

# **CHINA COAL TECHNOLOGY & ENGINEERING GROUP**

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## CHINA (HEADQUARTERS)

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# AUSTRALIA (AZURE MINING TECHNOLOGY PTY LTD)

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**TO BUILD A WORLD-CLASS** 

**TECHNOLOGICAL INNOVATION ENTERPRISE** 







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# **Group Profile**

known as CCTEG, has established a comprehensive entire professional fields in the coal industry. CCTEG

and intelligent practices, as well as the clean, efficient, and low-carbon utilization of coal. With its mission to lead the advancement of coal science and technology, CCTEG aims to make significant contributions in the

- CCTEG has 136 research platforms at the provincial and ministerial level or above, including 3 state-level key laboratories, 4 state-level engineering research centres, 1 state-level engineering technology research centre, and 3 state-designated enterprise technology centres.
- It has a post-doctoral research mobile station on mining engineering, 5 post-doctoral scientific research stations, 4 doctoral degree programs, and 12 master degree programs.
- There are more than 27,000 employees in CCTEG, including more than 14,000 professional and technical talents. It has cultivated aggregately 10 academicians of the Chinese Academy of Sciences and Chinese Academy of Engineering, including 2 long-appointed academicians, 5 of them being in work; It has cultivated aggregately 10 state-level survey and design masters, including 2 in service; It has 27 national candidates of the National Millions of Talents Project in service, and a total of 550 people having been awarded the special government allowances from the State Council.

With over 70 years of development, CCTEG has gradually formed a science & technology innovation and technology service system integrating with basic research, R&D in technology and equipment, engineering demonstration, testing & inspection, and a strategic think tank. It has six major industrial sectors: coal machine intelligent manufacturing, safety technology and equipment, clean energy, design and construction, demonstration engineering, and emerging industries. Affiliated companies of CCTEG are located across China, such as Beijing, Shanghai, Chongging, Xi'an, Shenyang, Nanjing, Wuhan, Taiyuan, Yinchuan, etc., A high-tech publicly listed company-Tiandi Science & Technology Co., Ltd. (stock code 600582) is under its umbrella, and occupies the leading position in the industry.

CCTEG has consistently pursued an innovation-driven strategy while strongly focusing on our core business. We have established a robust three-tier R&D system, optimized the allocation of scientific and technological resources, increased

investment in research and development, and implemented effective incentive programs. As a result, we have successfully attracted and nurtured a substantial number of high-caliber professionals, forming a highly skilled scientific and technological innovation team. Our primary emphasis has been addressing the key scientific and technological requirements in coal development and utilization. We have concentrated our efforts and resources on applied basic research, core technologies, cutting-edge technologies, strategic emerging technologies, and significant industrial advancements. Notably, we have successfully bridged several technological gaps in areas such as the construction of intelligent coal mines, ecological environment improvement, and disaster prevention and control in coal mines. CCTEG has established itself as a frontrunner in coal mining technology and equipment. We have spearheaded the domestication of essential equipment and have significantly contributed to enhancing the safety, intelligence, and sustainable development of China's coal industry.

27000\*

60 **Chief Scientists** 

2

Academics

57

72









There are 5 academicians of the Chinese Academy of Engineering (including 2 specially appointed academicians), 2 national survey and design masters, 8 prize-winners of the National Technical Invention Award, 56 prize-winners of the National Science and Technology Progress Award, 72 people enjoying special government allowances under the State Council (550 in total), and 27 national candidates for the National Hundred Million Talents Project.

Among them, 3 are academicians, 11 are first-class chief scientists, 21 are second-class chief scientists, and thirty are third-class chief scientists.









# **Global Layout**

CCTEG directly manages over 30 subsidiary enterprises, including Azure Mining Technology Pty Ltd (AMT), which was founded in Sydney in 2019 to focus on research and development, providing innovative solutions and technologies on coal mining applications for the coal mining industry in Australia and globally.



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# **Major Scientific** and Technological **Achievements**



### Intelligent unmanned coal mining technology

CCTEG pioneered a new "smart + remote" intervention mining mode and successfully developed the first intelligent system of complete equipment for a fully mechanized coal mining face with the highest installed power, mining height, and output in China. CCTEG won the second prize in the National Science and Technology Progress Award through this achievement, leading the development direction of intelligent unmanned mining, which is of great significance to the construction of a safe, intelligent, green and efficient mine.

# The key technology of anti-impact prestressed support of coal mine roadway

The complete set of the technical system of anti-impact pre-stressed support of coal mine roadway developed by CCTEG solved the problems of strong impact, strong disturbance and large deformation of soft rock in roadway support in kilometre-deep underground mines. It's a breakthrough in coal mine roadway support technology, reaching the leading international level. Having won the second prize in the National Technological Invention Award, it provides technical support for mining deep and complex coal resources, with significant economic and social benefits.





## Rapid tunnelling system combining tunnelling, bolting and conveying functions

CCTEG's world's first rapid tunnelling system combining tunnelling, bolting and conveying functions has changed the serial operation of tunnelling, bolting, and conveying to parallel operation, which greatly improved the tunnelling efficiency, reduced the labor by 60%, and increased the efficiency up to 3 times on average. The achievement broke foreign monopoly and realized intelligent manufacturing in China. In Shendong mining field, it successfully achieved a monthly advance of 3,088 meters and set a world record for monthly advance in a single roadway. This system was enlisted into the recommended directory of scientific and technological innovation achievements of central enterprises and won the special prize of the Science and Technology Award of the China Coal Industry Association.

# Shearer with 9 meter mining height

CCTEG has developed the world's first high-power intelligent shearer for a 9m extra-thick coal seam. It can achieve the mining of 6-9m coal seam at one time, with an annual output of 12-18 million tons of ROM coal, creating a world record of a single-day output of 58,400 tons and a monthly output of 1.46 million tons. It symbolizes the leading position of our shearers both at home and abroad.

equipment.

# Land consolidation & utilization and ecological restoration technology in coal mining subsidence area

CCTEG has made a breakthrough in the key technologies of land consolidation & utilization and ecological restoration in coal mining subsidence areas. Its agricultural reclamation technology applied in coal mining subsidence areas has helped safeguarding the National Arable Land Red Line. Its group construction technology has helped resolve the deficiency of urban construction land., Its technology of manmade wetlands has improved the ecological environment of mining fields, helping mining cities reverse the side effect of the subsidence areas





# Technology and equipment for large-diameter ultra-long directional drilling in coal mines

CCTEG has developed the first high-power directional drilling rig and its supporting equipment in China, reaching the leading international level in terms of drilling capacity, hole-forming diameter, the accuracy of measurement and control, etc. It can achieve 3000 m directional drilling along the coal seam and provides a new technical solution for gas control in the large panel field. The drilling depth of the main hole of Baode Coal Mine reached a world record deep of 3353 m along the coal seam by adopting the ultra-long directional drilling



# The first Harmony OS-based multi-scene inspection robot for underground coal mines

CCTEG has successfully developed the first Harmony OS-based multi-scene inspection robot for underground coal mines, improving manual inspection efficiency and intelligence level of inspection equipment. The positioning accuracy of the robot is 10 mm, and the multi-parameter measurement accuracy is <3%. It can collect 8 environmental parameters at the same time. It has been successfully applied to Shendong Coal Group, reducing the labor intensity of inspection workers by 80% and reducing the number of workers in fixed places such as substations by 60%-100%.

# Intelligent Equipment

In the intelligent equipment field, we use our expertise in intelligent mining to transform our operations towards intelligence and services. By combining our resources and focusing on research and industry, we create complete solutions and a strong marketing network for intelligent mines. We also improve the intelligence of our mining and coal-washing equipment by upgrading our manufacturing processes. Our goal is to build advanced intelligent factories that can produce high-quality equipment. We strengthen our industrial chain through international cooperation while maintaining self-reliance. Our service-oriented approach allows











us to provide comprehensive life cycle services for our intelligent equipment, catering to diverse customer needs. Moreover, we actively explore opportunities in non-coal sectors, expanding our business into areas like non-coal mining equipment and engineering equipment. These efforts position us as leaders in the intelligent equipment sector, driven by our commitment to innovation, service excellence, and meeting industry demands. Our commitment to innovation and service excellence enables us to meet the industry's evolving demands and diversify our offerings to cater to a broader market.



## 1.

High-power intelligent shearer for 9m extra thick coal seam

# 2.

Highly-effective dismountable nonfoundation extensible belt conveyor

Rapid quantitative loading system

## 4.

One-stop bolt and thin spray supporting miner rapid driving production line

### 5.

Intelligent auxiliary transporting robot

# 6.

Intelligent fully mechanized mining and conveying equipment with an annual output of 20 million tons

## 7.

CCTEG Tianma Remote Operation and Maintenance Service Center

# Safety and Sustainability

Our primary focus is to enhance emergency rescue capabilities and disaster management in the mining industry, ensuring overall safety. We address major safety risks by developing intelligent safety products and providing comprehensive mine disaster engineering services. In our pursuit of green development, we prioritize upholding environmental standards throughout the entire life cycle of mining operations.

Our commitment to clean and low-carbon practices involves developing initiatives such as clean coal utilization, distributed multi-fuel boilers, coal water slurry, mine water treatment, and





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coal chemical wastewater treatment. We actively promote the industrialization of modern coal chemistry and catalysts through technology mergers and acquisitions.

Additionally, we prioritize CCUS technology innovation and industrial layout. Expanding our involvement in new energy industries, including photovoltaic, wind power, and other projects, is crucial. We explore opportunities in ecological restoration and consider establishing new energy companies through mergers and acquisitions or joint ventures, focusing on photovoltaic, wind energy, energy storage, hydrogen energy, and related fields.

# **Design and Construction**



Regarding the design and construction sector, we aim to promote the building of high-end think tanks. We will implement the differentiation strategy of "one enterprise, one policy" to accelerate transformation and upgrading; We will promote the innovation of organizational and business patterns; carrying out collaborative design, cloud design, package design and modular design, improving our service capability and level. We will







steadily expand the scale of project contracting and gradually cultivate and establish a high-quality project management team. We will expand our supervision and consultation services to municipality, transportation and other fields, accelerating the building of a high-end think-tank to build our brand as an authoritative consultant in the industry.

Shenhua Shendong Boertai Coal Mine and Coal Preparation Plant, the world's largest underground coal mine

## 2.

China's first 110-meter high ferris wheel "Eye of Tianjin" on highway bridge

Huadian Group Mengtai Buliangou Mine and Coal **Preparation Plant** 

Tunliu Coal Mine, with the first main shaft derrick in Asia 5.

Anjialing Open-pit Coal Preparation Plant-one of the largest coal preparation plants in the world and China's first super large modern preparation plant for thermal coal

Shaft tower and production system of Hongqinghe coal mine

Shenhua Group Halwusu Open-pit Coal Mine

# International **Market**

Our international operations have made great achievements covering many countries such as Australia, India, Turkey, Bangladesh, Uzbekistan and Laos, demonstrating the scientific and technological strength and manufacturing capability of CCTEG.

# CCTEG CRI - CSIRO Letter of Intent Signing Ceremony 19 March 2019 Brisbane, Australia 식工重庆研究院 – 澳大利亚联邦科学与工业 合作研究意向书签字仪式



### 1.

CCTEG CRI - CSIRO Letter of Intent Signing Ceremony

# 2.

Angelian Open-pit Coal Mine Modernization Project in Uzbekistan

# 3.

Mengba Coal Mine Phase III Mine and Face Water Control Technology Research Project in Bangladesh



# **Azure Mining Technology Pty Ltd- Sydney Australia**

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# **CORE BUSINESS**

technology.

# Scientific Research Cooperation

Equipment and Technology Service

Training and

Knowledge Exchange



enterprises.

Training and Knowledge Exchange

mining training programs.

Commercialization

Commercialization





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# Scientific Research Cooperation

Our goal is to promote safe and efficient coal mining practices in both China and Australia, while promoting clean and low-carbon utilization of coal. We conduct special commissioned and joint research and development projects to advance progress in coal science and

# Equipment and Technology Service

We provide mining equipment and solutions as well as technical services in Australia. We strive to promote the industrialization and application of advanced technologies and products of Australian

In an effort to foster robust knowledge exchanges and collaboration in the mining sector between China and Australia, We regularly organize academic forums, special lectures, and offer regular

We develop and commercialise technology, equipment, processes and other systems that apply the results of relevant coal mining research to commercialise coal mining applications.