全、消防应急演练 (场)<br>Safety, fire emergency drills  |  | 88   | 108    | 121    |
| 供应商<br>Supplier   | 供应商总量 (家)<br>Total number of suppliers   | /  | 1,043  | 942    |
|   | 通过 ISO 9001 质量管理体系的供应商 (家)<br>Number of suppliers who have passed the ISO 9001 quality management system             | /  | 241    | 211    |
|   | 通过 ISO 14001 环境管理体系的供应商 (家)<br>Number of suppliers who have passed the ISO 14001 environmental management system     | /  | 100    | 98     |
|   | 通过 ISO 45001 职业健康安全体系的供应商 (家)<br>Number of suppliers who have passed ISO 45001 occupational health and safety system | /  | 87     | 90     |
|   | 责任采购率 (%)<br>Responsible procurement rate (%)  | 100  | 100    | 100    |
|   | 本地化采购比例 (%)<br>Localized procurement proportion (%)  | /  | 26.46  | 30.88  |

| 类别<br>Category  | 关键绩效<br>Key Indicators                                       | 2020                             | 2021  | 2022  |
|---|--|----------------------------------|-------|-------|
| 社会<br>Society   | 乡村振兴专项资金投入 (万元)<br>Fund for rural vitalization (10,000 yuan) | 976                              | 1,242 | 1,223 |
|   | 实施乡村振兴项目 (个)<br>Number of rural vitalization projects        | 12                               | 8     | 12    |
|   | 青年志愿者 (人)<br>Number of young volunteers                      | 238                              | 229   | 240   |
|   | 青年志愿者服务队 (个)<br>Number of young volunteer teams              | 7                                | 5     | 8     |
|   | 志愿服务活动 (人次)<br>Participants of volunteer activities          | 136                              | 200   | 200   |
|   | 志愿服务活动次数<br>Number of volunteer activities                   | 8                                | 12    | 12    |
|   | 治理<br>Administer   | 董事会 (次)<br>Board meeting (times) | 7     | 12    |
| 董事会成员 (人)<br>Members of the Board of Directors          |  | 9                                | 9     | 9     |
| 独立董事占比 (%)<br>Proportion of independent directors (%)   |  | 33.33                            | 33.33 | 33.33 |
| 开展反贪污和商业道德培训 (次)<br>Participants of integrity education |  | 438                              | 413   | 529   |
| 党建<br>Party Building                                    | 下属基层党组织数 (个)<br>Number of primary Party organizations        | 57                               | 57    | 50    |
|   | 党委数 (个)<br>Number of Party committees                        | 5                                | 6     | 5     |
|   | 党总支数 (个)<br>Number of general Party branches                 | 5                                | 6     | 4     |
|   | 党支部数 (个)<br>Number of Party branches                         | 49                               | 45    | 41    |
|   | 党员数 (人)<br>Number of Party members                           | 1,092                            | 1,220 | 1,123 |

 本报告书采用可降解环保再生纸制作



 **攀钢集团钒钛资源股份有限公司**  
ANSTEEL Pangang Group Vanadium & Titanium Resources Co., Ltd.

地址：四川省攀枝花市东区钢城大道西段 21 号

电话：0812-3385366

传真：0812-3385285

邮编：617067

电子邮箱：psv@pzhsteel.com.cn

Address: No. 21, west section of Gangcheng Avenue, East District, Panzhihua City, Sichuan Province, China

Tel: +86-812-3385366

Fax: +86-812-3385285 Postcode: 617067

E-mail: psv@pzhsteel.com.cn