

Brief introduction of New Process of ULAB Recycling

JIANGSU NEW CHUNXING RESOURCE RECYCLING CO., LTD.

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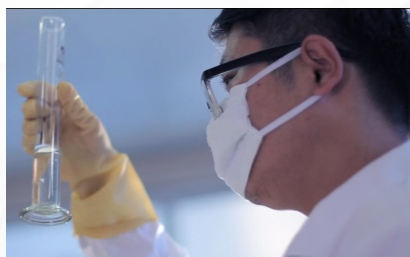
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公司简介

COMPANY INTRODUCTION



- New Chunxing has independent intellectual property rights and proprietary technology, with strict environmental protection measures and labor protection measures.
- Follow the strategy of sustainable development with limited resources and unlimited recycling
- Keep innovation to promote the rapid development of enterprises
- Now it has many wholly-owned or holding subsidiaries both in China and abroad
- New Chunxing has become the nation's largest comprehensive utilization of used lead-acid battery enterprises. In 2016, the processing capacity has reached 850,000 tons in Xuzhou plant



New Chunxing adheres to the “Ecologicalization, Resource Utilization, Intellectualization ” development concept. It is the world’s only lead recycling company with whole flow of automatic production from ULAB breaking -sorting - conversion - filter-press - weighing - mixing - granulation - feeding - melting - oxygen free lead smelting - hot to refined - alloy - ingot – storage.

Traditional technology & Environmental Pollution

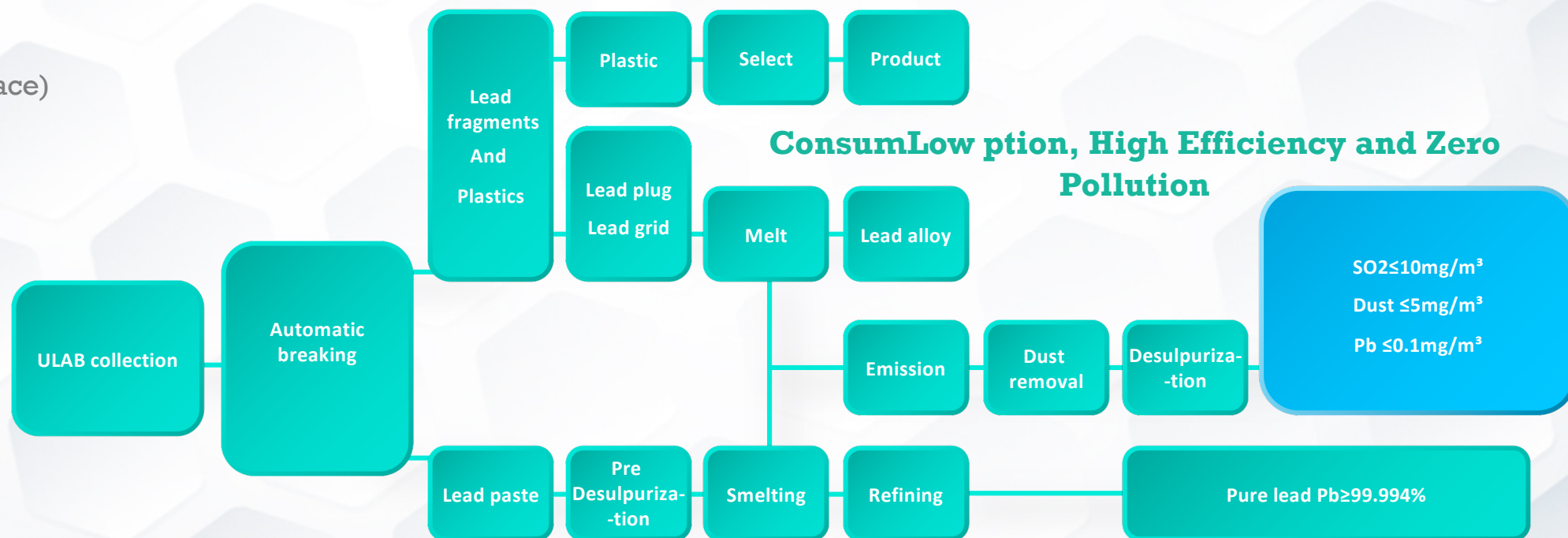
- The sulfuric acid solution is dumped directly into the environment. It will be harmful to the animals and plants.
- ULABs are disassembled by hand, which is detrimental to health.
- Low metal recovery rate of lower than 90%, which wastes resources.
- High energy consumption, big quantity of slag with high lead content.



- Serious environmental pollution. Due to the backward technology, a lot of lead steam, SO₂ and dust from the production are discharged directly into the air, which causes the pollution and harms the environment.
- Low comprehensive utilization. Because of no pre-treatment selection technology, the metal partition and lead paste are melt together. The metals of Sb and Sn, etc., are not utilized fairly.



Chunxing's Technology



- ULAB automatic breaking and selection
- Lead Paste Pre-desulphurization (PD)



生产与运营·工艺对比

PRODUCTION AND OPERATION-PROCESS COMPARISON

The company has the secondary lead production experience of more than 40 years. With the abundant technical strength, the company designs, manufactures and uses all of the equipments of the whole production process. After the continuous technical improvement, the equipment operation standards all exceeds the international advanced level.

Eg.1 million ton/YLead product	Europe/USA	Traditional tech	Chunxing
Pb in Slag	8-10% Comparing with Chunxing, they waste 12,000 tons of lead per year. The lead slag is harmful and the disposal charge is about Euro 1,300/ton.	10-35% Comparing with Chunxing, they waste 40,000 tons of lead per year, polluting the soil and underground water.	$\leq 1.6\%$ Save lead metal 12,000-40,000 tons per year. The slag could be used as kind of material.
Sn,Sb recovery rate	The breaking system doesn't have the effective separating technology. The lead grid is smelted separately. The recovery rate of Sn and Sb is lower.	Manually dissembling of ULAB and mixed smelting. Waste Sn 500T/Y and Sb 2000T/Y.	With the advanced automatic breaking and selecting system, lead grid feeding to refining process directly for lead alloy. The recovery rate of Sn,Sb $\geq 95\%$. Save Sn 1000T, Sb5000T
Dust and flue gas	The gate of the Rotary furnace needs to be opened when feeding.	Without dedusting equipment $Pb > 100\text{mg}/\text{m}^3$ $\text{SO}_2 > 8000\text{mg}/\text{m}^3$ $\text{Dust} > 200\text{mg}/\text{m}^3$	Fully closed feeding system and fully negative pressure processing. $Pb \leq 0.1\text{mg}/\text{m}^3$ $\text{SO}_2 \leq 10\text{mg}/\text{m}^3$ $\text{Dust} \leq 5\text{mg}/\text{m}^3$
Energy consumption (t Pb)	Oil 200kg/t Pb (Around 300kgs coal) Power 200kwh/t Pb		Coal $\leq 90 \text{ kg /t Pb}$ Power $\leq 40 \text{ kwh/t Pb}$
Others	The recovery rate of Lead plug and grid is around 20-25%. Feeding from one side and tapping from other side, low recovery rate.Open feed lead		The recovery rate of Lead plug and grid is around 35-40%. Closed feeding system, no dust out Closed No-Oxygen Feed lead



The production equipments are fully designed and manufactured by Chunxing, which are far superior to the rotary furnace or top blow furnace widely used in Europe and America in terms of energy consumption, production efficiency and emission level.

Breaking & Selection Sys

- Patents and first rank breaking sys.
- Advanced breaking and selection sys
- Highly automatic
- Good selecting results
- Closed and circular water recycling

Smelting Sys

- Patent tech.
- Automatic continuous closed feeding,
- Heat energy exchange, combined preheating and smelting of material, decreasing the energy consumption.
- Operation in negative pressure .
- Slag lead content $\leq 0.5\%$.

Refining Sys

- Short production cycle, combine oxidized refining and alkaline refining. Make full use of valuable element to cut down cost.
- The lead alloys have stable properties and are produced under a lot of core technology and know-how.

Emission Control Sys

- Multiple grade desulphurization of gas and flue emission ensures the emission meet the local environment protection standards.
- The dust automatically returns to the melting system.



智能化发展理念

INTELLIGENT DEVELOPMENT CONCEPT

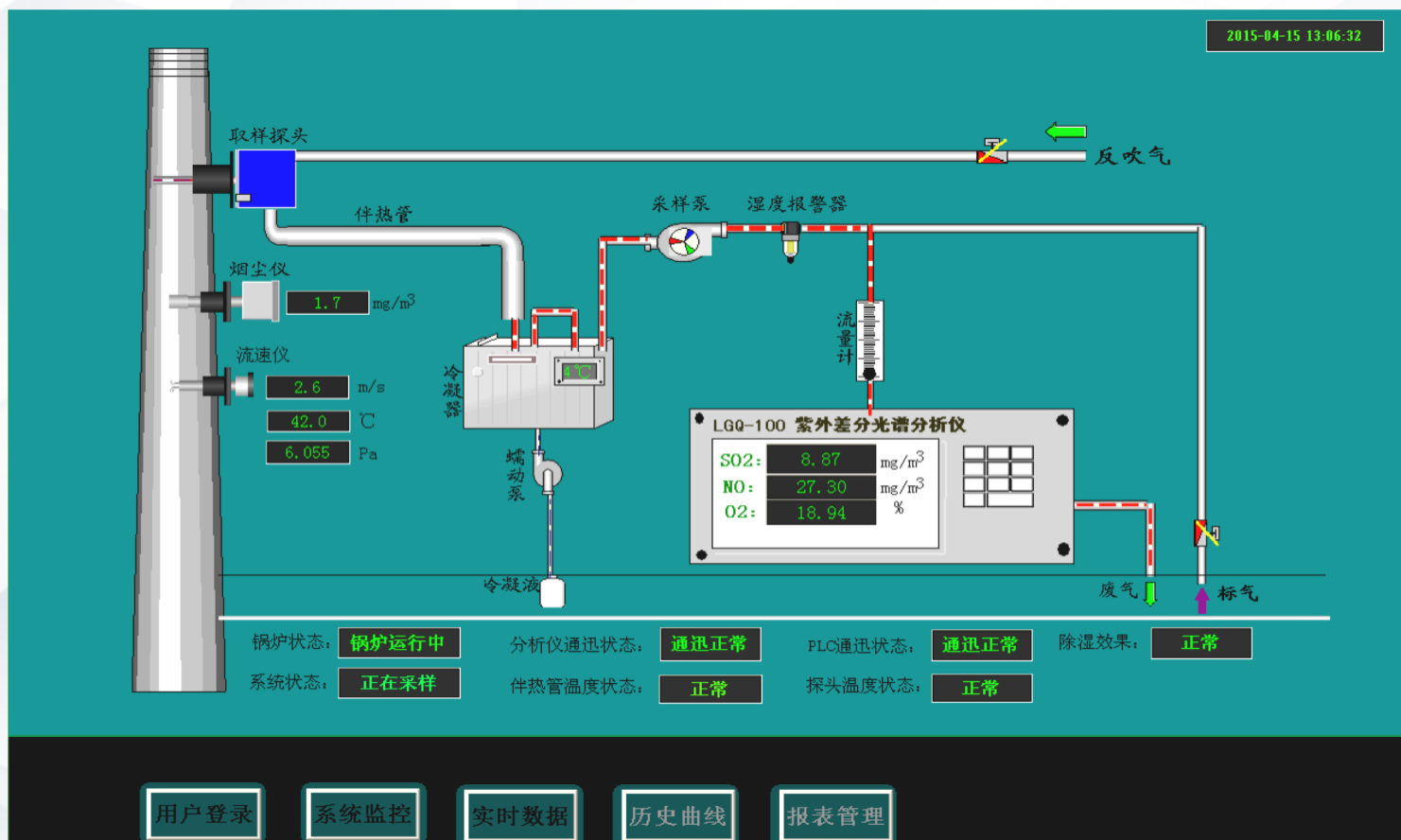
▼ The whole production procedure is monitored by smart controller system , all of the key data is controlled by the computer. The consumption data of Gas, electricity and raw materials is connected with ERP system. Continuous on-line monitoring system for flue gas emission. Automatic casting and Packing system. With the development of high technology and Automatic system, the productivity is improved , the labor is reduced, the enviroment is more friendly.



自主研发的XCX节能环保熔炼设备



Continuous on-line monitoring system for flue gas emission



24-hour online emission monitoring



Flue Gas

Using the heat-resisting and anti-corrosive dust removing bags with the pulse inverse airflow.dedusting efficiency rate $>99.9\%$

Dust $\leq 3\text{mg}/\text{m}^3$, Pb $\leq 0.1\text{mg}/\text{m}^3$

SO₂ $\leq 10\text{ mg}/\text{m}^3$

Slag

The lead content in the slag is less than 1.6% . The toxicity immersed is lower than the standard value. The slag can be disposed as harmless solid waste. It can be used as cement additive and road construction materials. Refined slag can all be refined again.

Waste Water

The water system in the plant in closed and circular. The rain collected is used for breaking system. No waste water is discharged from the plant.

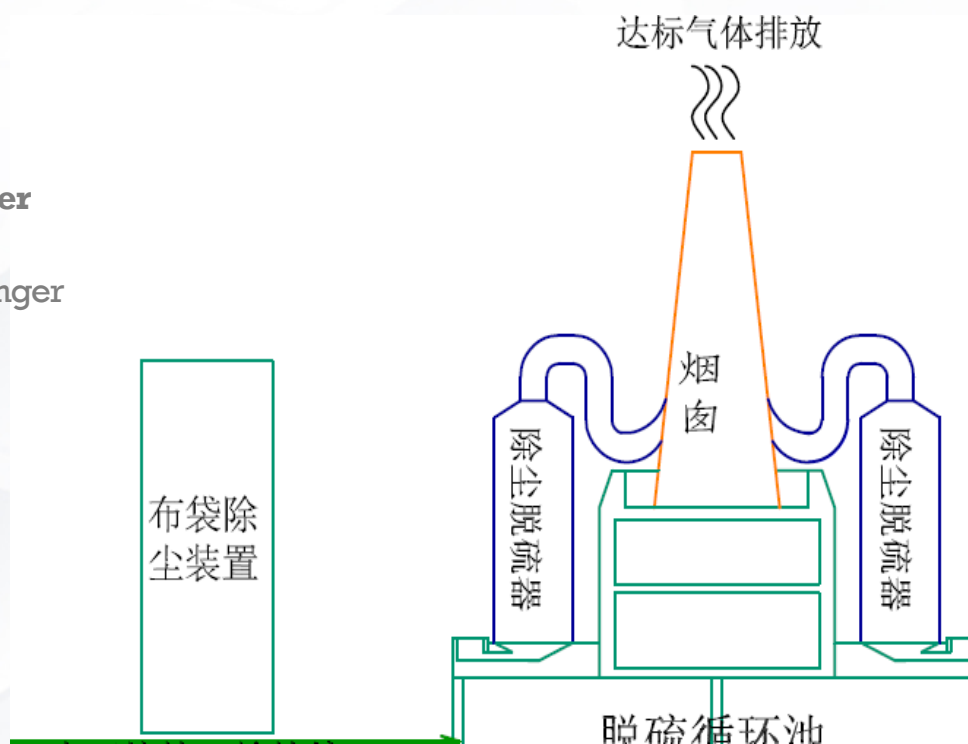




New Chunxing developed and utilized next generation desulphurization system which excessively decreased the detrimental chemicals in smoke and slags.

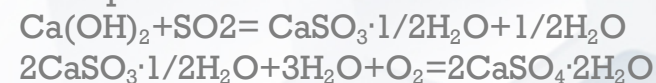
Features of Smoke Remover

- ✓ High Efficiency Heat Exchanger
- ✓ Residual Heat Furnace
- ✓ Whirlwind Cooling Dust Remover
- ✓ Pulse Pocked-Form Dust Remover



Features of Desulphurization System

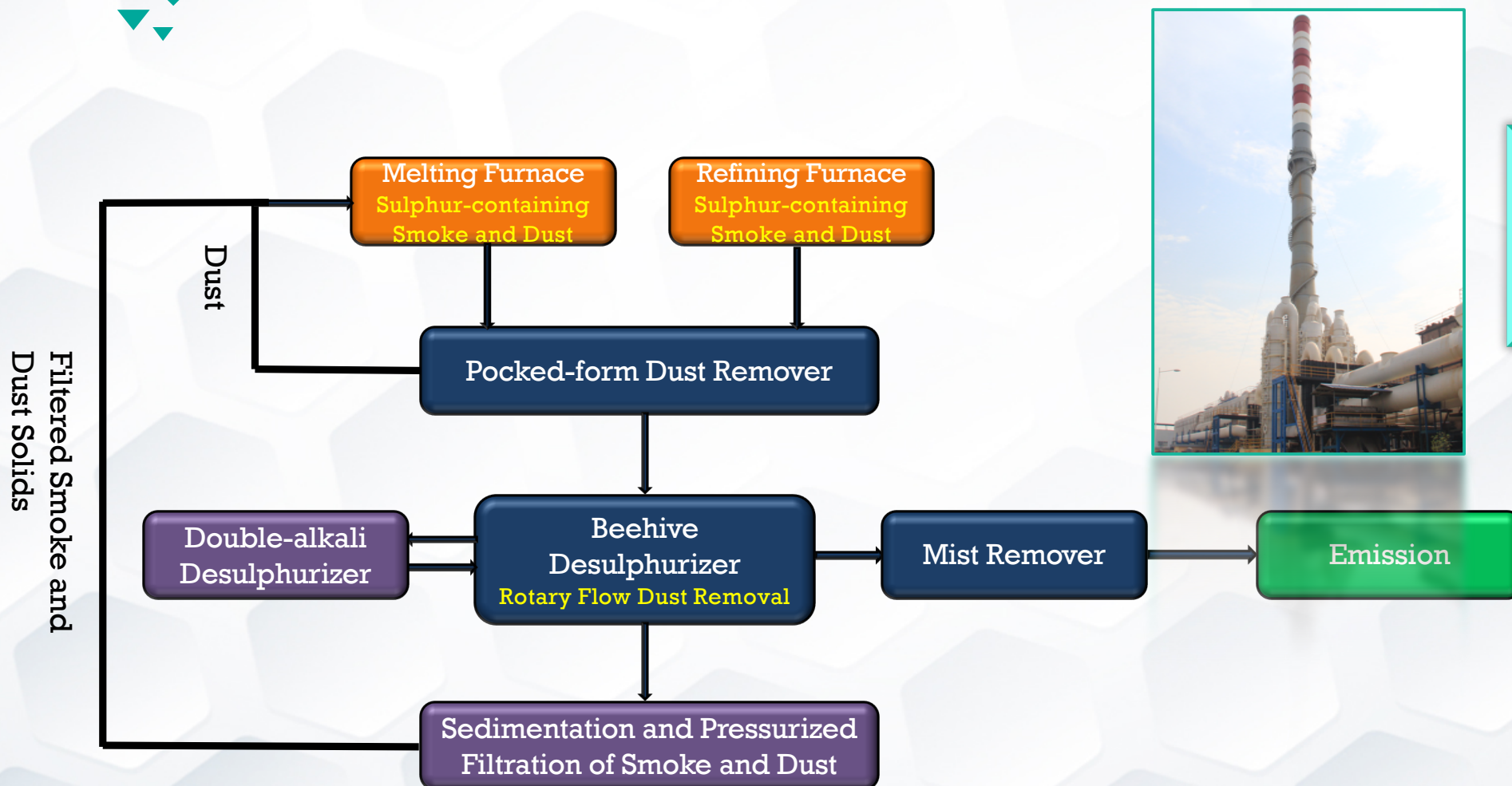
- ✓ Multi-level Whirlwind Desulphurization Tower
- ✓ Desulphurization Reaction :





环境保护·烟气排放

ENVIRONMENTAL PROTECTION – SMOKE AND DUST



High
Efficiency
Dust
Remover



环境保护·水排放

ENVIRONMENTAL PROTECTION – WASTE WATER

New Chunxing developed and utilized the next generation waste water recycling system which brought waste water management to a whole new level.



**Fish in river
circling the
industry zone**

Used Water from
Breaking System



Neutralization
Pool

Used Water from
Desulphurization System



Desulphuri-
zation Pool

Used Water from Factory
Cleaning



Sewage
System

Used Water from
Vehicle Cleaning



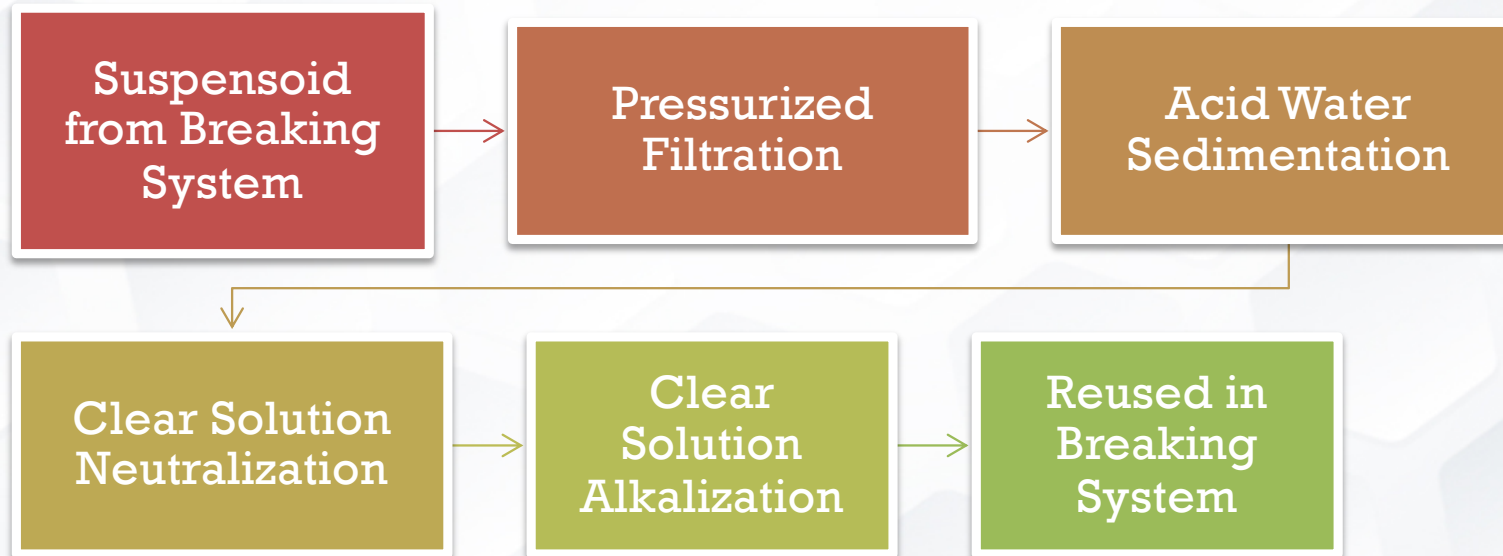
Sedimentation
Pool



**Clean and beautiful
river circling the
industry zone**

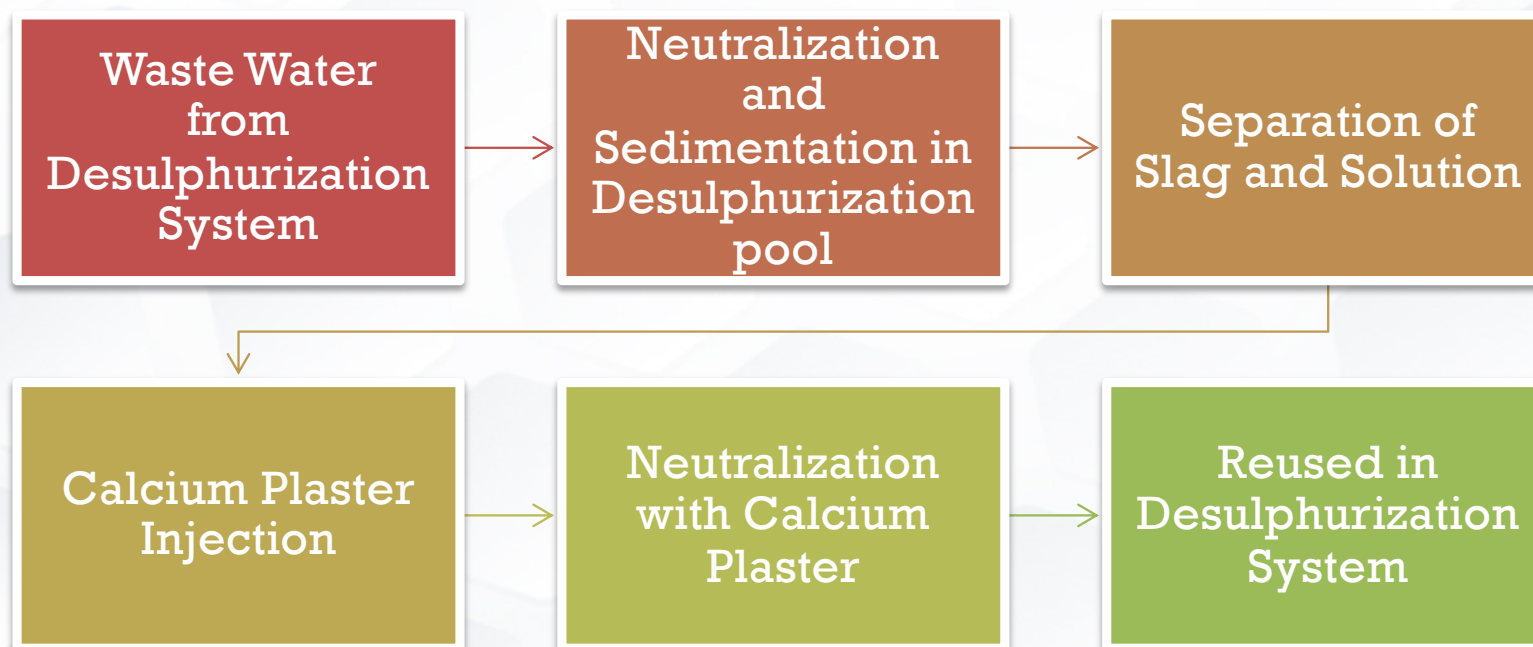


Water used to clean lead plugs, lead grids and plastic cases is neutralized in the neutralization pool, then is reused in the breaking system.





Waste water from desulphurization system for smoke and dust is processed in the desulphurization pool before being reused.





生态化发展理念·环境保护

ECOLOGICAL DEVELOPMENT CONCEPT·ENVIRONMENTAL PROTECTION

New Chunxing devotes itself to establish the friendly environmental-oriented business. All the possible waste discharging spots are designed under the environmental protection rules, through which the company avoids the possible pollution to the environment during the product

Special Passage



All the staff go into/out of the workshop via the special passage. There is an automatic cleaning machine in the passage, washing away the dust the bottom of the shoes.

Vehicle Cleaning



All the vehicles (trucks for ULAB of lead products) entering the plant must be cleaned in the washing trough inside the plant gate. After unloading, the vehicles are cleaned by high-pressure water for the second cleaning. When leaving the plant, the vehicles are cleaned in the washing trough inside the plant gate for the third cleaning. All the vehicles entering the workshop must be cleaned in the washing trough at the workshop entrance, which is operated by specially-assigned person. When leaving, cleaned again. Ensure the vehicles are cleaned no less than two times.

Closed-off Management



The closed-off management is implemented in the workshop. The charging wagons, loaders and lifters are not allowed to leave the workshop.

Rain and Sewage Treatment



The water from the dinning hall, toilet and the cleaning water flows into the sedimentation pool, then into the sewage pool. The rain water flows into the rain collection pool. The treated sewage is used for green land, and the treated rain water is used for floor cleaning and workshop production. The hand cleaning water and floor cleaning water flows into the workshop water recycling system. The water used in the workshop has a separate treatment system and will not flow outside. The consumption is recruited by the rain water.

Seepage Prevention



All the water pipes and trenches are designed with seepage prevention .



车辆清洁

VEHICLE CLEANING

All the vehicles (trucks for ULAB of lead products) entering/outing the plant must be cleaned in the washing trough inside the plant gate to make sure no any dust or mud out of the factory.

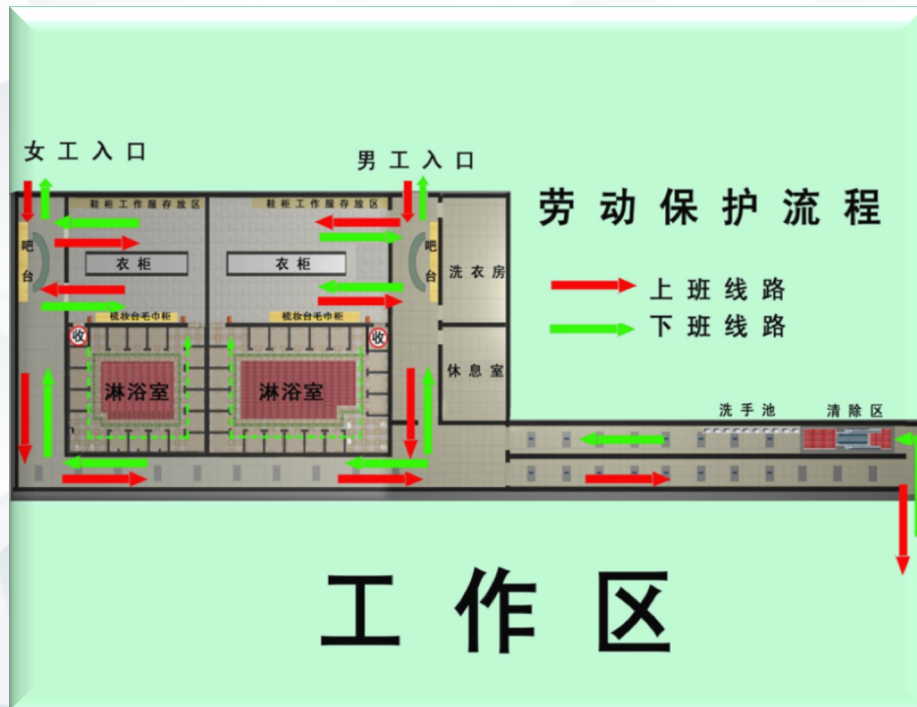




劳动保护·生产劳动保护流程

LABOR PROTECTION · PRODUCTION LABOR PROTECTION PROCESS

The company has set up the detailed labor protection procedure for going on duty and coming off duty in order to prevent the lead dust from being taken out of the plant.



Go On Duty

Take the key from the reception desk, put on the work uniform together with other labor protection supplies, then enter the workshop.

Come Off Duty

Enter the powerful cleaning area to clean the shoes bottom on the automatic cleaning machine, wash the hands, put the working uniform in the washing area, then go to the bathroom for shower before going home.

Break Time

Go through the powerful cleaning area and enter the rest room.



The work uniform is washed every shift. The company provides VIP service to the staff for going on duty and coming off duty.



The workers must Enter the powerful cleaning area to clean the shoes bottom on the automatic cleaning machine, wash the hands, put the working uniform in the washing area, then go to the bathroom for shower before going home.





结束语 CONCLUSION

▼ New Chunxing is a company with many years experience in ULAB (Used Lead Acid Battery) comprehensive utilization, technology and equipments development. Aiming for resources saving, environmental protection and smart development, follow the path of green, low-carbon and circular. We are willing to share our 40 years' experience with the society, write a new chapter for the future.





新春兴

THANKS!



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