

Solutions Supplier of High-efficiency Utilization for Mineral Resources

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Shanghai Milestone Technology, China

Outline

1 Process Evolution

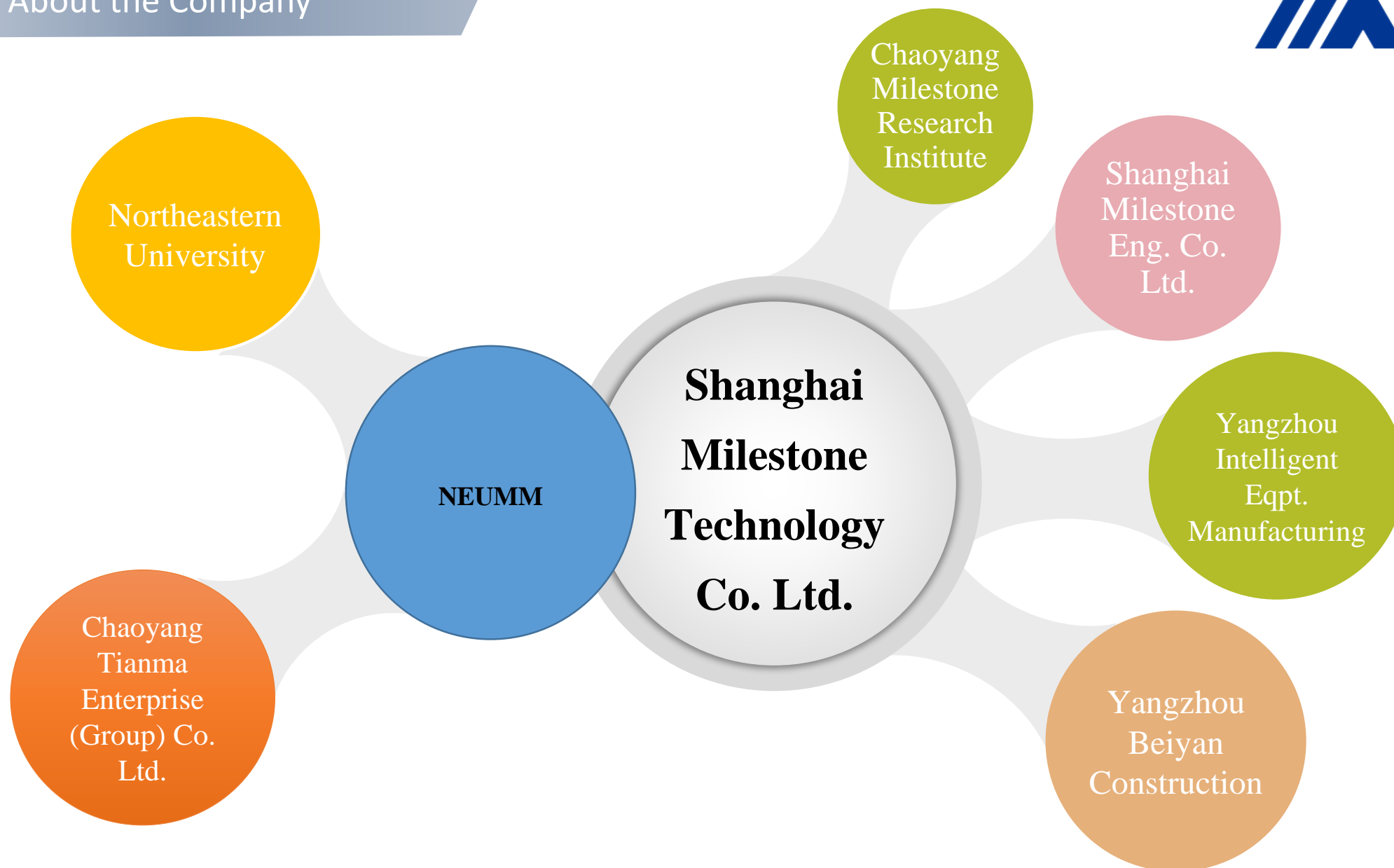
2 What We Do

3 Our Technology

4 Completed Researches

5 Industrialized Projects

6 Capabilities



Part 1

Process Evolution





Flotation

Require high standard water
Chemical reagent
Environment pollution



High-gradient Magnetic Separator(HGMS)

Magnetic gap of iron and impurity



HMPT

Change magnetic gap by green energy to supply high grade iron ore
Expend the magnetic gap between iron and impurity
Fit for small size
Mostly reduce flotation application

Part 2

What We Do



We can help you to turn your Waste into Wealth



Hard-to-
beneficiate Iron
Ore



Iron ore Tailings



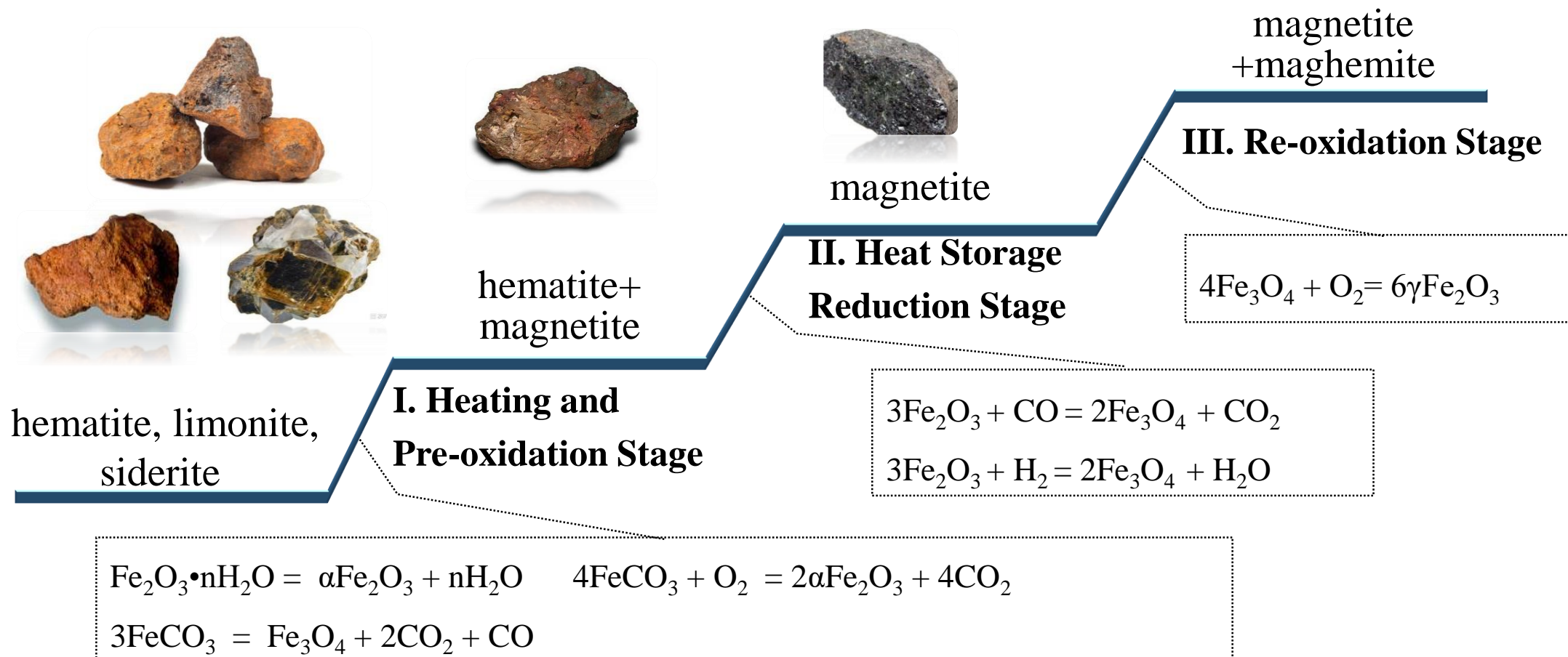
Manganese Ore
with High Fe

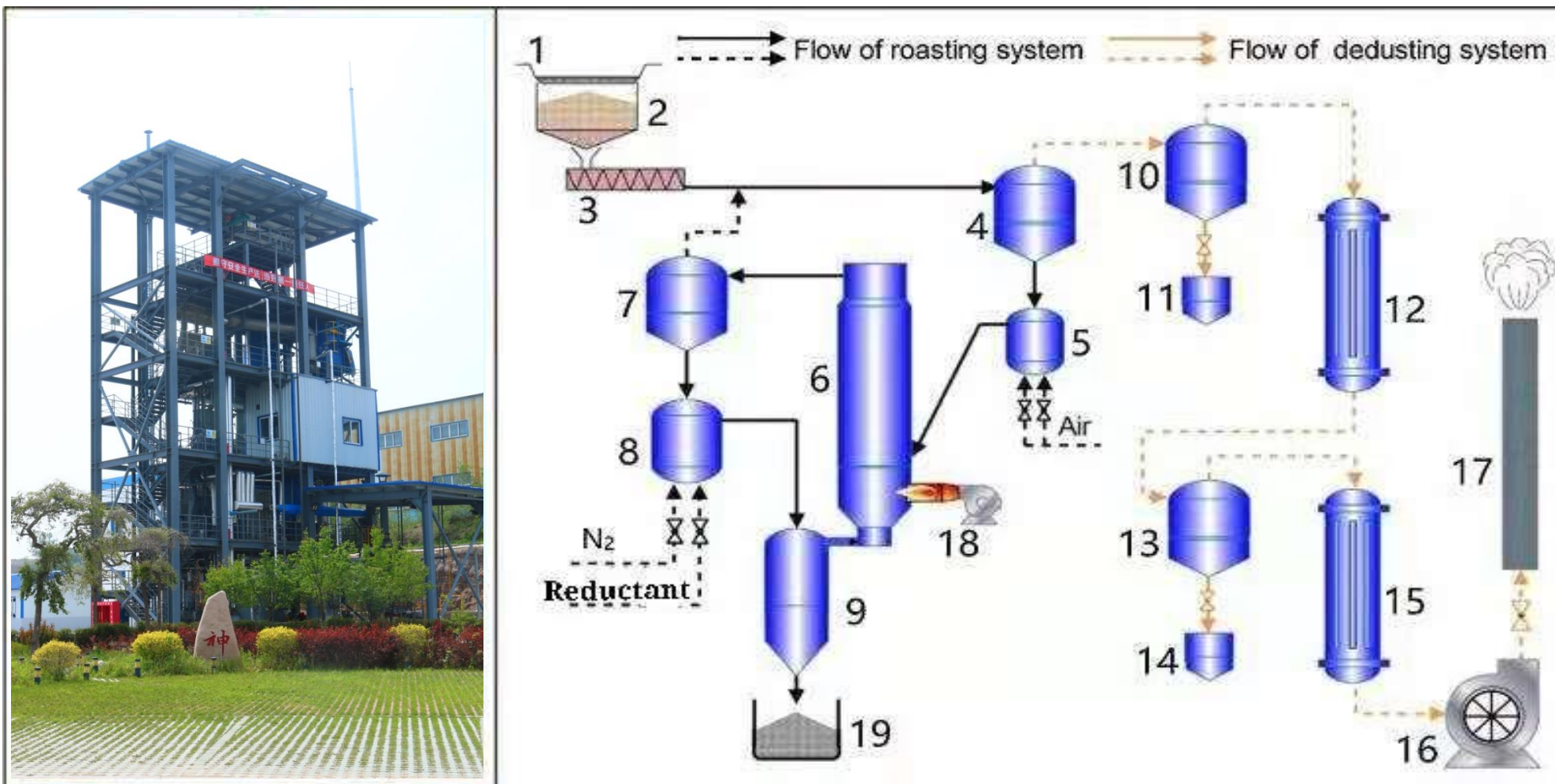
Part 3

Our Technology



“Pre-oxidation-Heat storage reduction-Re-oxidation”
multi-stage processing method.





- ◆ **Feeding System:** ①feeding; ②stock bin; ③belt weigher;
- ◆ **Heat Storage-Reduction-Cooling System:** ④⑤preheating and pre-oxidation system; ⑥⑱heat storage system; ⑦⑧ reduction system; ⑨cooling system; ⑲ roasted product;
- ◆ **Dust and Offgas Treatment System:** ⑩-⑰.

Technology Advantages

01

Effective Performance

Innovative multi-stage phase transformation and heat storage reduction are applied to precisely control the transformation of iron ore phase.

02

Highly Automated

DCS or PLC control systems and intelligent sensors are used to monitor and control the temperature, time, atmosphere of HMPT production line.

03

Environmentally Friendly

To adopt advanced dust removal, desulfurization, and denitrification technologies, which can achieve ultra-low emission, $SO_2 < 35\text{mg/Nm}^3$, $NO_x < 50\text{mg/Nm}^3$, $Dust < 10\text{mg/Nm}^3$.

04

Considerable Profit

Using natural gas, blast furnace gas, or coke oven gas as fuel and reductant bring low cost and result in high profit.

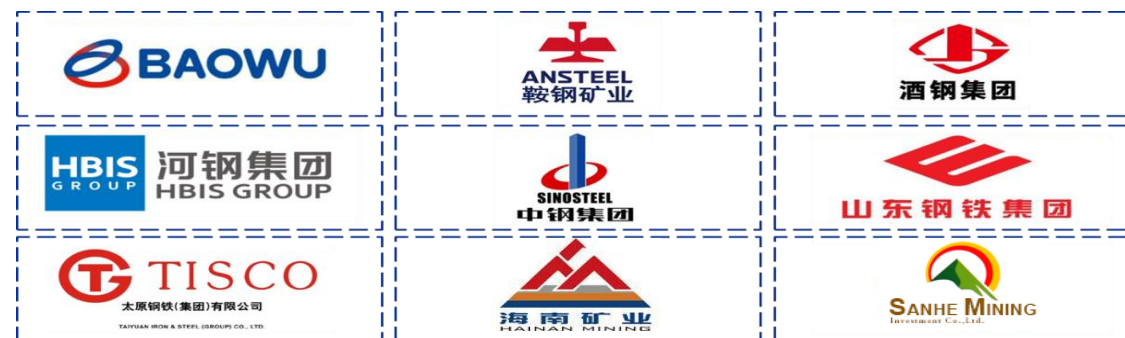
Part 4

Completed Researches



Part 4 | Completed Researches

A 3000 tons/year system is used for application researches on over 40 kinds of hard-to-beneficiate iron ores all over the world, all gained desirable results.



Ore Sample		Raw Ore Grade/%	Previous Process Technology		HMPT		Results Comparison	
			Concentrate Grade/%	Recovery Rate/%	Concentrate Grade/%	Recovery Rate/%	Concentrate Grade/%	Recovery Rate/%
Zambia iron-bearing manganese ore	Fe	44.71	inapplicable	0	67.46	97.23	-	+97
	Mn	17.86	inapplicable	0	50.18	88.68	-	+88
JISCO fine iron ore		33.10	44 ~ 46	64 ~ 66	60.59	85.62	+14	+19
Hainan Mining iron ore		40.60	61 ~ 62	60 ~ 61	65.68	85.56	+3	+25
Ansteel eastern tailings		11.48	inapplicable	0	65.69	55.33	-	+55
Ansteel Donganshan ore		31.74	63 ~ 64	63 ~ 65	66.60	88.56	+3	+23
Vale S.A. hard-to-beneficiate iron ore		47.45	60 ~ 61	60 ~ 65	65.32	97.06	+5	+32
Australia FMG iron ore		54.78	58	65	64	98.33	+6	+33
Sierra Leone Tonkolili iron ore		42.85	inapplicable	0	65.5	96.88	+22	+97
South Africa Thabazimbi iron ore		40	inapplicable	0	65.7	95.00	+25	+95
Iran Chadormalu iron tailings		28-33	inapplicable	0	66.42	85	+33	+85
Algeria Gara Djebilet iron ore		56	-	-	64.13	89.59	-	+89
Vale's tailings		28.08	-	-	64.64	64.44	+64	+64

Part 5

Industrialized Projects



Sanhe Mining Zambia Industrialized Project

Location: Zambia

Material: Iron & Manganese

Investment: 250 million RMB

Capacity: 600,000 TPY HMPT

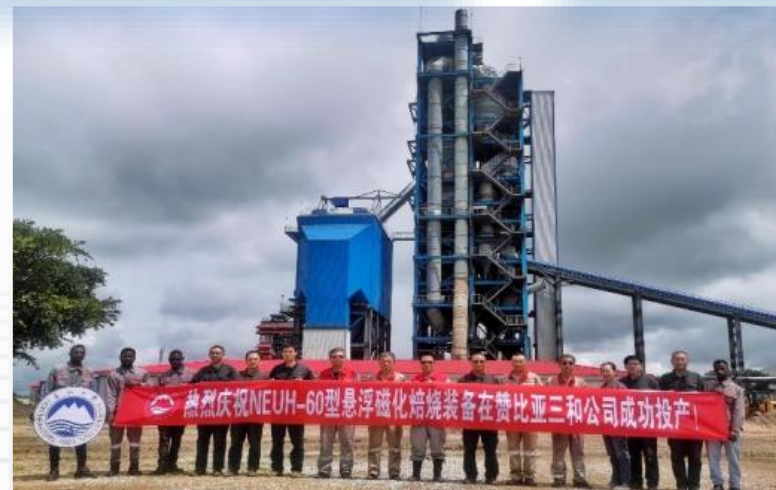
Material:
Mn: **15%**
Fe: **40%**

Increased:
Mn: **35%**
Fe: **26%**

Product:
Mn: **50%**
Fe: **66%**

**2021.10 in
operation**

**Annual net profit
301 million RMB**



Hainan Mining Industrialized Project

Location: Hainan

Material: Iron

Investment:
200 million RMB

Capacity: 2.00 MTPY HMPT

Material:
Fe: **38%**

Increased:
27%

Product:
Fe: **65%**

2024.3 to
operate

Annual net profit
100 million RMB

**33.63 Million Reward
From PRC NDRC**

重点方向：先进制造业—重要物资保障能力建设—战
略性矿产资源—铁矿石等战略性矿产资源
绿色化、智能化开发和综合利用。

项目名称：海南矿业股份有限公司石碌铁矿悬浮磁
化焙烧技术改造项目。

申报单位：海南矿业股份有限公司。

项目负责人：张洪义。

项目联系人：朱海龙。

联系方式：18789013353。

监管直接责任单位：海南昌江循环经济工业园区管理



JISCO Project

Location: Gansu

Material: Iron

Investment:
180 million RMB

Capacity: 1.65 MTPY HMPT

Material:
Fe: 50%

Increased:
12%

Product:
Fe: 62%

2020.11 in
operateion

Annual net profit
126 million RMB



JISCO Phase II Project

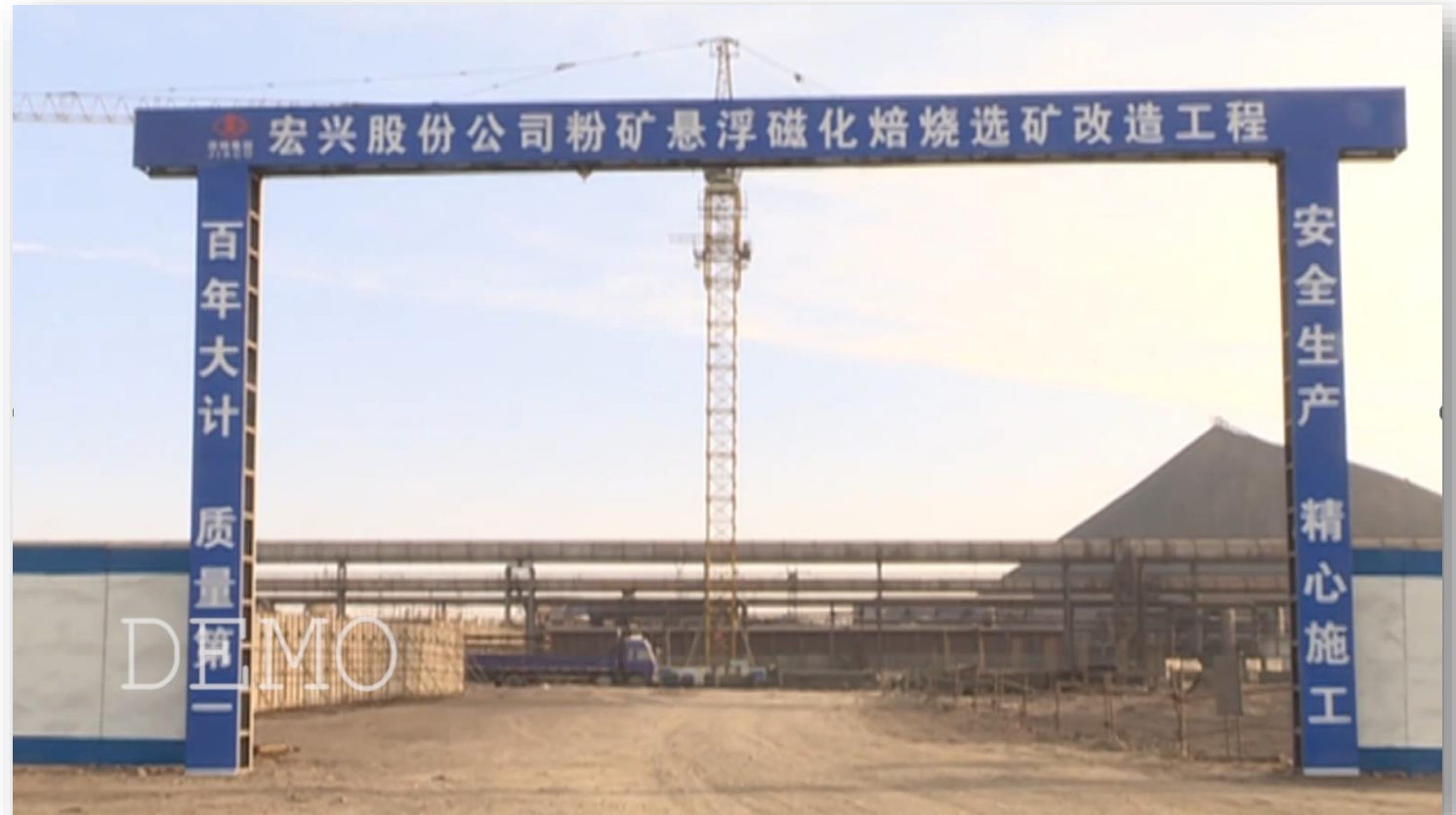
Location: Gansu

Material: Iron

Capacity: 2.00 MTPY HMPT

Commencement of Construction
March 15, 2023

Estimated Completion Date
Oct 15, 2025



Part 6

Capabilities



One-Stop Solution

Step1

Hard-to-beneficiate Iron Ore

Step2

Characterisation and Preliminary tests

Step3

Batch and Pilot Scale Researches

Step4

Techno-Economic Feasibility

Step5

Design and Engineering

Step6

Manufacturing and Supply

Step7

Construction, Installation and Commissioning

Step8

Technical Support and Continuous Improvement

Thanks for watching!

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