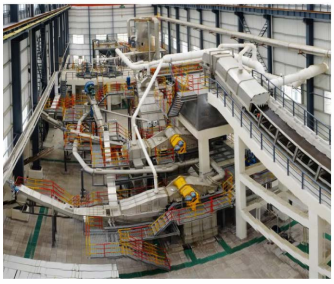
Jangyec

# INNOVATIVE TECHNOLOGY FOR RESOURCE RECYCLING AND FOR ENVIRONMENTAL PROTECTION



## *BREAKING&SEPARATION*

*Best Available Technology for Waste Lead-Acid Battery Breaking and Separation*

## *DESULPHURIZATION SYSTEM*

*Ammonium Bicarbonate Desulphurization Technology*
*Sodium Carbonate Desulphurization Technology*

## *SMELTING SYSTEM*

*Rotary Furnace*
*Reverberatory Furnace*
*Blast Furnace*

## *INGOT CASTING*

*Alloy Lead Ingot Casting Technology*
*Refining Lead Ingot Casting Technology*

QUALITY SYSTEM CERTIFICATE
WSF
ISO 9001

# COMPANY PROFILE

***Jangyec*** was established on March, 2009, located in Shaoshan city, Hunan Province, China

Jangyec is a high-tech enterprise which professionally engaged in R&D, manufacturing and selling waste lead acid battery recycling plant, waste lithium-ion battery breaking and separation plant, waste water disposing system, waste gas disposing system, large-scale of non-ferrous metallurgical and non-standard automation machinery.

We acquired 1 international patent,10 invention patents,23 utility model patents and 16 appearance patents. Relying on advanced technology and R&D productivity, we made a great progress in resource recycling and environmental protection fields.

Our main products including :waste lithium-ion battery breaking and separation system, waste lead acid battery breaking and separation system, lead paste desulfurization system, ammonium/sodium sulfate solution purification system, ammonium/sodium sulfate crystallization and drying system, high(low)temperature smelting system, lead refining and ingot casting system, off-gas treatment system, plastic recycling system, lead electrolysis manufacture plant etc.

Based on ten years of experience in the design and technology development, more than 60 sets of plants have been successfully operated and used in the world.

Follows the Quality Management System with the standard ISO 9001:2015, ensure the quality of product.



# PRODUCTS INTRODUCTION

## WASTE LITHIUM-ION BATTERY BREAKING AND SEPARATION SYSTEM

Waste lithium-ion battery pack breaking lines is adopted man-machine combination, high level of automation, widely applicable.

After breaking, stripping, separation and other continuous process, the diaphragm, shell, copper foil, aluminum foil, positive & negative powder and other products are obtained.

The process is based on market demand, resource regeneration and benefit maximization. Fully efficient recovery of single lithium-ion batteries, leftover bits of materials can be achieved.

The discharge is standard completely after the waste water and off-gas are disposed.

## WASTE LEAD ACID BATTERY BREAKING AND SEPARATION SYSTEM

This device can be personalized design according to customer's demand, equipped with auto control program. The technical data of device are displayed on the control screen. There is production monitoring function on the screen. The whole device can be operated safely with computer by one person. And the production operation can be handled by 3-5 staff.

The lead grid, lead cake, heavy plastic and polypropylene will be stored individually after breaking and separation by the device.

Device composition: vibrating feeder, belt conveyor, battery breaking machine, vibrating screen, hydraulic separation machine and conveyor.

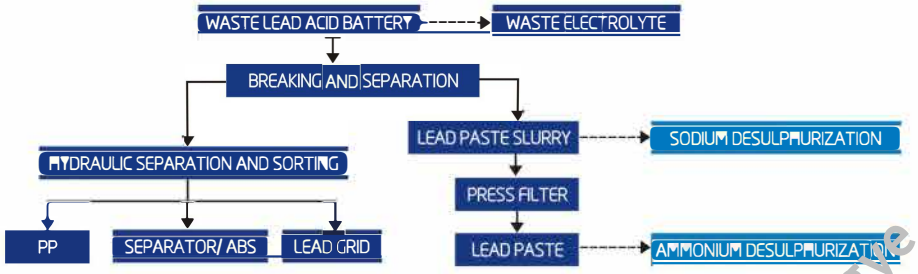
Technical data:

- Total recovery rate of lead ≥98%
- Recovery rate of plastic≥98%
- Moisture of lead paste<13%

| Model | JYPF01 | JYPF02 | JYPF03 | JYPF05 | JYPF10 | JYPF15 | JYPF20 |
|---|---|---|---|---|---|---|---|
| Capacity: (Ton/hour) | 1 - 2 | 3 - 4 | 5 - 7 | 8 - 10 | 16 - 20 | 24 - 30 | 32 - 40 |

# PRODUCTS INTRODUCTION

## BREAKING AND SEPARATION PROCESS




## LEAD PASTE DESULPHURIZATION SYSTEM

### A.LEAD PASTE AMMONIUM DESULPHURIZATION SYSTEM

The lead paste which from breaking and separation machine are as raw material for desulphurization. The process is shown in below:

The paste pumped into desulphurization tank A, add the desulfurizer (ammonium bicarbonate) to conduct desulfurization reaction, the mixed liquid of lead paste will be returned to desulphurization tank after compulsory desulphurization in the same time.

After the reaction, the liquid and solid are separated by the filter press. The lead cake (desulphurization lead paste) is entered into the smelting system. The filtrate (desulphurization filtrate A) will be entered into filtrate tank A.

The desulphurization filtrate A will be entered into desulphurization tank B, added lead paste and ammonium bicarbonate to conduct desulphurization reaction. The mixed liquid of lead paste will be returned to desulphurization tank after compulsory desulphurization in the same time.

After the reaction, the liquid and solid are separated by the filter press. The lead cake (desulphurization lead paste) is entered into the smelting system. The filtrate B (desulphurization filtrate B) will be entered into filtrate tank B. The filtrate B (ammonium sulfate) will be entered into purification system.

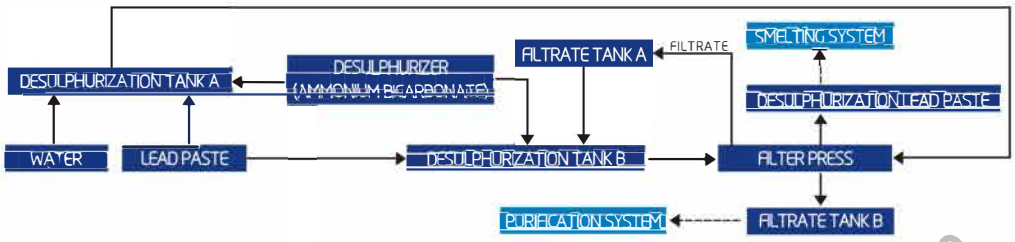
Technical data:

- The sulfur content of paste after desulphurization < 1%
- The moisture content of paste after filter press < 13%
- System control: Centralized PLC control



# PRODUCTS INTRODUCTION

## AMMONIUM SULFATE DESULPHURIZATION




## B. LEAD PASTE SODIUM DESULPHURIZATION SYSTEM

The lead paste slurry which from breaking and separation machine are as raw material for desulphurization. The process is shown in below:

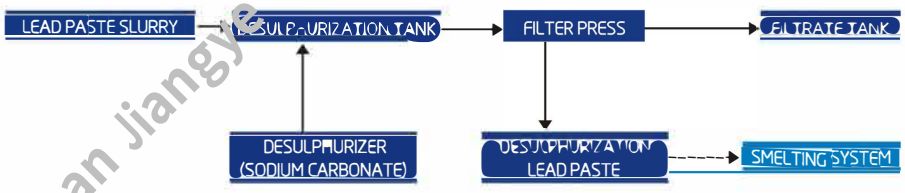
The paste pumped into desulphurization tank, add the desulfurizer (sodium carbonate) to conduct desulfurization reaction, and stirred sufficiently. The mixed liquid of lead paste will be returned to desulphurization tank after compulsory desulphurization.

After the reaction, the liquid and solid are separated by the filter press. The lead cake (desulphurization lead paste) is entered into the smelting system. The filtrate (sodium sulfate) are entered into filtrate tank.

Technical data:

- The sulfur content of paste after desulphurization<1%
- The moisture content of paste after filter press<13%
- System control: Centralized PLC control

## SODIUM SULFATE DESULPHURIZATION






# PRODUCTS INTRODUCTION

## SULFATE SOLUTION PURIFICATION TREATMENT EQUIPMENT

Heavy metal ion and other impurities of the sulfate solution which produced in the process of desulphurization are purified by the device.

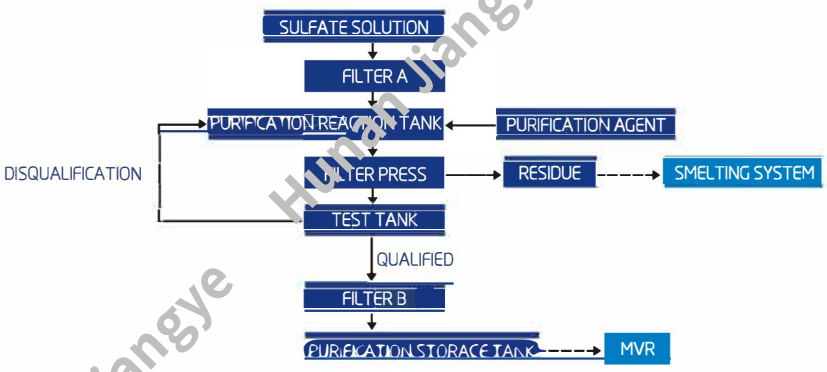
The main process flow:

- The filtrate is transferred to purification storage tank after the desulphurization.
- The filtrate is adjusted PH value in the reaction tank and added purification reaction agent.
- Transferred to purified storage tank after passed the inspection.

Technical data:

A. Ammonium sulfate solution: 25-35%,the heavy metal content in solution after treatment<10PPM
B. Sodium sulfate solution: 16-28%,the heavy metal content in solution after treatment<10PPM

### PURIFICATION SYSTEM




## AMMONIUM/SODIUM SULFATE CRYSTALLIZATION AND DRYING SYSTEM

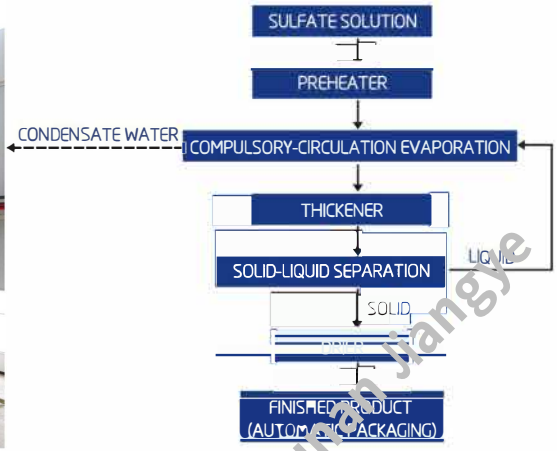
The purified sulfate solution was treated by MVR, the product of sulfate was obtained.

The condensate water produced from MVR reused in the process of desulphurization or discharged if they are treated qualified.

High purity of sulfate product can be obtained to sell after dehydrated completely by dryer.

# PRODUCTS INTRODUCTION

## MVR PROCESS

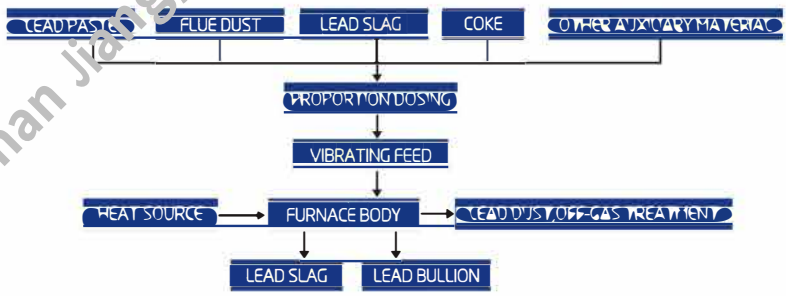



## SMELTING SYSTEM

The mixed materials are entered to high temperature smelting furnace. Secondary lead poured into ingot casting mold. The off gas produced from smelting process must be discharged if treated qualified.

The system including precise proportion dosing, automatic feed, combustion system, furnace body, cooling system,off gas dust removal and desulphurization treatment .

## SMELTING



# PRODUCTS INTRODUCTION

## REFINING AND INGOT CASTING

The lead bullion was refined to refined lead or alloy lead. Lead liquid were poured into mold to form lead ingots and stacked automatically. There are standard model and intelligent model.

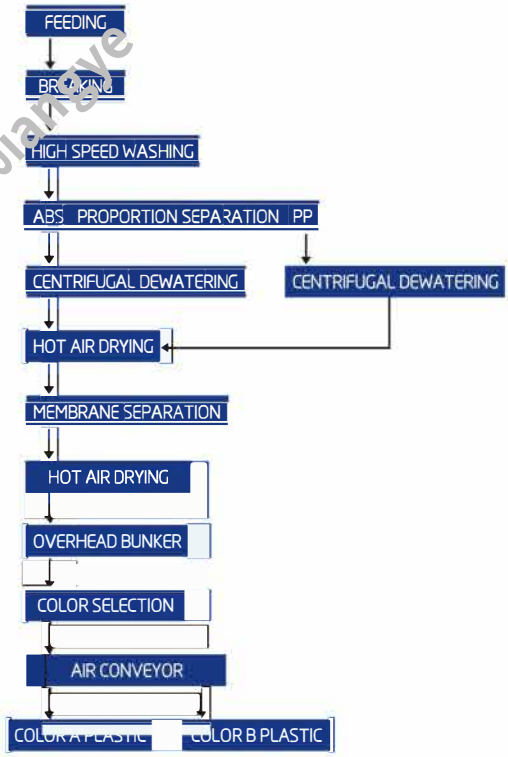
Device features: high production efficiency, easy maintenance, low fault rate, less oxide slag.

## PLASTIC RECYCLING SYSTEM

There are several processes of plastic recycling, such as breaking, sorting, color selection, anhydrating, pelletizing etc.

The whole equipment includes plastic mill, washing machine, dehydrated drying machine, color sorting machine and pelletizing machine etc.

### PLASTIC RECYCLING SYSTEM



# PRODUCTS INTRODUCTION

## OFF-GAS TREATMENT

The off gas, lead dust and ash are treated in the process of lead smelting. To avoid the pollution of environment.

## ELECTROLYTIC LEAD SYSTEM

With many years research and development, the system of electrolytic lead technology achieves the leading level of high technology equipment in the China.



# SERVICE

## ENGINEERING

- Basic design
- Detailed design
- Technical documentation
- Feasibility study
- Capital cost estimation

## ON SITE CONSTRUCTION

- Equipment erection
- Commissioning
- Training
- Start up

## PROCUREMENT

- Manufacturing
- Quality control
- Shipment

## AFTER SALE SERVICE

- Spare parts management
- On line assistance
- On site assistant
- Technology updating

# 60 PLANTS IN THE WORLD




**Jangyec**

High-tech Industrial Park,
Shaoshan City, Hunan Province, China
Phone: +86 731 55673011
Fax: +86 731 55673011
info@jangyec.com
www.chinajiangye.com
www.hnjyjd.en.alibaba.com
***www.jangyec.com***