

ENSA

构建未来的固废处置与资源循环系统
Establish Future Solid Waste Disposal & Recycling System

MSW INCINERATION
生活垃圾焚烧飞灰

OIL SLUDGE
油泥

HAZARDOUS WASTE
危险废物

CONTAMINATED SOIL
污染土



集团公司总部
Group Location

北京 | Beijing

固体废物处置运营公司
sub. Enterprises for Solid Waste Disposal

百色·广西 | Baise-Guangxi
贺州·广西 | Hezhou-Guangxi
永安·福建 | Yong'an-Fujian
曲靖·云南 | Qujing-Yunnan
唐山·河北 | Tangshan-Hebei

装备制造子公司
sub. Enterprise for Manufacturing

重庆 | Chongqing
北京·亦庄 | Beijing · Etown

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北京恩萨工程技术有限公司
Beijing ENSA Engineering Co., Ltd.

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Benefiting Others
创造价值
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Solid Waste Safe Disposal & Recycling Efficiently

愿景 Vision

旨在构建未来的固废处置与资源循环系统
Establish Future Solid Waste Disposal & Recycling System

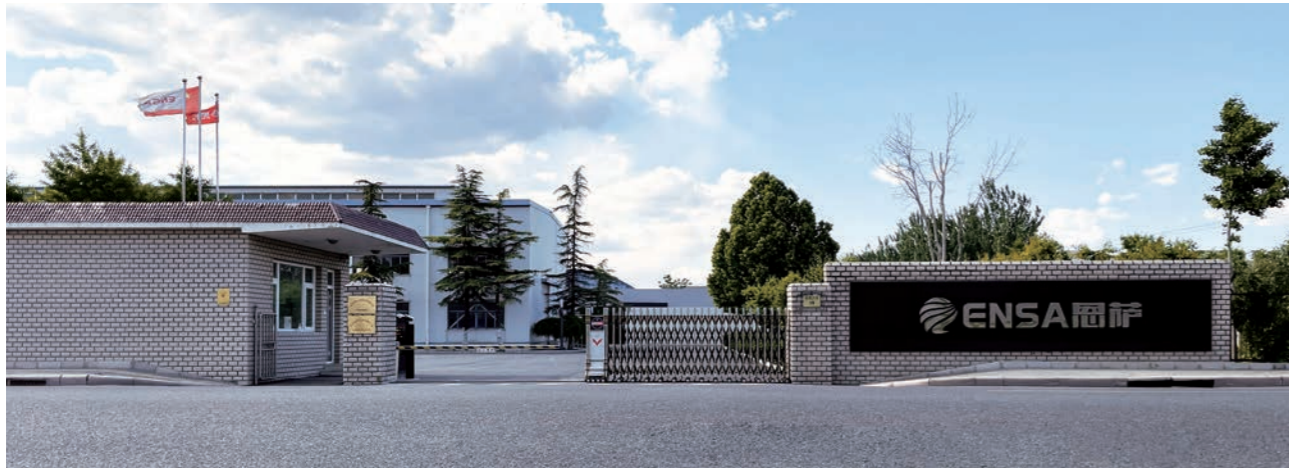


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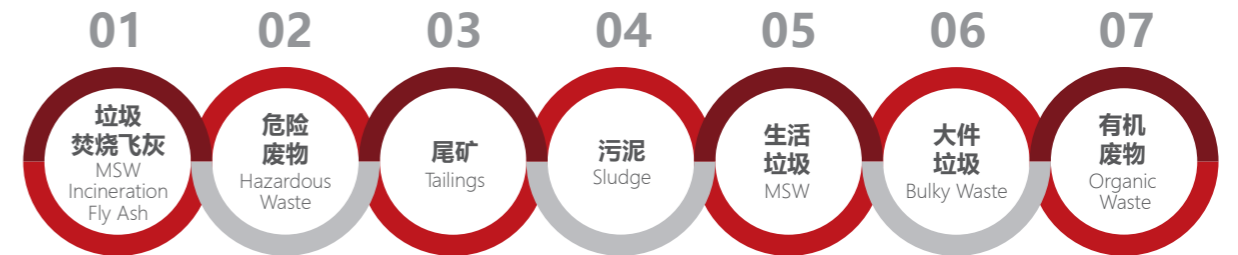


3 大板块 3 Major Sections



7 大业务领域 7 Business Areas

针对不同种类的固体废物，恩萨可为客户提供技术先进的高可靠性和高性价比的**预处理系统和整体解决方案**
For different types of solid wastes, ENSA can provide customers with advanced, highly reliable and cost-effective pretreatment systems and overall solutions



不同预处理环节 Different Pretreatment Steps



协同处置、厌氧消化、燃料工厂、替代燃料、生态修复、绿色矿山……
Co-processing, Anaerobic Digestion, Fuel Plant, Alternative fuel, Ecological Restoration, Green Mines……

关于恩萨 ABOUT ENSA

北京恩萨工程技术有限公司（以下简称“恩萨”）成立于2009年，聚焦固体废物处置与资源化领域，以核心装备制造为基础，为客户提供先进的整体解决方案，是集工程设计、项目建设和运营服务为一体的生态环境治理综合服务商。

近年来，恩萨已在工业危险废物、污泥、餐厨垃圾、厨余垃圾、陈腐垃圾、飞灰、污染土等不同的细分领域，为国内外近500家客户提供了高可靠性、高性价比的装备系统和整体解决方案，为客户和合作伙伴持续创造价值的同时，对践行绿水青山就是金山银山的生态环境保护大政方针作出积极贡献。

作为国家高新技术企业和北京市专精特新“小巨人”企业，恩萨自2017年至今先后获得金沙江联合资本等国内外知名机构战略投资，并作为北京市环保装备制造业重点扶持和培养对象，于2021年底成功入驻北京经济技术开发区。目前，恩萨已拥有数十项自主知识产权，产品通过了ISO9001-2015质量体系认证和欧盟CE认证。

目前，恩萨旗下已拥有9家从事危险废物和飞灰无害化处置的项目公司，已规划总处置能力近200万吨/年。

恩萨以“知行合一、利他主义、创造价值”为价值观，以“固废安全处置、资源高效循环”为使命，与客户和合作伙伴共同努力，旨在构建未来的固废处置与资源循环系统。

Beijing ENSA engineering technology co., Ltd. (Hereinafter referred to as "ENSA") was established in 2009, focusing on the field of solid waste disposal and recycling, based on the R&D and manufacturing of core equipment, to provide customers with advanced overall solutions. , Project construction and operation services as one of the integrated ecological environment management service provider.

In recent years, ENSA has provided highly reliable and cost-effective products for nearly 500 customers at home and abroad in different segments such as industrial hazardous waste, sludge, restaurant waste, kitchen waste, stale waste, fly ash, contaminated soil etc. Equipment systems and overall solutions, while continuing to create value for customers and partners, make positive contributions to the implementation of the ecological environmental protection policy of "lucid waters and lush mountains are invaluable assets".

As a national high-tech enterprise and a "little giant" enterprise specializing in specialization and new in Beijing, ensa has successively obtained strategic investment from well-known domestic and foreign institutions such as jinshajiang united capital since 2017, and has become a key support and training object for Beijing's environmental protection equipment manufacturing industry. , And successfully settled in Beijing economic and technological development zone by the end of 2021. At present, ENSA has dozens of independent intellectual property rights, and its products have passed iso9001-2015 quality system certification and eu ce certification.

At present, ENSA has 9 project companies engaged in the harmless disposal of hazardous waste and fly ash, with a planned total disposal capacity of nearly 2 million tons per year.

With the values of "unity of knowledge and action, altruism, and value creation" and the mission of "safe disposal of solid waste and efficient recycling of resources", ENSA works with customers and partners to establish future solid waste disposal & recycling system.



- 丰富经验 Professional Experience
- 实力团队 Solid Team
- 先进技术 Advanced Technology
- 服务至上 Service & Reputations

HONORS / 企业荣誉



生活垃圾焚烧飞灰无害化处置

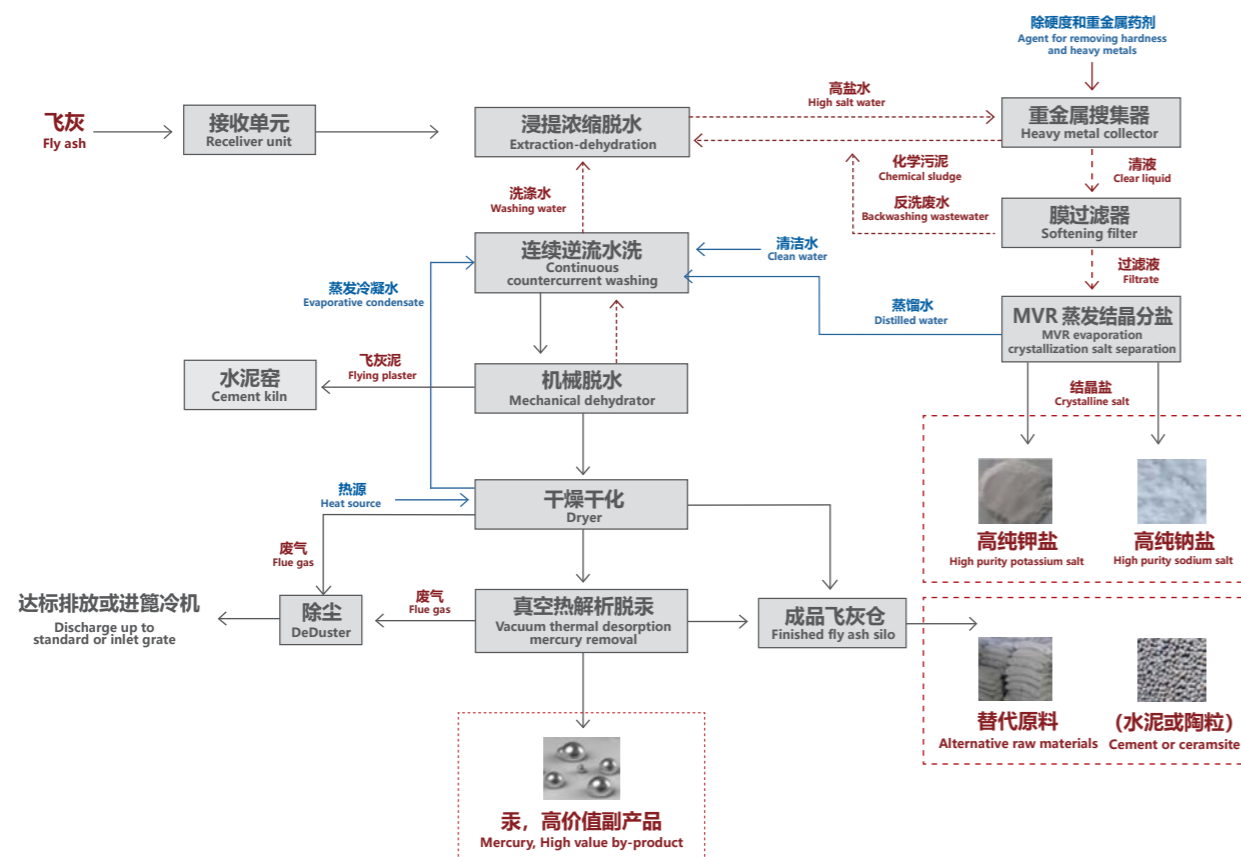
MSW Incineration Fly Ash Harmless Disposal

恩萨 MCR 系统基于恩萨自主研发的连续逆流水洗脱氯技术及循环浸提浓缩技术，实现更卓越的飞灰湿法脱氯效果，脱氯效率可达 99%。经高效脱盐、盐分离及回收、汞分离及回收后，以替代原料形式进入水泥窑进行资源化处置，同时实现了重金属的固化及二噁英等有机污染物的消解，投资与运行成本低，经济及环境效益高。

The ENSA MCR system is based on ENSA patented continuous counter-current water washing dechlorination technology and cyclic leaching concentration technology, achieving superior wet dechlorination of fly ash with a dechlorination efficiency of up to 99%. After efficient desalination, salt separation and recovery, mercury separation and recovery, it enters the cement kiln as an alternative raw material for resource disposal, while achieving the solidification of heavy metals and the digestion of organic pollutants such as dioxins. It has the characteristics of low investment and operating costs, high economic and environmental benefits.



工艺流程 | Process



技术优势 / Advantages



经济 Economic
采用循环浸提浓缩技术，蒸发水量少，蒸发能耗低。
Adopting circulating extraction and concentration technology, the amount of evaporated water energy consumption of evaporation is low.



稳定 Stable
设计单级或双级和间接加热干化 + 闪蒸等工艺组合，确保系统稳定运行，适应性强。
The process combination of single or double stage and indirect heating drying+flash evaporation is designed to ensure stable operation of the system and strong adaptability.



高效 Efficient
连续逆流洗涤，高效脱氯；重金属捕集器超滤，废水超高效除硬、除重金属和悬浮物，回收盐品质高。
Continuous counter current washing, efficient dechlorination; Ultrafiltration efficient removal and high quality of recovered salt.



环保 Environmental
高温煅烧固化重金属，高温焚烧消解二噁英，废水零排放，无二次污染。
High temperature calcination and solidification of heavy incineration and digestion of dioxins, zero discharge of wastewater, no secondary pollution.

飞灰由危废到资源的转变 | Transition of MSW Fly Ash from Hazardous Waste to Resources

关键解决路径 Key Solutions

飞灰高效脱氯
High efficiency dechlorination of fly ash

连续逆流水洗脱氯技术
Continuous countercurrent water washing Dechlorination Technology

盐分离及回收
Salt separation and recovery

MVR 蒸发结晶与钾钠分盐精制技术
MVR evaporation crystallization and potassium sodium salt refining technology

汞脱除及回收
Mercury removal and recovery

真空间接热脱汞及汞回收技术
The technology of mercury removal and mercury recovery in real space

重金属固化
Heavy metal solidification

水泥窑高温煅烧固化技术 (固相)
Cement kiln high temperature calcination and Technology (solid phase)

二噁英消解
Dioxin digestion

水泥窑高温焚烧 (气相 + 固相)
Cement kiln high temperature incineration (gas phase + solid phase)

副产品
By-products

高纯度氯盐产品 + 高纯度单质汞 + 高含钙量水泥生产替代原料
High purity chlorine salt product + high purity mercury element + high calcium content cement production alternative raw materials

项目案例 | Cases

华北某生活垃圾焚烧飞灰水洗脱氯 + 脱汞协同处置项目

MSW incineration fly ash water dechlorination+mercury removal Co-processing project in North China

处置种类: 飞灰、污染土
处置规模: 15 万 t/a
服务区域: 京津冀及华北地区
项目概述: 恩萨投资、建设、运营项目，采用连续逆流水洗 + 热脱汞 + MVR 工艺，飞灰经过脱氯、脱汞，得到部分工业原料产品，残渣进入水泥窑系统资源化处置。



Material: MSW fly ash, contaminated soil
Scale: 150,000 t/a
Service area: Beijing-Tianjin-Hebei and North China
Overview: Ensa invests, constructs, and operates projects. The project adopts a continuous counter-current water washing, thermal mercury removal & MVR process. Fly ash undergoes dechlorination and mercury removal to obtain some industrial raw material products, and the residue enters the cement kiln system for resource utilization and disposal.

污染土处置技术和工艺

Contaminated Soil Disposal Technology & Process

污染土水泥窑协同处置技术工艺

Contaminated Soil Cement Kiln Co-processing Disposal Technology

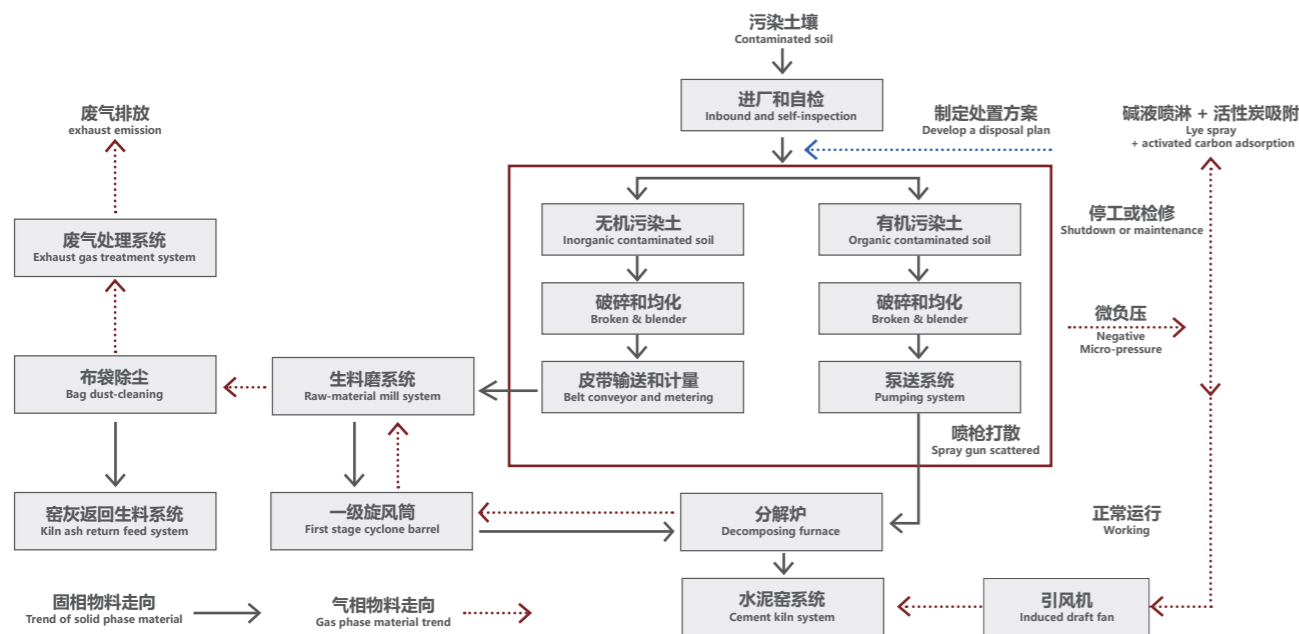
水泥窑协同处置污染土的原理是利用水泥回转窑内的高温、气体长时间停留、热容量大、热稳定性好、碱性环境、无废渣排放等特点，在生产水泥熟料的同时，焚烧固化处理污染土壤。

The principle of cooperative disposal of contaminated soil in cement kiln is to use the characteristics of high temperature, long time residence of gas, large heat capacity, good thermal stability, alkaline environment and no waste residue discharge in cement rotary kiln to incinerate and cure contaminated soil while producing cement clinker.

技术优势 / Technical Advantages

- 适用于大部分污染物（有机物和重金属）
Suitable for most pollutants (organic matter & heavy metals)
- 处置量大可达 400 吨 / 天
Disposal capacity is 400 t/d
- 污染可控，完全资源化，无废渣排放
Pollution under control, complete resource
- 处置成本有优势
Disposal costs have advantages

工艺流程 | Process



撬装式热脱附系统

Thermal Desorption System

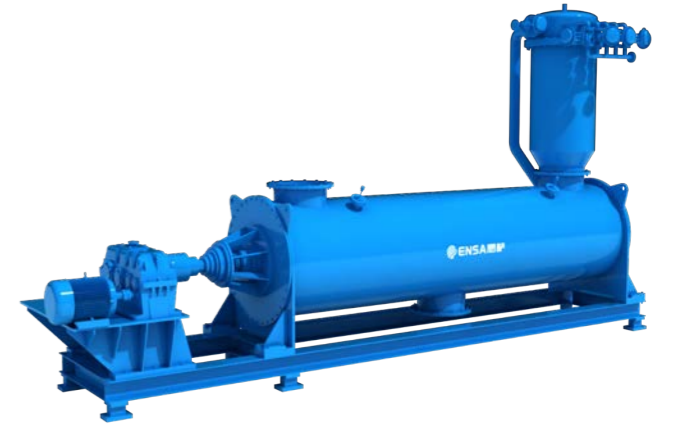
TD 热脱附 | TD Thermal Desorption

适应物料 / Material

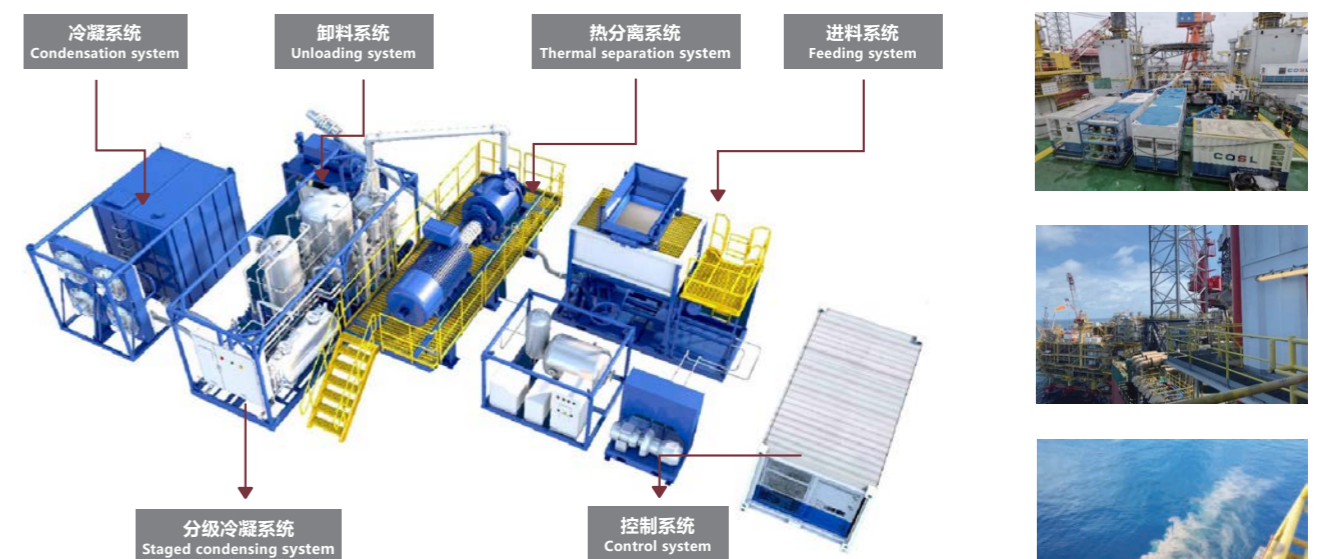
油泥、钻井岩屑 Oil sludge, drilling cuttings
有机污染土 Organic contaminated soil
含汞固体废物 Mercury containing solid waste

优势特点 / Advantage

- 可实现 500~1000℃ 的高温热解析
High temperature thermal analysis at 500~1000 °C
- 可实现连续或间歇运行
Realize Continuous or intermittent operation
- 真空过程，氮气保护，安全高效
Vacuum process, nitrogen protection, safe
- 可利用导热油等热源节省运行费用
Heat sources such as heat transfer oil can be used to save operating costs



工艺流程 | Process



适应物料 / Material

落地油泥、油基钻屑和废弃钻井泥浆、清罐污泥、炼化油泥等（含固率 >40%，含油 <10%）
Material: floor sludge, oil-based drilling cuttings, waste drilling mud, tank cleaning mud, refining sludge, etc. (solid content >40%, oil content <10%)

处置量: 2-4t/h
Disposal Capacity: 2-4t/h

占地面积: 12mX12m(含储罐)
Floor Space: 12mX12m (including storage tank)

优势特点 / Features

- 撬装系统，可移动快速布置。
Skid mounted system, movable and quick layout
- 资源化效果好，干渣含油率 <0.5%；
High resource efficiency, oil content of dry residue <0.5%
- 自动化程度高，处置成本低。
High degree of automation & low disposal cost
- 能够长时间持续稳定运行。
Capable of continuous & stable operation for a long time
- 模块化设计，可适应海洋和陆地等多种场合。
Modular design can adapt to various occasions such as ocean and land

油泥资源化处置技术工艺

Oil Sludge Recycling & Disposal Process

适应物料 / Material

石油行业油泥: 主要来自罐底泥、井口作业、联合站污水厂等；钻井泥浆；

石化行业油泥: 主要包括隔油池底泥、浮渣、剩余生化污泥，即炼化三泥。

Oil industry sludge: It mainly comes from tank bottom mud, well head operation, combined station sewage plant, etc. Drilling mud

Petrochemical industry Oil: It mainly includes bottom mud, scum and residual biochemical sludge, i.e. refined sludge.

危险废物处置与资源化

Hazardous Waste Disposal & Recycling

危险废物预处理系统

Hazardous Waste Pretreatment System

恩萨 SMP 系统解决了多种物料进料配伍热值不均衡的问题；有效降低危废焚烧工艺控制难度；系统集成度高，运行灵活多变，故障率低安全有保障。

Ensa SMP system solves the problem of unbalanced calorific value of various materials and feeds; reduces the difficulty of hazardous waste incineration process control; high system integration, flexible operation, low failure rate and guaranteed safety.

适应物料 / Material

桶装、散装、袋装等固态、半固态危险废物
Barrel, bulk, bag and other solid & semi-solid hazardous wastes

应用场景 / Application Scenario

- 危废焚烧处置中心 Main configital controabinet
- 水泥窑协同处置危废 Maif electrical control cabinet

SMP 危险废物预处理系统 | SMP Hazardous Waste Pretreatment System

SMP 系统核心设备主要包括破碎机、混合器和柱塞泵。
SMP system core equipment mainly includes crusher, mixer & piston pump.

特点 / Features

- 应对更严苛的物料条件
Handle tougher material conditions
- 精细化破碎、均匀热值
Fine crushing, uniform calorific value
- 安全防爆、密闭
Safety explosion-proof, airtight
- 系统高度自动化集成
Highly automated integration of the system
- 高压长距离管道输送
High pressure long distance pipeline transportation
- 杜绝现场洒漏、泄漏问题
Eliminate the problem of spillage and leakage on site
- 尽可能避免员工与危废接触
Avoid employee contact with hazardous waste as much as possible

CE 认证产品
危险与可操作性分析 (HARZOP)
保护层分析认证 (LOPA)
安全完整性等级分析 (SIL)



SMF 危废预处理系统 | SMF Hazardous Waste Pr etreatment System

若物料输送距离较短，可将 SMP 系统中的 EPG“虎鲸”固体泵螺旋输送机给料。
If the material conveying distance is short, the EPG Orca solid pump of SMP System can be replaced with Screw conveying.

破得碎 回转剪切破碎机

Double Shaft Rotary Shredder

产品特点 / Features

- 软硬物料通吃 Soft & Hard Material Take-all
- 结构坚固 Durable Structure
- 高强适应性 High adaptability
- 安全可靠 Safe & reliable



混得匀 卧式混合器

Single-shaft Horizontal Mixer

产品特点 / Features

- 防缠绕“跳跃环”设计 Anti winding "Jump Ring" design
- 智能称重系统 Intelligent weighing
- 防爆监控 Explosion proof monitoring
- 混合效率高 High mixing efficiency
- 坚固耐用 Sturdy & durable



泵得动 EPG“虎鲸”单柱塞固体泵

EPG Orca Single Piston Solid Pump

产品特点 / Features

- 可适应个别大块物料，皇冠切割头，防卡阻
Adapt to individual bulk materials, crown cutting head, anti jamming
- 更高泵送压力 (150bar)，输送距离更远
Transport distance farther ,higher pumping pressure
- 杜绝返料，稳定性与密封性强
No Backflow, strong stability & sealing
- 使用寿命长，维修简便 long lifetime, easy maintenance
- 耐磨损及抗腐蚀 Abrasion resistant & anti-corrosive
- 固液分离功能 Solid-liquid separation function
- 可配备注膜润滑单元，增强物料的可输送性。
Film lubrication unit can be equipped to enhance the transportability of materials.



偏爱高含固率物料（危险废物、干污泥），适应流动性较好物料的高压远距离输送。

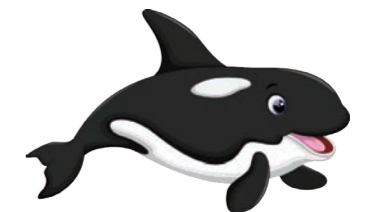
Prefer waste materials with high solid content (eg: hazardous waste, sludge with low moisture content), and at the same time applicable for high pressure ,long distance pumping for good fluidity materials.

无缠绕，无堵塞

No Winding, No Blockage

对于难破碎的柔性物料，恩萨 SMP 系统适应性更强，更有利于后续危废的处置

For hard-to-break flexible materials, the Ensa SMP system is more adaptable and more conducive to the subsequent disposal of hazardous waste



西南某危险废物协同处置项目

Hazardous waste cement co-processing project in South China



处置种类: 工业危废、污泥、污染土
处理规模: 80000t/年
服务区域: 整个云南省及西南地区
项目概述: 恩萨投资、建设、运营，物料通过 SMP 预处理系统之后，再进入水泥窑资源化处置。

Material: industry hazardous waste, sludge, contaminated soil
Scale: 80000t/ d
Service Area : serve all regions and surrounding areas of Yunnan province
Overview: ENSA investment, operation and construction, after passing through the SMP pre-treatment system, the materials enter the cement kiln for recycling disposal.



华东某危险废物焚烧处置项目

Hazardous waste incineration disposal project in East China

处置种类: 多种类别的固态和半固态工业危废
处理规模: 30000t/年
项目概述: 物料通过恩萨的 SMP 预处理系统之后，进入后续危废焚烧炉处置。
Material: various solids & semi-solid industrial hazardous wastes
Scale: 30000t/a
Overview: after passing through the SMP pre-treatment system, materials enter hazardous incinerator for disposal



东北某油泥资源化处置项目

Oil sludge disposal & recycling project in Northeast China

处置规模: 48000t/a
项目概述: 通过危废半固态投料系统 (PSP) , 将油泥输送到水泥窑分解炉系统。
Scale: 48000 t/a
Overview: Oily sludge is transported to cement kiln pre-calciner system through hazardous waste semi-solid feeding system (PSP)

