

Shiguai District, Baotou City

1 Million Tons/Year Coal Gangue Resource Comprehensive Utilization Project

Business Plan

I. Project Summary

This project is invested and constructed by Baotou Hongjing Solid Waste Treatment Co., Ltd., located in Shiguai District, Baotou City. The total investment is RMB 651.3248 million, with a construction period of 24 months. The project is planned to commence in January 2026 and be completed in January 2028. Centered on the comprehensive resource utilization of coal gangue, the project adopts advanced technologies including 3T high-intensity magnetic separation combined with gravity separation for impurity removal and supercritical thermal cracking. It processes 1 million tons of coal gangue annually, producing 400,000 tons of kaolin, 100,000 tons of clean coal, and 500,000 tons of mineral soil conditioner annually. Upon reaching full production capacity, the average annual output value is RMB 940 million, the average annual net profit is RMB 265.8415 million, the investment payback period is 3.23 years (after tax, excluding construction period), and the financial internal rate of return is 42.23% (after tax).

The project complies with national circular economy and solid waste treatment industrial policies, delivering significant economic, social, and environmental benefits. It provides stable returns for investment institutions and possesses strong investment value.

II. Project Background and Market Analysis

(I) Project Background

1. Policy Support: At the national level, policies such as the "Solid Waste Comprehensive Treatment Action Plan" and the "14th Five-Year Plan for Circular Economy Development" have been issued, explicitly strengthening the comprehensive utilization of bulk solid waste, with a target of 60% comprehensive utilization rate of bulk solid waste by 2025. At the local level, Baotou City and Shiguai District have introduced multiple policies to support the resource utilization of industrial solid waste such as coal gangue, building a "Zero-Waste City" demonstration benchmark, providing solid policy guarantees for this project.

2. Industry Pain Points: China generates a huge amount of coal gangue annually. As a major coal-producing region, Inner Mongolia generates 1.2-1.5 billion tons of coal gangue annually, but the comprehensive utilization rate is only about 30%. Traditional treatment methods have problems such as environmental pollution, land occupation, and resource waste, while high-quality resource utilization technologies are in short supply. The market urgently needs large-scale, high-value utilization solutions.

3. Technical Support: The project adopts core technologies developed by Huazhu Lvjian (Beijing) Technology Co., Ltd., including 3T high-intensity magnetic separation combined with gravity separation impurity removal technology (capable of separating 99% fixed carbon and titanium-iron impurities) and silicon-based nano rare earth gel technology, achieving full-component resource utilization of coal gangue with domestically leading technical level.

(II) Market Analysis

1. Kaolin Market: Kaolin is widely used in ceramics, building materials, plastic products, cosmetics, and other fields. In 2021, the annual kaolin consumption in Inner Mongolia's ceramic industry was approximately 5 million tons; demand from the construction and plastic product industries reached RMB 200 million and RMB 4.4 billion respectively. National annual demand is approximately 7-8 million tons and continues to grow. High-quality kaolin is in short supply. The project's product unit price is RMB 1,800/ton, with broad market space.

2. Clean Coal Market: Driven by environmental protection policies, demand for clean coal continues to rise. In 2019, national total output was 215 million tons, a year-on-year increase of 12.6%. Baotou City's annual demand is 10-20 million tons, the autonomous region exceeds 50 million tons, and the national demand exceeds 300 million tons. The project's product unit price is RMB 400/ton, meeting market demand.

3. Mineral Soil Conditioner Market: The state attaches importance to cultivated land quality protection and saline-alkali land management. In 2021, Inner Mongolia's cosmetics industry demand for kaolin was RMB 300 million. National annual demand for mineral soil conditioners is 20-30 million tons, and Baotou City's annual demand is 100,000-200,000 tons. The project's product unit price is RMB 360/ton, with enormous market potential.

III. Project Planning and Construction Plan

(I) Project Site Selection and Scale

1. Site Selection: The project is located in Shiguai Economic Development Zone, Shiguai District, Baotou City. This area is a demonstration base for comprehensive utilization of industrial solid waste, with convenient transportation (37 km from Baotou Donghe Airport, 40 km from Baotou Station), complete infrastructure with "seven supplies and one leveling" already realized, and abundant coal gangue resources, meeting project construction requirements.

2. Scale: The project covers a total land area of 132 mu (approximately 87,912 m²), with a total building area of 42,730 m² and a total calculated building area of 83,444 m². It constructs 4 production workshops (3T high-intensity magnetic separation combined with gravity separation impurity removal workshop, kaolin production workshop, clean coal production workshop, mineral soil conditioner production workshop) as well as office buildings, apartment buildings, raw material yards, and other supporting facilities.

(II) Process Technology Plan

1. Core Process: Adopts the full-process technology of "3T high-intensity magnetic separation combined with gravity separation impurity removal - kaolin deep processing - clean coal purification - mineral soil conditioner preparation", achieving 100% resource utilization of coal gangue with zero waste discharge.

2. Product Technical Indicators: Kaolin whiteness greater than 90%, particle size above 3000 mesh; clean coal calorific value above 5000 kcal; mineral soil conditioner can effectively reduce salt and alkali, improve soil structure, with all indicators reaching industry advanced levels.

3. Main Equipment: Includes crushers, weak/medium/high/super-high magnetic field permanent magnetic separators, magnetic spiral gravity separation equipment, supercritical thermal cracking reactors, vertical mills, high-pressure reaction kettles, etc. The equipment selection is advanced, ensuring production efficiency and product quality.

(III) Construction Period and Schedule

The total construction period is 24 months, implemented in phases:

- 1. Preliminary Work (1 month):** Complete project approval, survey and design, etc.;
- 2. Construction Preparation (1 month):** Establish cooperative relationships, conduct bidding;
- 3. Engineering Construction (20 months):** Complete civil construction, equipment procurement and installation;
- 4. Completion Acceptance (2 months):** Handover acceptance and put into use.

IV. Operation Management and Human Resources

(I) Organizational Structure

The project implements a general manager responsibility system, with departments including Production Department, Technology Department, Marketing Department, Operation Department, Administration Department, and Finance Department, forming a linear hierarchical management system to ensure efficient and orderly operations.

(II) Human Resource Allocation

The project adds 320 employees, including 60 factory management and technical personnel and 260 workers of various types. Personnel are mainly recruited through public recruitment. Key positions require certification, and all employees receive professional training before taking up their positions to ensure they meet the project's technical requirements.

(III) Incentive and Constraint Mechanisms

Establish a diversified compensation system, complete corporate governance structure, external supervision mechanism, and market-oriented personnel selection and employment mechanism, fully stimulating the enthusiasm of the management team and employees, and ensuring the project's continuous and efficient operation.

V. Investment Estimation and Financial Analysis

(I) Investment Estimation

The total project investment is RMB 651.3248 million, with the following composition:

Item	Amount (RMB 10,000)	Percentage
Construction Investment	56,444.00	86.66%
- Engineering Costs	48,944.00	75.15%
- Other Construction Costs	4,000.00	6.14%
- Reserve Funds	3,500.00	5.37%
Construction Period Interest	7,688.48	11.80%
Initial Working Capital	1,000.00	1.54%

(II) Financing

Funding sources are 20% enterprise self-financing (RMB 130.2650 million) and 80% bank loans (RMB 521.0598 million). The bank loan term is 5 years with an annual interest rate of 10.6%, adopting equal principal repayment during the loan period.

(III) Financial Forecast

1. Operating Revenue: Average annual operating revenue after reaching full production is RMB 940 million;

2. Cost Expenses: Average annual total cost expenses after reaching full production is RMB 669.1634 million, of which operating costs are RMB 571.9473 million;

3. Profit Indicators: Average annual total profit and tax is RMB 332.3019 million, average annual income tax is RMB 66.4604 million, average annual net profit is RMB 265.8415 million;

4. Profitability: Financial internal rate of return is 42.23% (after tax), financial net present value is RMB 513.0016 million, break-even point is 34.92%, investment payback period is 3.23 years (after tax, excluding construction period);

5. Debt Solvency: Interest coverage ratio is 6.2-18.54, debt service coverage ratio is 1.4-1.61, asset-liability ratio gradually decreases to 10.19%, indicating strong debt solvency.

VI. Social and Environmental Benefits

(I) Social Benefits

1. Industrial Upgrading: Promote regional coal gangue resource utilization toward industrialization, scale, and intensification, improve relevant industrial supporting facilities, and optimize industrial structure;

2. Employment Generation: Provide 320 new jobs, indirectly drive the development of transportation, engineering construction, service industries, etc., alleviate employment pressure, and increase residents' income;

3. Fiscal Contribution: Annual average income tax payment of RMB 66.4604 million and value-added tax of RMB 49.9514 million, making positive contributions to local fiscal revenue.

(II) Environmental Benefits

1. Solid Waste Absorption: Process 1 million tons of coal gangue annually, effectively solving solid waste accumulation pollution problems and reducing land occupation;

2. Pollution Reduction: Replace traditional treatment methods such as landfilling and incineration, reduce emissions of harmful gases such as sulfur dioxide and carbon dioxide, and lower water pollution risks;

3. Ecological Restoration: Mineral soil conditioner can be used for ecological restoration of coal mining subsidence areas and saline-alkali land management, contributing to ecological civilization construction.

VII. Risk Analysis and Countermeasures

(I) Main Risks

1. Market Risk: Intensified industry competition, product price fluctuations, rising raw material costs;

2. Management Risk: Technical talent turnover, insufficient operational management efficiency;

3. Financial Risk: Insufficient financing, low capital utilization efficiency.

(II) Countermeasures

1. Market Risk: Strengthen product quality control, optimize production costs, sign long-term supply contracts with suppliers, expand diversified sales channels, and establish price warning mechanisms;

2. Management Risk: Improve talent incentive mechanisms, strengthen core technology protection, establish standardized operation management systems, and conduct regular employee training;

3. Financial Risk: Broaden financing channels, reasonably formulate capital usage plans, strengthen capital usage supervision, ensure earmarked funds, and improve capital utilization efficiency.

VIII. Conclusion and Investment Highlights

(I) Project Conclusion

This project complies with national and local industrial policies, with reasonable site selection, advanced technology, broad market, and financial feasibility. It delivers significant economic, social, and environmental benefits, making the project construction necessary and feasible.

(II) Investment Highlights

- 1. Policy Dividends:** Enjoy policy support related to comprehensive solid waste utilization and circular economy, with clear development prospects;
- 2. Technical Barriers:** Core technology is domestically leading, achieving high-value full utilization of coal gangue with strong competitiveness;
- 3. Stable Returns:** Excellent financial indicators, short investment payback period, strong profitability and risk resistance;
- 4. Social Value:** Contribute to environmental governance and industrial upgrading, with significant social benefits and good brand image.

Huazhu Lvjian (Beijing) Technology Co., Ltd.

February 25, 2026