



**CITY
ENVIRONMENT**



Restore the Original Beauty of the World

Restore the Original Beauty of the World

A Listed Company in Environmental Technology Industry

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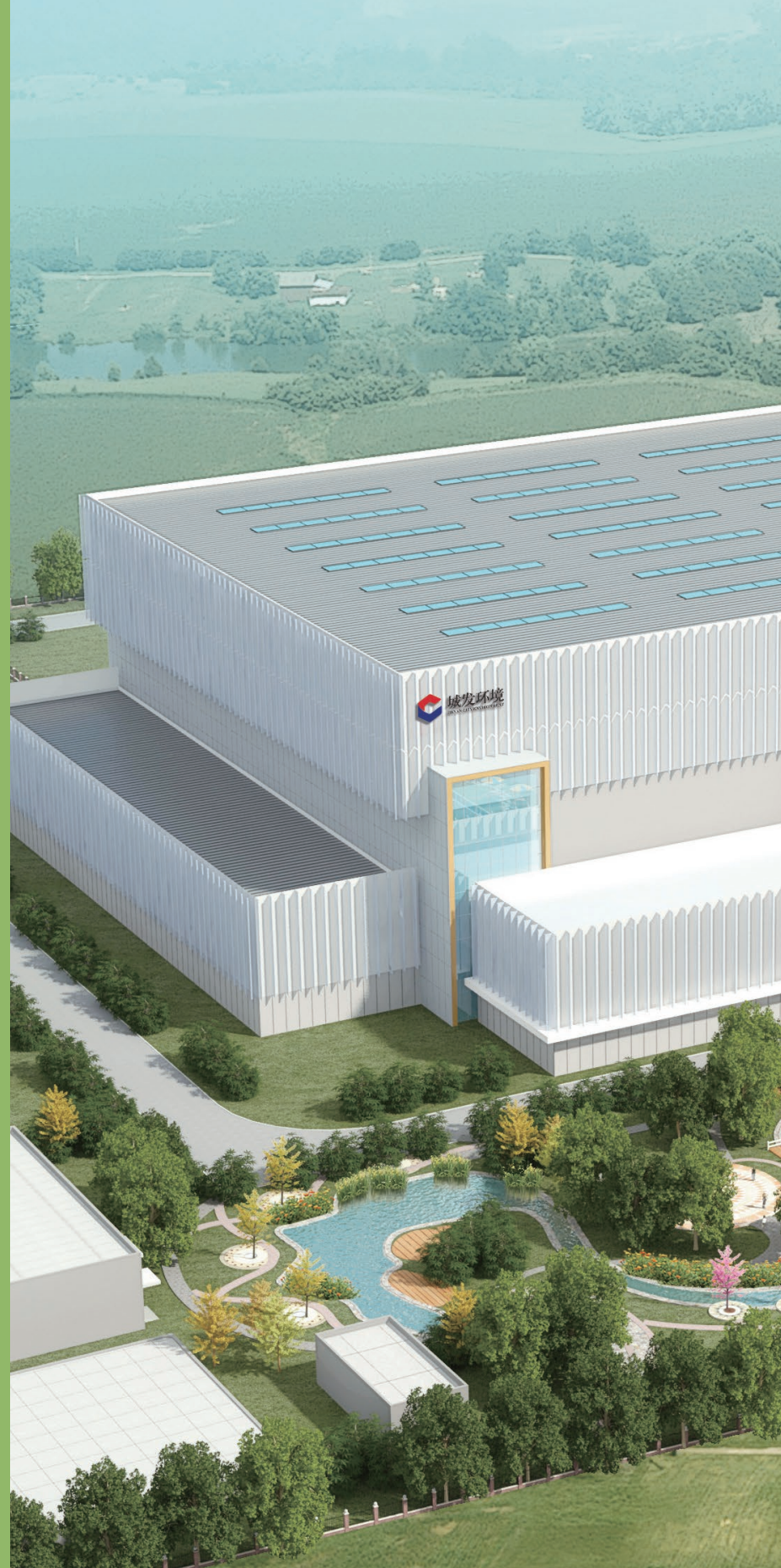
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Try Everything
To Follow Nature

About City Environment

Henan Investment Group

Henan Investment Group is a pilot enterprise of the state-owned capital operation and has been included in the "Double Top Hundred Enterprises" of SOE reform by the State-owned Assets Supervision and Administration Commission of the State Council. The Group assumes the function of service strategy and market operation, and plays an important role in the investment of infrastructure projects, the cultivation and guidance of strategic emerging industries and the promotion of social investment. The Group places priority on the investment in environmental protection industry and operates the environmental protection platform of Henan City Development Environment Co., Ltd.

Total assets
170 billion
RMB

Total size
260 billion
funds

Listed
company
Hold shares of
7
companies

Domestic
credit rating
AAA
International credit
rating **A-**

City Environment Co., Ltd.

City Environment Co., Ltd. has been listed on the Shenzhen Stock Exchange (stock code 000885). As a subsidiary of Henan Investment Group, it is committed to building a carrier in the environmental protection technology industry and making significant contributions to environmental protection in China.

Total assets
8 billion
RMB yuan

Annual
turnover
2 billion
RMB yuan

Daily solid
waste processing
capacity
29,400
tons

Daily water
processing capacity
780,000 tons



Two-sector dual-core N-business forms

City Environment Co., Ltd., based on its investment and financing capabilities and professional back-stage management, specializes in solid waste treatment and smart water system, and meanwhile cultivates multiple business forms, forming the development pattern of "Two-sector + Dual-core + N-business forms".

Organizational structure

In the principle of "powerful, professional and energetic", City Environment Co., Ltd. establishes a three-level management structure: headquarters, professional sectors and joint-venture platforms, and project companies. The headquarters is at the investment management level, and its core functions include "expansion drive, operation supervision, risk prevention and control, and business empowerment".

The professional sector is at the specialized management level, and its core functions include "pursuit of excellence efficiency improvement, and platform sharing", and currently, it covers environmental protection energy (solid waste), water treatment (water) and general contracting (engineering), etc. The core function of the regional joint venture company is "resource potential tapping".

The project company, at the project execution level, is positioned as "operational execution".

Talent team

City Environment Co., Ltd. welcomes all industry leaders at home and abroad, and now it has more than 2,000 employees, 52% of whom have master's degree or above, and they major in project investment, engineering construction, and operation management, etc. The team has a high professionalism and a strong cohesion. The ability determines the position, and the performance determines the remuneration. The dedication and hard working have been rooted in all employees' hearts as the mainstream culture of the company.



COMPANY PROFILE

Starting

In 2015, Henan Investment Group integrated the infrastructure, transportation & logistics and municipal water services into the infrastructure sector.

Growing

In 2017, the infrastructure sector set up a joint-venture platform with local governments with an investment of more than 28 billion yuan, through which more than 1 million tons of water was integrated, and an area of 68.3 million square meters was heated.

Sailing

In 2016, the infrastructure sector made extensive negotiation with the local governments and project implementation agencies, and finally won the bid of 11 projects throughout the year, with a total investment of more than 10 billion yuan.

Rising

In 2019, the future of City Environment Co., Ltd. has come. Based on the Central Plains, its business has covered the whole country. The company actively takes part in the Belt and Road and Silk Road strategies, and has become a comprehensive, ecological and innovative benchmark enterprise in environmental technology industry with core competitiveness and brand advantages.

Transformation

In 2018, City Environment Co., Ltd. led the province's venous industry parks to promote investment, construction and operation of environmental protection projects.

Core Business

**Two sectors
(solid waste treatment &
smart water system)**



Solid waste treatment

Building and operation of various industry parks centered on waste incineration power plant



Intelligent water system

Municipal water supply, sewage treatment, water reuse, and water environment treatment



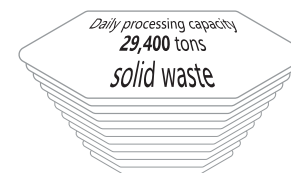
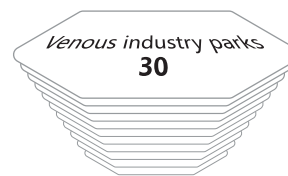
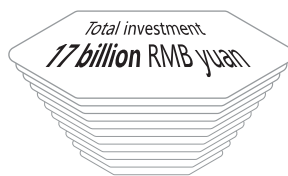


城发环境
HUNAN CITY ENVIRONMENT

JIYUAN FACTORY ENTRANCE

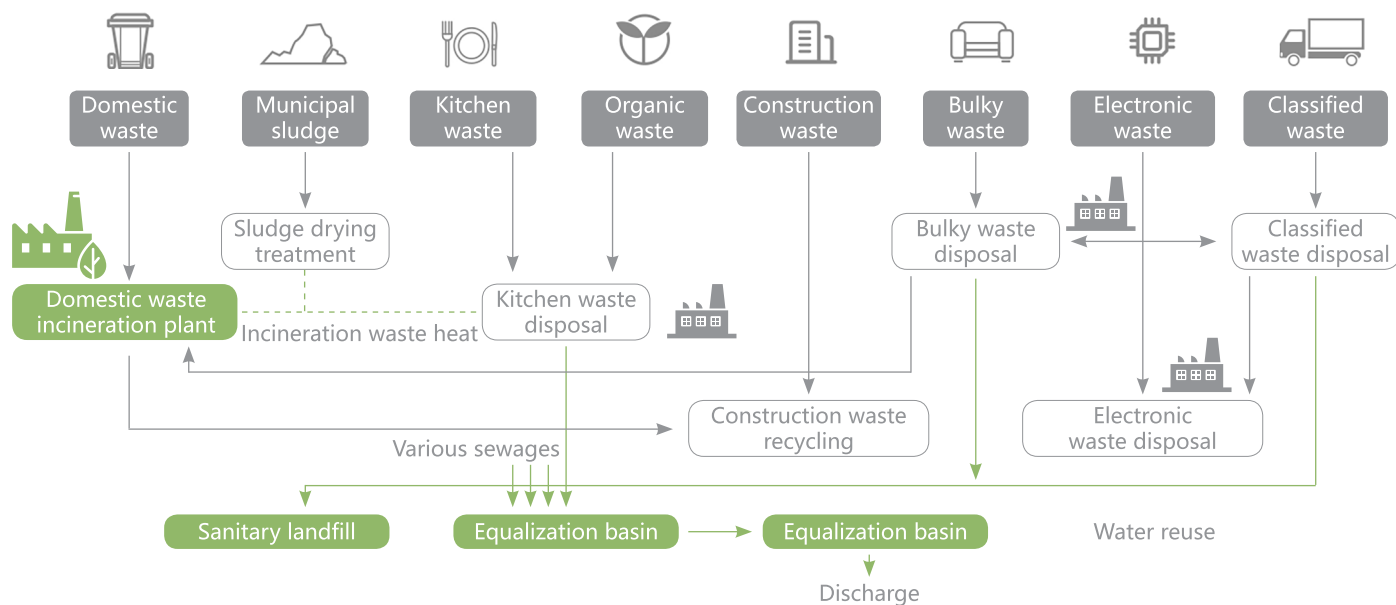
Solid Waste Treatment

City Environment Co., Ltd. invests, builds and operates venous industry parks that integrate the treatment of sludge, kitchen waste and construction waste, with WTE as the core. The main business includes: WTE-centered venous industry park and intelligent municipal solid waste collection and transportation system. The company has established a wholly-owned subsidiary – HENAN URBAN DEVELOPMENT ENVIRONMENTAL PROTECYION ENERGY CO., LTD which specializes in the solid waste treatment, and has a professional and efficient engineering management team of more than 300 professional management personnel and technicians, of which 45% obtain the master's or doctoral degrees and 32% the senior titles and above.



Solid Waste Treatment Integrated Solution

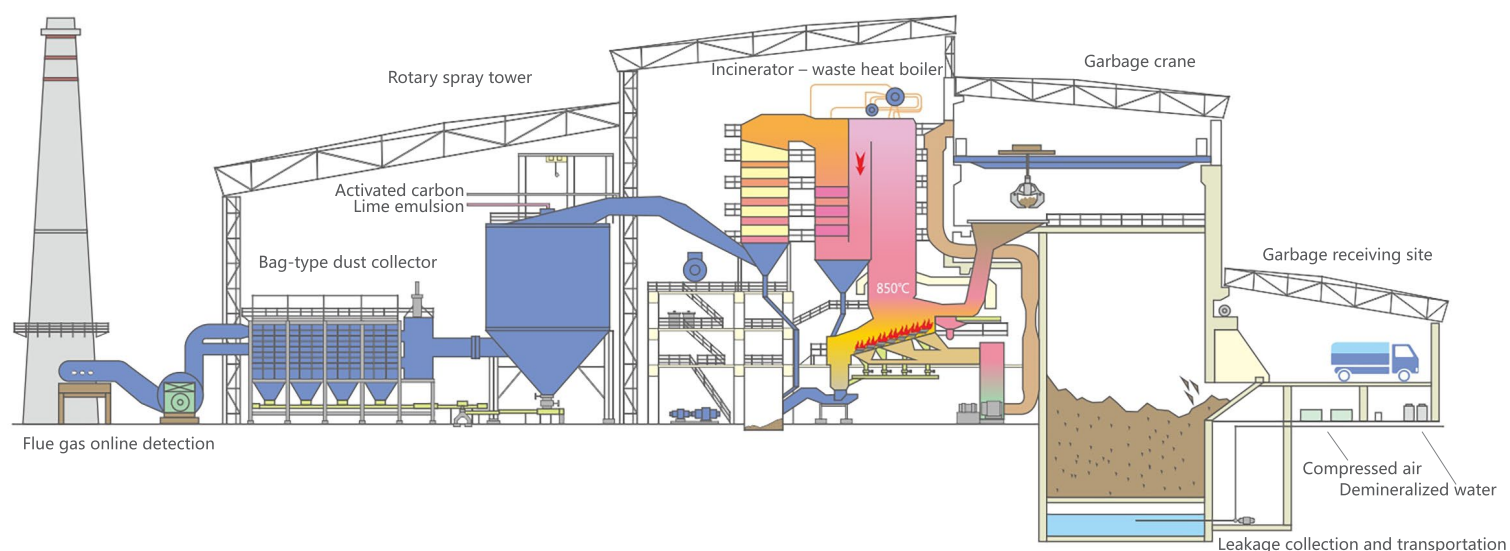
The company has introduced the grate waste incineration technology from Babcock & Wilcox Volund (BWV) in Denmark. By applying this technology, the waste heat of incineration can be used for the sludge drying, and the fermentation and thermal hydrolysis of kitchen waste. At the same time, the combustible residues can be returned to the incinerator to generate heat energy, thereby realizing the recycling of materials and energy. Flue gas emissions fully comply with national standards. The daily average value of designed flue gas indicators is better than the "EU 2010 Standard". The leachate treatment meets the leachate effluent reuse and corresponding emission standards.



WTE Process

The intelligent garbage truck transports the garbage to the unloading site of the waste incineration power plant. In the sealed storage pit, the garbage crane sends the garbage into the incinerator hopper and the garbage enters the incinerator.

At 850 °C and above, the harmful substances such as dioxin are completely eliminated. The flue gas generated from the waste incineration enters the denitration device to remove the nitrogen oxides, and then enters the deacidification reaction tower to remove the acid harmful substances such as sulfur dioxide and hydrogen chloride through reaction with the lime slurry; next, the activated carbon powder sprayed into the flue absorbs lead, mercury, cadmium and other heavy metal ions, and the flue gas enters the bag-type dust collector to filter the dust and finally discharges into the air.



Flue gas purification system: a combination of "SNCR [ammonia water] + semi-dry method [$\text{Ca}(\text{OH})_2$] + dry method [$\text{Ca}(\text{OH})_2$] + activated carbon adsorption + bag type dust removal".

Fly ash stabilization system: using chelating agent + water process, the stabilized fly ash meets the provisions of Identification Standards for Hazardous Wastes – Identification for Extraction Toxicity (GB5085.3-2007) and Standard for Pollution Control on the Landfill Site of Municipal Solid Waste (GB16889-2008).

SNCR system: 20% ammonia water is adopted in denitration as reducing agent, and an ammonia storage tank is set up, enclosed by stainless steel safety fence. At the entrance and exit, there are ESD devices and emergency spray cleaning devices. The SNCR system mainly includes three parts: unloading and storage system, solution injection system and automatic control system.

Solid Waste Treatment

SOLID WASTE TREATMENT

Investment Cases

City Environment Co., Ltd. invests, builds and operates the kitchen waste, sludge and hazardous waste treatment projects. Up to now, it has carried out more than 30 venous industry park projects.

| Project Name | Scale | Operation Mode |
|-------------------------|--|----------------|
| WTE project in Xiping | Total scale 1,200 tons/day (phase I 600 tons/day) | BOT |
| WTE project in Runan | Total scale 600 tons/day | BOT |
| WTE project in Anyang | Total scale 2,250 tons/day | BOT |
| WTE project in Hebi | Total scale 1,500 tons/day (phase I 1,000 tons/day) | BOT+TOT |
| WTE project in Jiyuan | Total scale 600 tons/day | BOT |
| WTE project in Huaxian | Total scale 1,000 tons/day | BOT |
| WTE project in Dengzhou | Total scale 1,000 tons/day | BOT |
| WTE project in Yichuan | Total scale 1,000 tons/day | BOT |
| WTE project in Xin'an | Total scale 800 tons/day | BOT |
| WTE project in Huixian | Total scale 700 tons/day | BOT |
| | | |



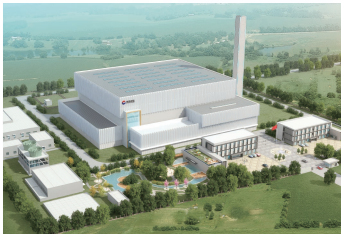
WTE project in Jiyuan



WTE project in Xiping



WTE project in Runan



WTE project in Anyang

Environmental Equipment Manufacturing Base

City Environment Co., Ltd. has cooperated with Dongfang Boiler Group Co., Ltd., a principal subsidiary of Dongfang Electric Corporation to establish Henan Dongfang Boiler City Environmental Protection Equipment Co., Ltd. and introduced the super reciprocating grate technology from BWV in Denmark. By controlling the WTE core technology, the company takes digital and intelligent production as the engine, builds a comprehensive environmental protection equipment manufacturing base through multi-point distribution of equipment manufacturing projects in physical space and collaboration in industrial development, and aims to develop into a WTE service provider integrating R&D, manufacturing, assembly, commissioning and technical consultation.



Super reciprocating grate technology

BWV, Denmark

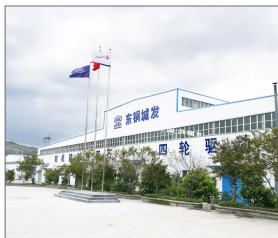
It invents the grate technology which is the origin of all available grate technologies in the world. In 1931, it built the world's first waste incineration power plant.

City Environment Co., Ltd.

It has strong policy research capabilities, accurate industry and market analysis teams and abundant project resources.

Dongfang Electric Corporation

It is a key state-owned enterprise and one of the world's largest power generation equipment manufacturers. Its subsidiary DBC has rich manufacturing experience, first-class R&D and technical teams, rapid absorption technology, and ability to upgrade product.



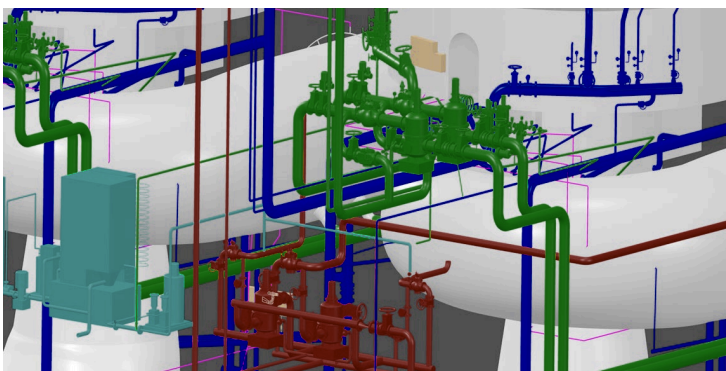
Now it has 15,000 square meters of plants, nearly 300 sets of equipment, and 20 sets of grate furnaces/year.

Solid Waste Treatment

Standardized venous industry park model

A standardized venous industry park with beautiful environment, advanced technology, intelligent management, and low carbon emission is established by strengthening the background construction and professional management.





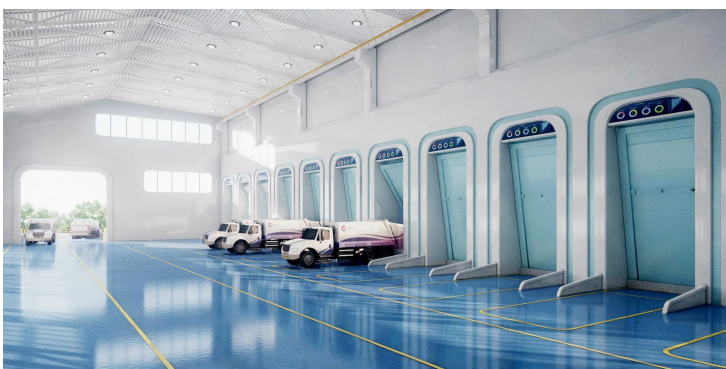
High starting point planning

The design work including feasibility study, preliminary design and construction drawing is strictly implemented. The BIM design covers the whole plant facilities. During the whole construction process, multiple professionals conduct comprehensive inspection. The on-site progress is displayed through the three-dimensional model. The external wall of the project, plant greening and decoration style are designed in a unified manner with the new concept of modern architecture according to the requirement of "One Plant, One Scene, One Ecology", to build quality engineering.



High quality construction

Develop a WTE project management manual, construction process guideline, construction standardization manual, and safety facility standardization manual. Centralized management and control are implemented to project acquisition, construction quality, safety progress, project cost and fund payment and many measures are taken to control the quality of process.

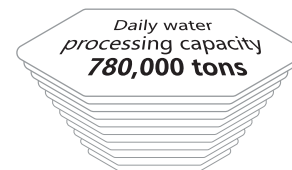


High standard operation

Prepare project production outline around personnel, technology and materials. Realize the life cycle management based on the engineering information base. Research on equipment selection, engineering technology and operation and management is conducted. Over 100 research reports have been completed, which help create a unified, standardized and stable management system.

Smart Water System

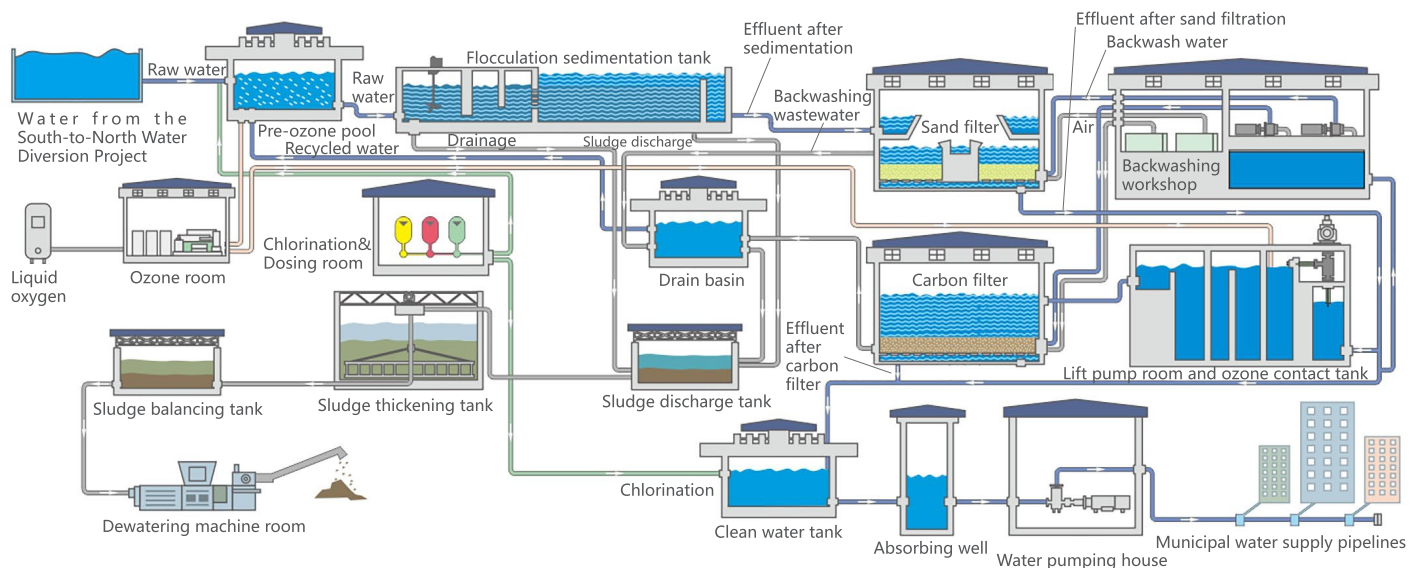
City Environment Co., Ltd. invests and operates an integrated solution taking water treatment project as the main line and integrating planning and design, engineering construction, technology research and development, equipment manufacturing, investment construction and operation management, which can provide the most comprehensive, advanced and reasonable water for a region. A wholly-owned water professionalization company which specializes in the development of smart water system is established. It has more than 100 professional management and technical talents, of which 52% obtains master's degree, doctor's degree and senior professional titles. They strictly control the level of specialization and standardization of project construction management.



Water Supply Process

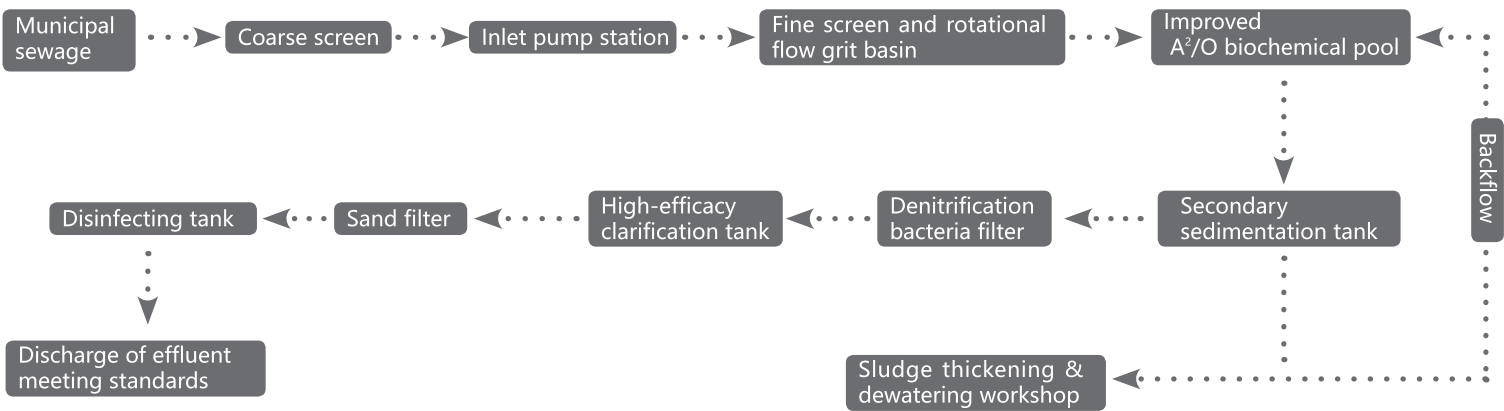
With the standard of "good quality, sufficient volume, sufficient pressure, accurate measurement, fast maintenance and good service", Henan City-development Water Co., Ltd has gradually developed into an urban water service provider integrating tap water production and sales, investment construction management, water supply engineering installation and material supply.

The 12 routine indicators of raw water and tap water is tested twice a day, the 7 routine indicators of pipe network water is tested twice a month and a third party is entrusted to conduct 42 monthly tests and 106 annual tests in a timely manner in strict accordance with the Standards for Drinking Water Quality. In recent years, all the testing indicators have met the internal control indicators set by China, and the pass rate has reached 100%.



Sewage Treatment Upgrading Process

In recent years, municipal water upgrading and reconstruction business has increased year by year in China. We have comprehensively started the tough battle for municipal water construction and improvement, which promoted urban sewage treatment facilities to reach Class A or higher emission standards. The municipal sewage treatment standard improvement is to increase the emission indicators of COD, total nitrogen, ammonia nitrogen and total phosphorus in the sewage discharged from the existing urban sewage treatment plants. The processes and technologies used include: MBR membrane process technology, MBBR process, biological filter, denitrification deep bed filter, high-efficiency clarification tank and UV disinfection.



| Indicators of influent and effluent | Indicator categories | COD | NH3-N | TN | TP |
|-------------------------------------|----------------------|--------|-------|-------|------|
| | Influent | 140.09 | 16.24 | 20.42 | 1.77 |
| | Level A indicator | 50 | 5 | 15 | 0.5 |
| | Effluent | 30 | 1.5 | 10 | 0.3 |

Smart Water System

Investment Cases

The Company is dedicated to the construction and operation of municipal sewage disposal, water supply and other projects, with considerable new and existing water supply and sewage disposal projects, and rich engineering and technical service experience and project investment and financing strength in the field of water treatment.

| Project Name | Capacity | Production Process |
|--|--|--|
| Luohe Shanan Sewage Plant (proposed) | Designed daily capacity / 130,000 tons | Oxidation ditch treatment process is applied |
| Luohe Shabei Sewage Plant (proposed) | Designed daily capacity / 60,000 tons | Oxidation ditch treatment process is applied |
| Luohe Magou Sewage Plant (proposed) | Designed daily capacity / 50,000 tons | AAO + shallow sand filtering+ Ca(ClO)2 disinfection |
| Xinyang No. 1 Sewage Plant (proposed) | Designed daily capacity / 200,000 tons | Phase I: Activated sludge method Carrousel oxidation ditch treatment Phase II: Improved oxidation ditch + advanced treatment |
| Huojia Sewage Plant (proposed) | Designed daily capacity / 60,000 tons | Improved oxidation ditch treatment process |
| Muyuan Water Supply and Purification Plant | Designed daily capacity / 75,000 tons | Pre-oxidation + coagulation + precipitation + filtration + ozone activated carbon treatment |
| ZAEZ Water Supply and Purification Plant | Designed daily capacity / 200,000 tons | Ultrafiltration membrane technology |
| | | |



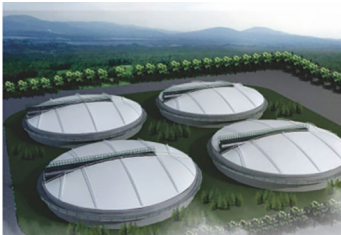
ZAEZ No. 2 Water Supply and Purification Plant



Muyuan Water Supply and Purification Plant



Xinyang Sewage Plant



Luohe Shanan Sewage Plant

Digital Water Management

"Internet + Big Data" is used to integrate various and basic information related to water acquisition, supply, use and drainage to build intelligent water cloud data center. An entire industrial chain of municipal water supply, sewage treatment, water reuse and water environment treatment is formed to achieve international quality, dual water source protection, intelligent system and integrated management.



Strict drainage standard



Digital control

Core Advantages

**Dual cores
(investment and financing
capacity + professional
management)**



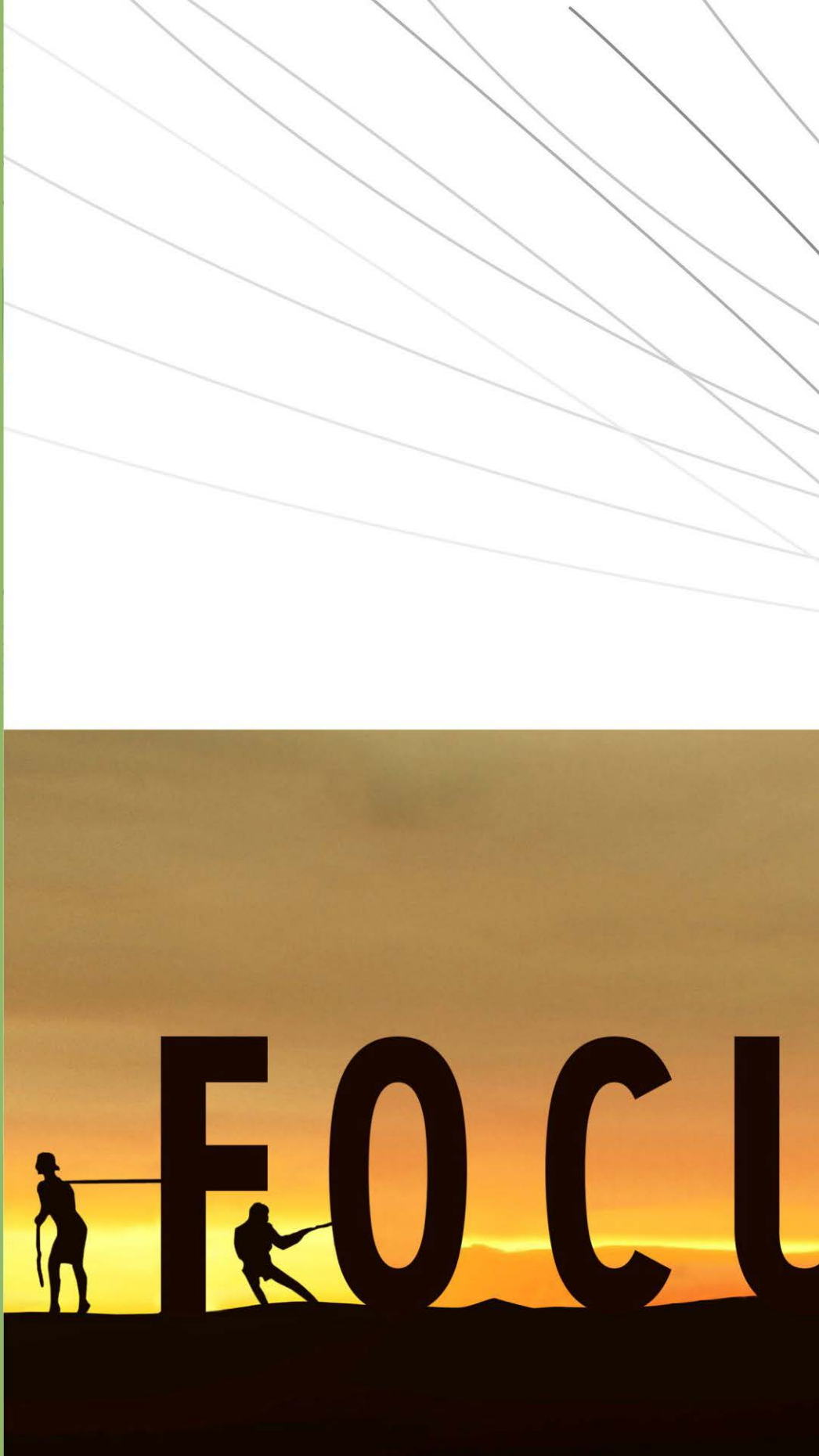
Investment and financing capacity

Taking its own advantage as a listed company and relying on the environmental protection industry investment platform of Henan Investment Group, it provides flow capital for construction of the project.



Professional management

Provide one-stop service for comprehensive management of urban environment in the whole industry chain through strong backstage and professional management.

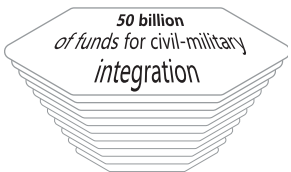




Investment and financing capacity

Investment Cases

As a wholly state-owned company operating the state-owned assets within the authorization scope of the provincial government, the investment group ranks among the list of top 100 central enterprises and top 100 state-owned enterprises with strong comprehensive strength. It is the investment and financing entity of the provincial government with AAA credit rating and qualifications for super short, short and medium-term shares. It mainly supports infrastructure construction and development of strategic emerging industries.



City Environment Co., Ltd.

With the platform advantage of a listed company and AA+ credit rating, City Environment Co., Ltd. has obtained the special loan of China Development Bank, and the transportation & logistics sector will provide good cash flow for the Company.



Professional Management

Strong backstage management / professionalism

The Environmental Protection Division and Sanitation Business Division are established for joint development of solid waste treatment. The Company adopts the management mode of "unified control, construction, equipment and operation" and forms a standardization program that can be duplicated, promoted and learned to create a batch of bench-marking projects.

Standardization: key technologies of leading enterprises in the industry is introduced, market-oriented recruitment process is adopted to recruit domestic and overseas industry leaders, and a 300-people professional team covering planning, design, engineering and operation management fields is formed. A batch of venous industry parks with first-class technology, obvious synergistic effects and ecological environment are built.

Ecologicalization: The project will be de-industrialized, and the venous industry park will be built into an ecological park to realize the "one factory, one scene and one ecology" mode and make it a local tourism landscape. The Company aims to create a provincial science popularization base, publicity and education base, and green ecological demonstration base.

Intelligence: The Internet of Things, 5G technology, intelligent process control, optimized scheduling and automatic warning are used to achieve "unmanned supervision", and to improve quality and efficiency and reduce costs. Through the whole process of big data management, garbage collection, disposal and emission data will be uploaded on the cloud, creating an environmental protection platform and a supervision platform.

Talent Team



Executive team

Mainly from infrastructure and power sectors
Have rich experience in undertaking
infrastructure project and project management



Professional team

Over 1,000 professional management
and technical talents, 52% with master's
degree and above 72% majoring in
finance, management, engineering, and
environmental protection



HCDE College

Adhering to the concept of lifelong
learning, a corporate university is
opened to cultivate industry elites
and serve the cause of environmental
protection

Advanced Technology

- Join hands with leading international companies such as BWV and DBC to build the equipment manufacturing base for a comprehensive improvement of the technical level of project equipment and the core competitiveness of the company.
- Take the lead in applying national and industry-related standards, and plan to formulate technical standards for the kitchen waste industry.
- Integrate planning and design, engineering construction, technology research and development, equipment manufacturing, investment construction and operation management to build a green industry ecosystem.

Multiple Business Forms

N-business forms (green ecosystem)



Transportation & Logistics



Clean Heating



Capital Driven



Environmental Resource
Trading Center



Dig Data Application



Design Consultation





Transportation & Logistics



The main business of the transportation and logistics sector is the investment, construction and operation of transportation facilities and supporting projects such as highways, municipal roads and logistics parks.

The affiliated Henan Xupingnan Expressway Co., Ltd. was established in 2000. It currently operates three expressways, namely Xupingnan, Anlin and Linchang. With a total mileage of 255 km, it plays an important role in developing the "double cross" type expressway network in Henan Province. With an estimated total investment of 2.567 billion Yuan, the new-built project of Xixia Highway is 56.9 kilometers long, which is an important part of the G312 national trunk highway. The key municipal road projects invested and constructed by the Company are located in various cities and counties in the province, with stable profits and strong financial support for other sectors.

To respond to the national "Belt and Road" strategy and the call of the provincial party committee and the provincial government to build a modern international logistics center, the Company joins hands with China Railway Group in the field of multimodal transport and modern logistics parks to create a first-class and domestic leading modern logistics network in the province, which will promote the transformation and upgrading of the logistics industry in the province and drives the local economy to achieve high-quality development.





Clean Heating

Giving full play to the Company's specialization advantages, the Company provides one package service of centralized heating consultation, investment, operation and capitalization for local districts and realizes the development of new and existing heat supply projects with the mushrooming trend.

Extend the central heating radius to promote the combined heat and power generation of large units. By using geothermal, biomass, distributed energy and other means, the Company establishes a clean, safe and stable heating system and achieves sustainable development by comprehensively optimizing the heating energy structure through the control of clean heat sources, efficient transmission and distribution network, energy-efficient buildings and other links.



Capital Driven



In accordance with the "government guidance, state assets driving, professional management, market-oriented operation" philosophy, a green development fund is established. By attracting investment companies, financial institutions and industrial enterprises to participate in whole industry chain such as environmental design, construction, operation, and equipment manufacturing, we will build an industrial ecosystem centered on City Environment Co., Ltd.

Environmental Resource Trading Center

City Environment Co., Ltd. intends to lead the establishment of the provincial environmental resource trading center. In this comprehensive environmental rights trading market, enterprises can conduct transactions on carbon emission rights, pollution-discharge rights, energy use rights and water rights through market-based means, thereby achieving the paid use and rational allocation of environmental resources.



Big Data Application



Giving full play to the role of the post-doctoral mobile workstation of City Environment Co., Ltd., the Company is to carry out in-depth exploration and research in the technical and operational management of the environmental protection industry. It is dedicated to the integration of big data of environmental protection in the province, build Henan's "environmental protection cloud" platform and environmental protection monitoring platform to promote industry transformation and upgrading, promote the development of emerging industries such as environmental protection information, and provide services and support for environmental monitoring and industry supervision of environmental protection departments.

Design Consultation

With strong qualifications, Henan Workman Construction Engineering Co., Ltd. is aimed to build a professional engineering construction and design consulting sector to provide one package service of consulting, design, construction and operation for the implementation of various projects, promote the planning, construction and operation of the project with a high starting point, a high quality and a high standard, and build bench-marking and quality projects.





Chairman Message



Fire
Insistent
Good-faith
Hard-working
Think
Explore
Receive
Share

Throughout the history of human civilization, the ecology prospers with civilization. The rolling mountains are covered with green trees, stretching plain is dressed in blue and green with large areas of waters and afforestation, and birds and flowers are seen everywhere in cities and villages. Good ecological environment are essential for sustainable development of mankind. We must treat the ecological environment as we treat life, follow the natural rules, carry out scientific planning, adapt to local conditions, and make overall plans to create a multi-symbiotic ecosystem.

Though the road of ecological governance is long, we will walk through with a willing heart. Like a dark horse in the environmental protection industry, Henan City Development Environment Co., Ltd. is dedicated to making the earth full of vitality with the pioneering spirit, persistence and human wisdom. From a horizontal perspective, Henan City Development Environment Co., Ltd. actively responds to the "Belt and Road" initiative, and comprehensively strengthens cooperation with countries along the road in the field of ecological environment, supports the construction of local environmental protection facilities, and enhances the ecological environmental protection capabilities of various countries. From a vertical perspective, we builds an environmental protection industry ecosystem centered on Henan City Development Environment Co., Ltd. by mastering the upstream and downstream links of the industrial chain such as design, construction, operation and equipment manufacturing.

Henan City Development Environment Co., Ltd. is dedicated to becoming a leader in the environmental technology industry that integrates investment, construction, operation management, equipment manufacturing, design consultation, and big data development to realize the principle of consistency with the nature in a true sense.

Strategic Objectives

**Dual cores
(investment and financing
capacity + professional
management)**

Global Vision with Foothold in Central Plains

Based on the Central Plains, its business has covered the whole country. The company actively takes part in the Belt and Road and Silk Road strategies, and has become a comprehensive, ecological and innovative benchmark enterprise in environmental technology industry with core competitiveness and brand advantages.

THE BELT AND ROAD





Beijing China Everbright International Co., Ltd.
Beijing China National Environmental Protection Group
Beijing PowerChina
Beijing Beijing Enterprises Water Group Limited
Beijing Capital Environmental Holdings Limited
Shenzhen Shenzhen Linlin Environmental Protection Energy Co., Ltd.
Suzhou Intelligent (Suzhou) Energy and Power Shanghai Electric Power Investment Co., Ltd.
Shanghai SUS Environment Co., Ltd.
Chongqing Chongqing Sanfeng Environmental Industry Group Co., Ltd.
Taiwan Taiwan Shunyi - Shanghai Dengqun Machinery Co., Ltd.
Hong Kong Nanode Water Treatment Technology Co., Ltd.

Denmark Babcock & Wilcox Volund
Denmark NRO
France Veolia Water Group
France Suez Environment Group
USA Pall
USA Meridian Aquatic Technology LLC
USA Everich Investment Group, Inc.
USA HACH
Germany Wilo
Germany NORD
Germany Martin

Sweden Waterlink
UK Horizon Environmental Ltd
Japan Tepia Group
Japan TORAY
Japan TEIJIN
Japan Fuji Electric
Japan Kurita Water Industries
Japan Hitachi Zosen Corporation
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