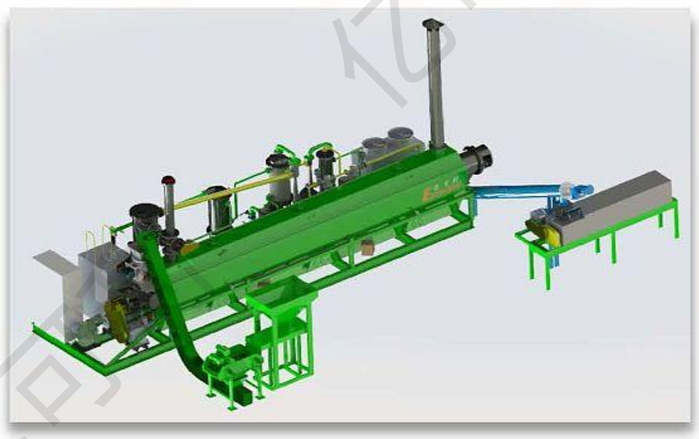
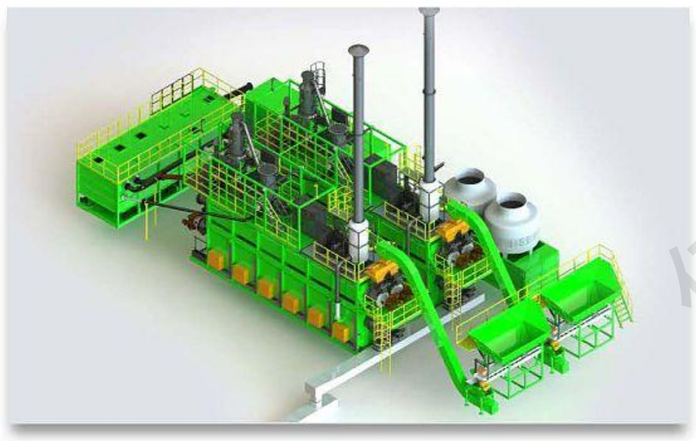
亿可利®
Easyclean

浙江亿可利环保科技有限公司

Zhejiang Easyclean Environmental Technology Co., Ltd.





固废热处置专家

SOLID WASTE THERMAL TREATMENT EXPERT

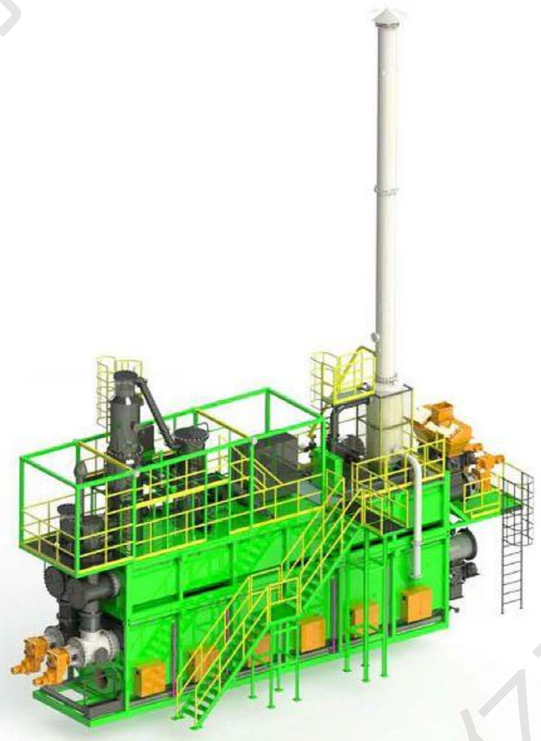
中国 • 平湖

Pinghu China

“亿可利”绞龙间接热脱附系统

“EasyClean” Screw Indirect Thermal Desorption System

核心装置 Key Unit



装置优点 Advantages

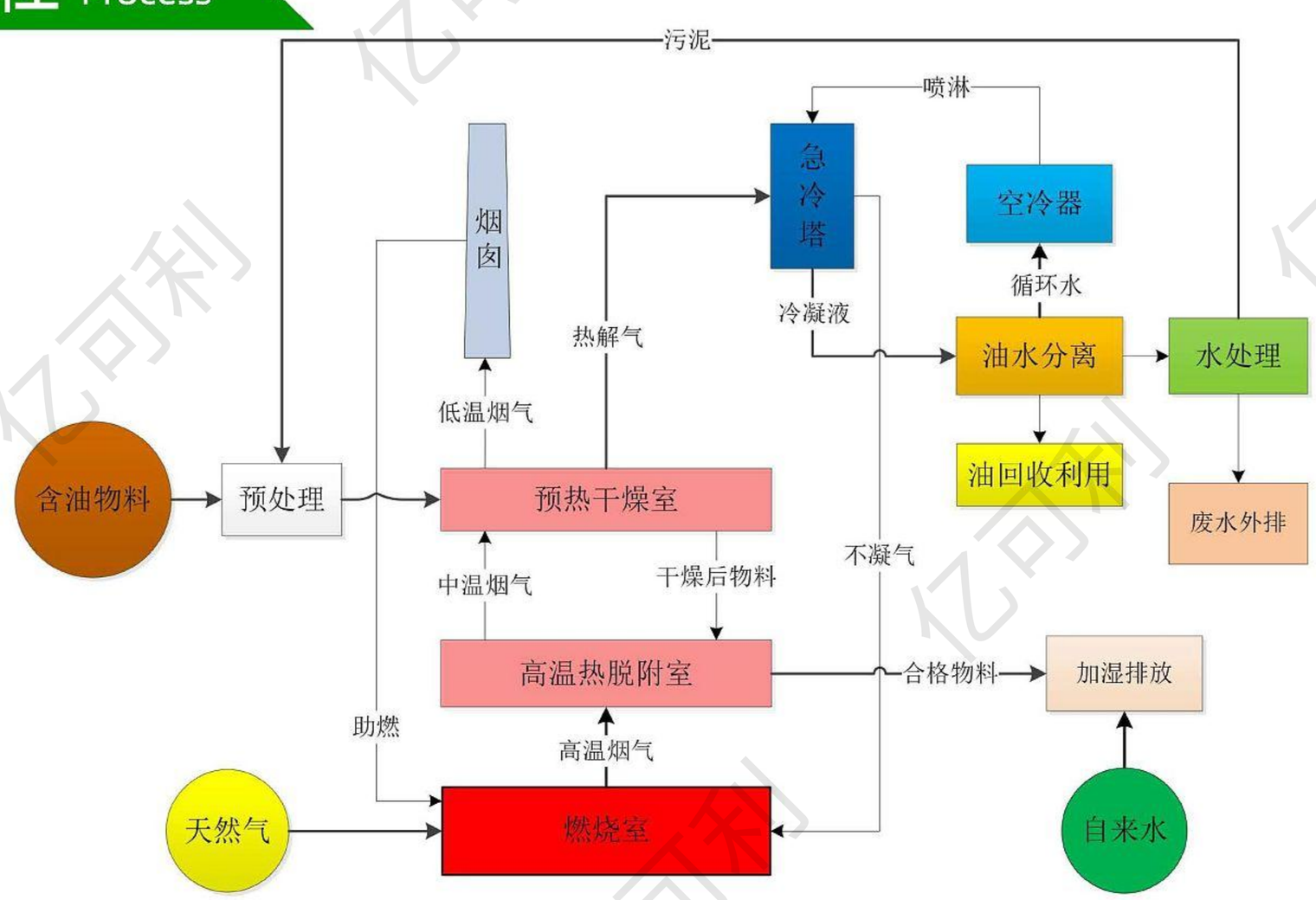
- 实现现场异位处置，确保 100% 合格，减少污染物料运输和随带的二次污染问题；
- 热效率高： 双层结构，上层利用下层烟气余热，排烟烟气余热再利用，整体热效率高；
- 间接加热，烟气与物料不接触，排放的烟气仅为燃烧燃料（通常是天然气）产生的烟气，无二噁英问题，无二次污染排放；
- 各个部件橇装设计，便于快速安装和运输，仅需 1-2 周便可在全国各地部署；
- 自动化程度高，每班仅需 3-4 人即可操作（不含进出料）。

- On-site ex-situ treatment, ensure 100% compliance and reduce the problem of transportation caused secondary pollution;
- High thermal efficiency: double-layer structure, the upper layer uses the exhuast heat of the lower layer of the flue gas to achieve an overall higher thermal efficiency;
- Indirect heating, the flue gas does not contact with the material and the emitted flue gas is only the flue gas produced by burning fuel (usually natural gas), without dioxin problems and no secondary pollution emissions;
- The skid-mounted design of each component facilitates rapid installation and transportation which can be deployed throughout the country in only 1-2 weeks;
- Highly automated, only 3-4 personnel needed per shift (excluding feeding and discharging).

典型业绩 Typical Cases

系统介绍
System Introduction

工艺流程 Process



预处理后的污染土壤，由进料系统送入热脱附系统，经过间接加热，有机物和水蒸气以热解气的形式从固相中脱附出来，在急冷喷淋塔内经水喷淋，重新凝结成液体进入水处理系统分离处置，循环水经换热系统冷却后继续喷淋，原先土壤中的水经净化后作为出料加湿水，合格物料经加湿降温后排放，浓缩的污染物送第三方处置。

Pre-treated contaminated soil is fed into the TDU by feeding unit and indirect heated, the organics and water are evaporated and separated from solids in the form of pyrolysis gas. Those gas are condensed into liquid in the quencher and sent to the water treatment unit for separation. Recycled water is cooled by the cooling unit and continues to use as quench water. The moisture from the soil is purified and used as discharge re-wet water. After re-wet and cooling, the qualified solids are discharged. Concentrated pollutants are sent to a third-party for disposal.

系统规格 Specification

系统 System	能力 Capacity	进料 Feeding	出料 Discharge	热解吸 TDU	水处理 Water Treatment	自控 Control
一拖一 Single	3~4t/h	√	√	√	√	√
一拖二 Double	6~8t/h	√	√	√	√	√

注：
- 以上处理能力基于 20% 含水率。
- 进料单元、出料单元和水处理单元为可选设备

Note:
- Above capacity are based on 20% moisture.
- Feeding unit, discharging unit and water treatment unit are optional.

“亿可灵”一体化热脱附系统

“EasySmart” Integrated Thermal Desorption System

核心装置 Key Unit

装置优点 Advantages

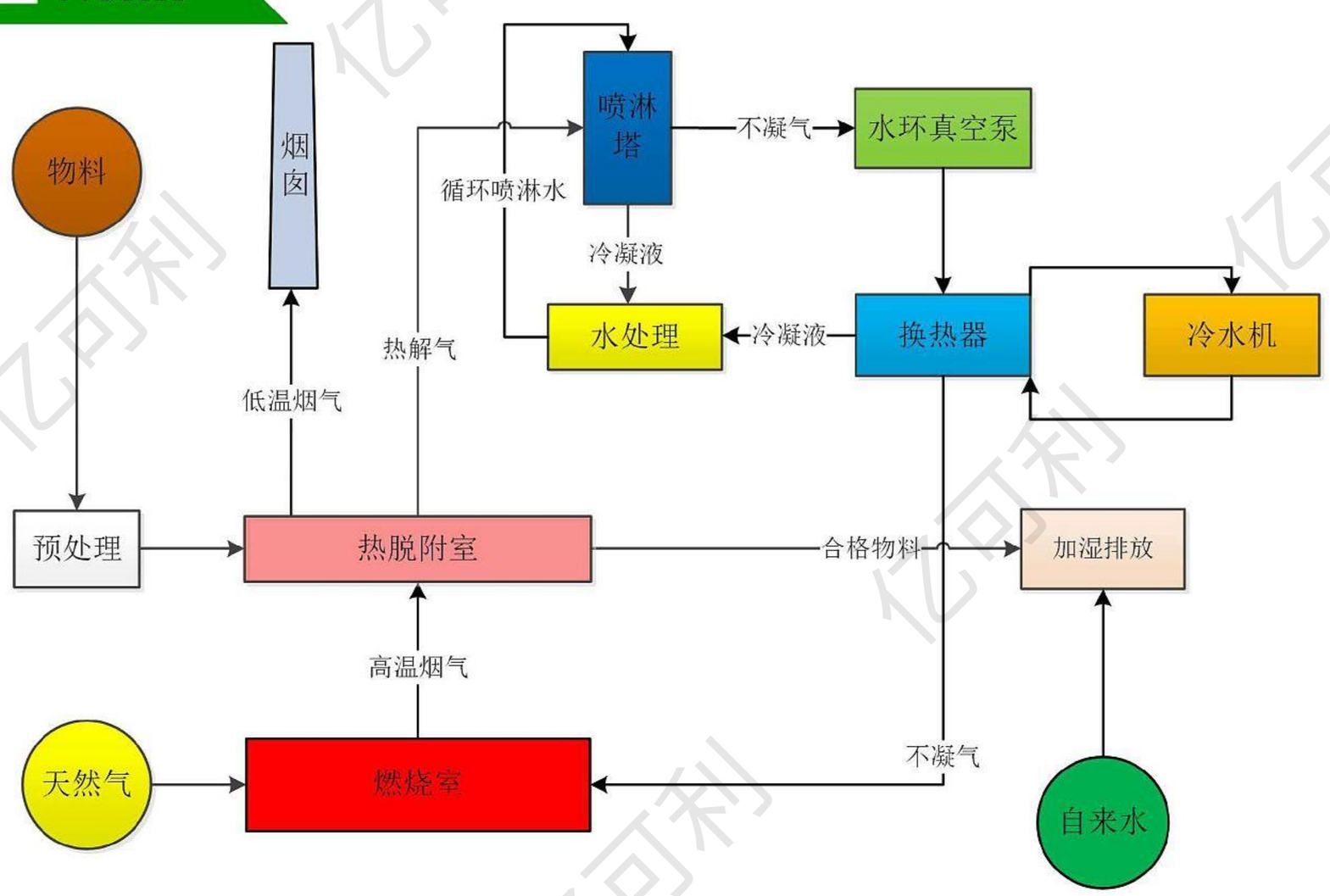
- 体积小、节省空间、易于布置；
- 集成度高，应用灵活；
- 便于快速安装和运输，仅需 3~7 天便可在全国各地部署；
- 自动化程度高，每班仅需 1-2 人即可操作。

- Small footprint, space saving and easy to arrange;
- High integration and flexible application:
- Easy transportation and quick installation which can be deployed all over the country in only 3-7 days;
- Highly automated, each shift only needs 1-2 personnel to operate.

典型业绩 Typical Cases

系统介绍
System Introduction

工艺流程 Process



预处理后的污染土壤，由进料系统送入热脱附系统，经过间接加热，有机物和水蒸气以热解气的形式从固相中脱附出来，经过喷淋塔喷淋后不凝气进入水环真空泵，在水环真空泵的推动下进入换热器降温除湿，而后进入燃烧室助燃。热解气冷凝产生的废水送第三方处置。合格物料经加湿降温后排放。

After pretreatment, the contaminated soil is fed into the thermal desorption system by the feed system. After indirect heating, the organics and water vapor are desorbed from the solid phase in the form of pyrolysis gas. After quenched by the spray tower, the non-condensable gas (NCG) enters the water ring vacuum pump and cooled in the heat exchanger to remove moisture in the NCG. Then it enters the combustion chamber and used as auxilary fuel. The waste water generated by the condensation of pyrolysis gas is sent to the third party for disposal. The qualified materials are discharged after humidification and cooling.

系统规格 Specification

系统 System	能力 Capacity	进料 Feeding	出料 Discharge	热解吸 TDU	油水分离 Oil-water separator	自控 Control
一体化 Integrated	10kg/h	√	√	√	——	√
一体化 Integrated	500kg/h	√	√	√	√	√

注：

- 以上处理能力基于 20% 含水率。
- 进料单元、出料单元和水处理单元为可选设备。

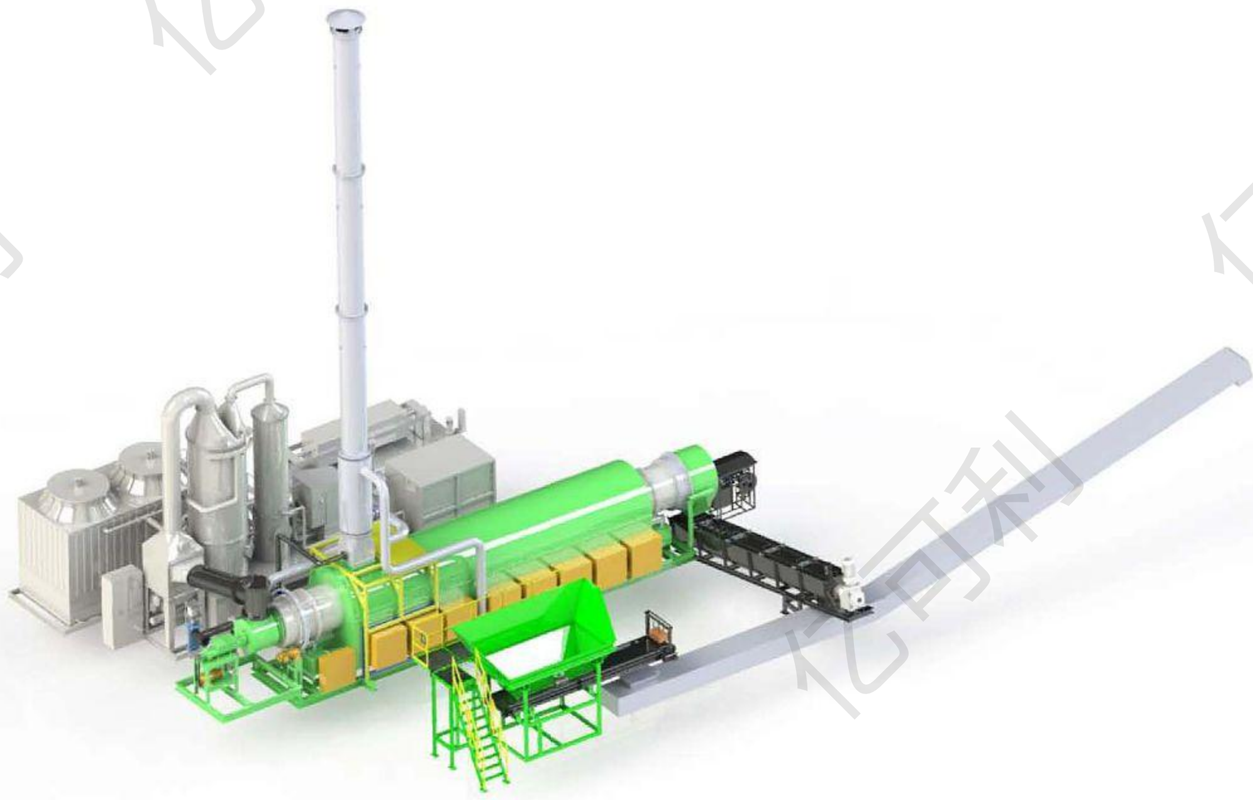
Note:

- Above capacity are based on 20% moisture.
- Feeding unit, discharging unit and water treatment unit are optional.

“亿可能”回转窑混合热脱附系统

“EasyCan” Rotary Kiln Hybrid Thermal Desorption System

核心装置 Key Unit



装置优点 Advantages

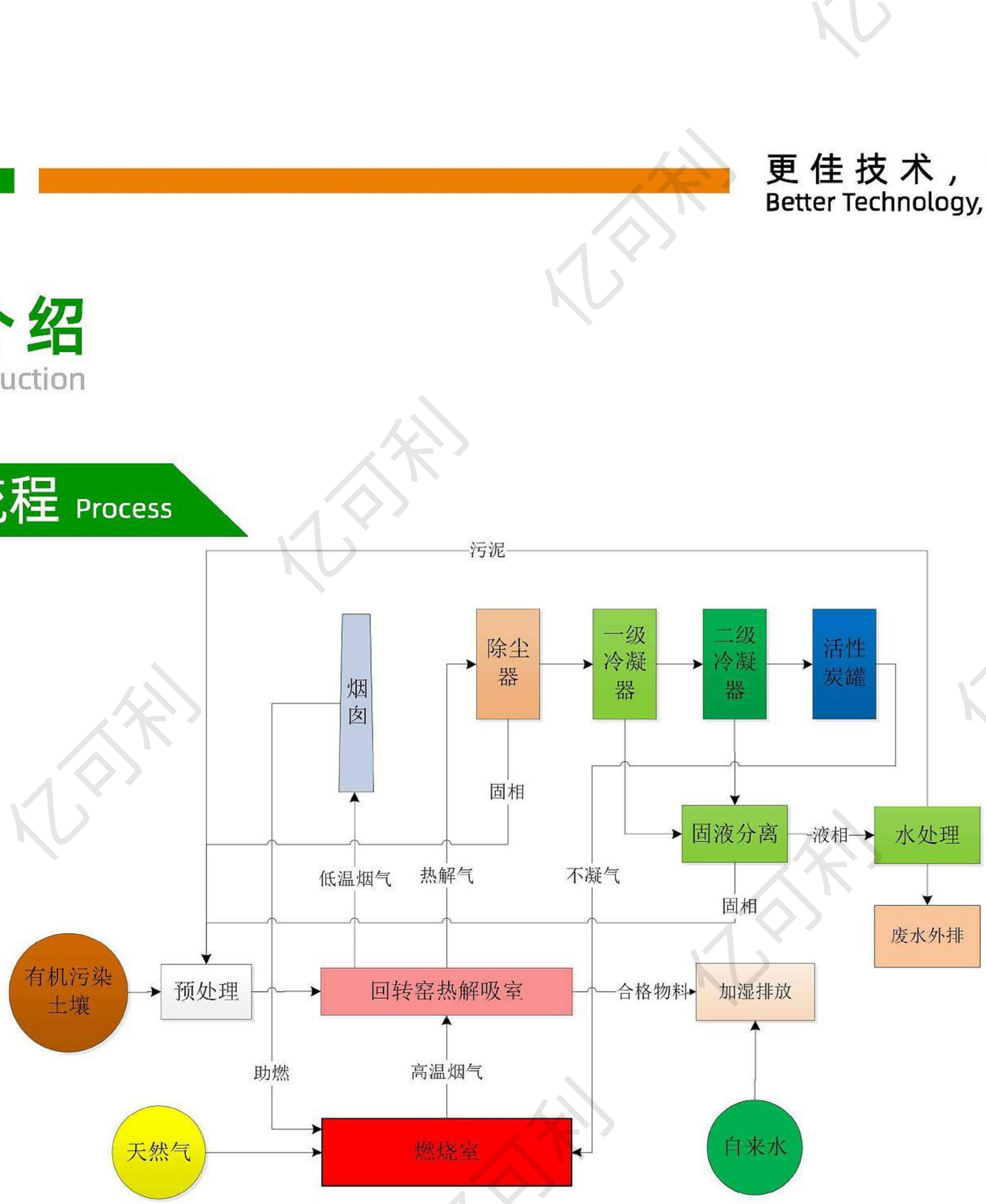
- 实现现场异位处置，确保 100% 合格，减少污染物料运输和随带的二次污染问题；
- 热效率高： 排烟烟气余热再利用，整体热效率高；
- 混合加热，在较小的空间内实现较大产能的设计；
- 各个部件橇装设计，便于快速安装和运输，仅需 1-2 周便可在全国各地部署；
- 自动化程度高，每班仅需 3-4 人即可操作（不含进出料）。

- Realize on-site ex-situ treatment, ensure 100% compliance and reduce the problem caused by transportation of secondary pollution;
- High thermal efficiency: Reuse of waste heat of exhaust gas, higher overall thermal efficiency;
- Mixed heating method to achieve a larger capacity design in a small footprint;
- The skid-mounted design of each component facilitates rapid installation and transportation, and can be deployed throughout the country in only 1-2 weeks;
- High degree of automation, only 3-4 personnel can operate per shift (excluding incoming and outgoing materials).

典型业绩 Typical Cases

系统介绍
System Introduction

工艺流程 Process



预处理后的污染土壤，由进料系统送入热脱附系统，经过混合加热，有机物和水蒸气以热解气的形式从固相中脱附出来，热解气首先经过除尘器除尘后进入两级冷凝器被冷凝，冷凝液进入水处理系统分离处置，循环水经换热系统冷却后继续作为冷却介质去冷凝器，原先土壤中的水经净化后作为出料加湿水，合格物料经加湿降温后排放，浓缩的污染物送第三方处置。

The pretreated polluted soil is sent to the thermal desorption system by the feeding system. After mixed heating, the organic matter and water vapor are desorbed from the solid phase in the form of pyrolysis gas. The pyrolysis gas first enters the dust collector and then enters the two-stage condenser and the condensate enters the water treatment system for separation and disposal. After the circulating water is cooled by the heat exchange system, it continues to be used as a cooling medium to the condenser. The water from the soil is purified and used as the re-wet water. Qualified solids are discharge after re-wet and cooling down. The concentrated pollutants are sent to a third party for disposal.

系统规格 Specification

系统 System	能力 Capacity	进料 Feeding	出料 Discharge	热解吸 TDU	水处理 Water Treatment	自控 Control
一拖一 Single TDU	8~10t/h	√	√	√	√	√
一拖二 Dual TDU	16~20t/h	√	√	√	√	√

注：

- 以上处理能力基于 20% 含水率。
- 进料单元、出料单元和水处理单元为可选设备。

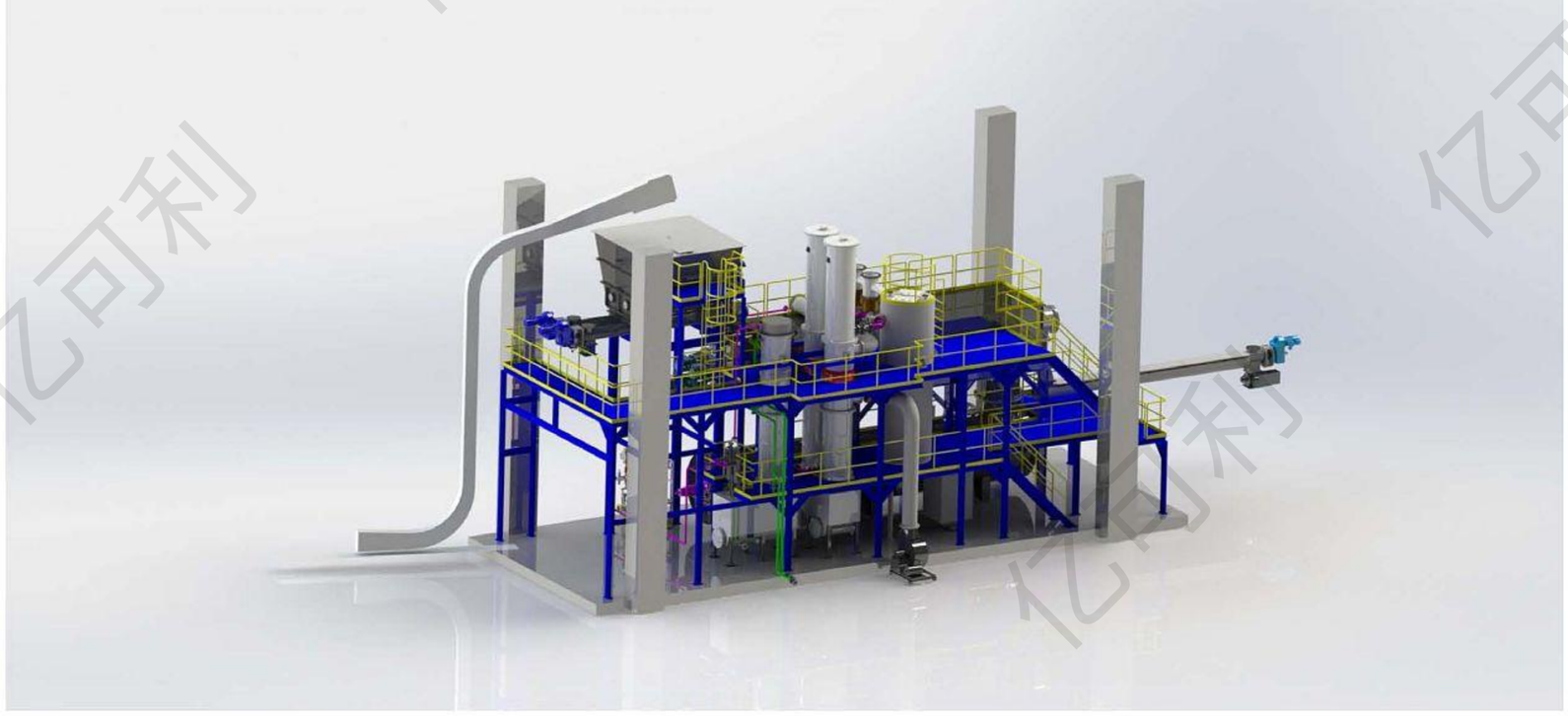
Note:

- Above capacity are based on 20% moisture.
- Feeding unit, discharging unit and water treatment unit are optional.

亿可利®
Easyclean

炭化装置
Carbonization Device

核心装置 Key Unit



装置优点 Advantages

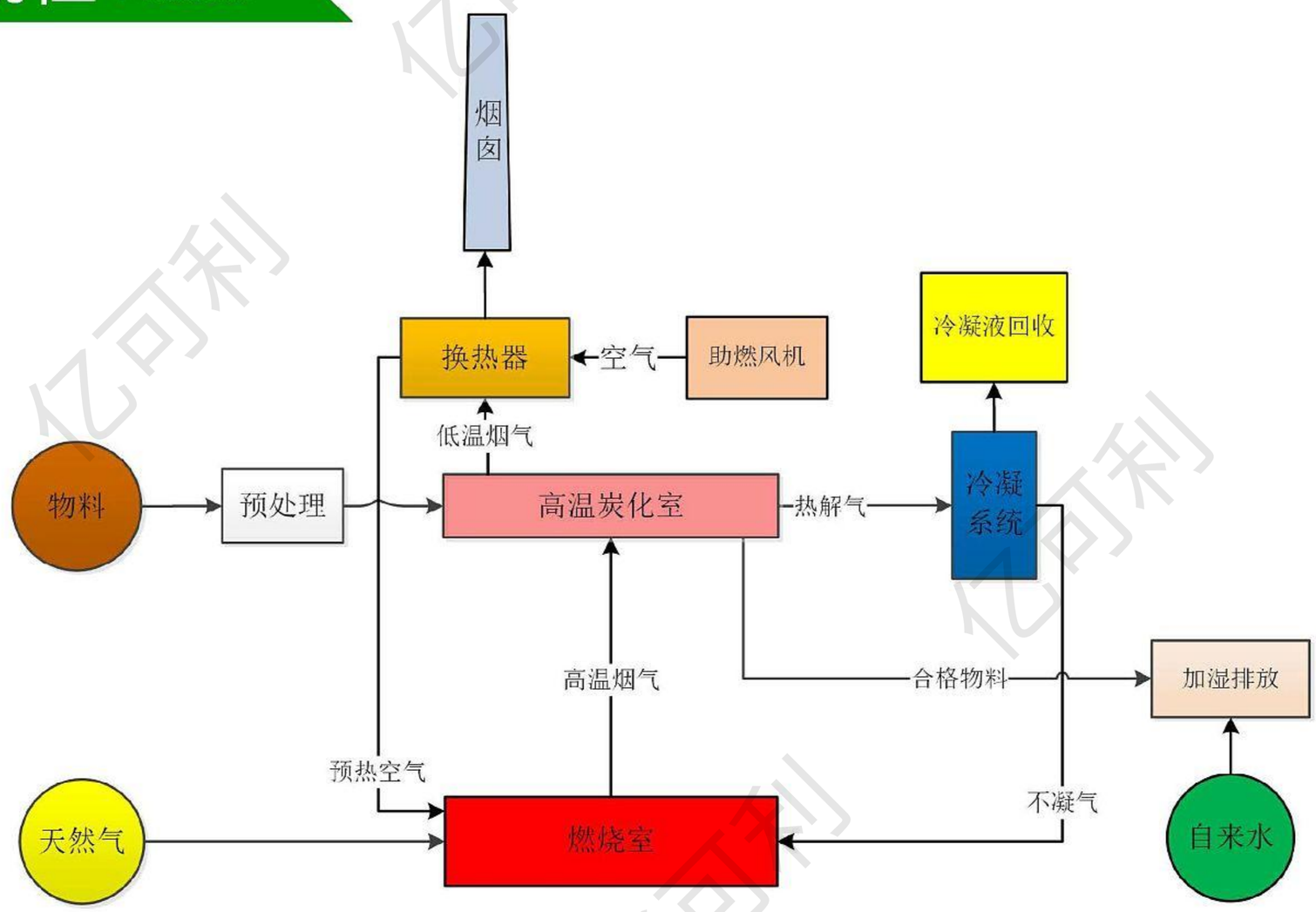
- 结构紧凑，占地面积小
- 节省能源，对产生的热解气进行回收燃烧，解决二次污染问题；
- 有效抑制二噁英产生，碳化产生的干馏气体在 1100℃的燃烧室滞留 2 秒以上；
- 稳定处理，通过测量出口处碳化物的温度，调节碳化炉螺旋输送器的输送速度，有效控制碳化时间，保证碳化物的稳定性；
- 自动化程度高，每班仅需 1-2 人即可操作。

- Compact structure, small footprint;
- Saving energy by burning the non-condensable pyrolysis gas and to solve the problem of secondary pollution;
- Dioxin is effectively inhibited by the means of keep the pyrolysis gas in the combustion chamber at 1100 ℃ for more than 2 seconds;
- Stable treatment: by measuring the temperature of carbide at the outlet, adjust the conveying speed of the screw conveyor of the carbonization furnace,
- effectively control the carbonization time and ensure the stability of carbide;
Highly automated, each shift only needs 1-2 personnel to operate.

典型业绩 Typical Cases

系统介绍
System Introduction

工艺流程 Process



预处理后的物料，由进料系统送入炭化系统。天燃气燃烧产生高温烟气将热量间接传递给物料，物料中的有机物和水蒸气以热解气的形式从固相中脱附出来。产生的热解气导入冷凝系统进行降温冷却，剩余部分不凝气进入燃烧室高温氧化助燃。烟囱上设置有换热器进行余热回收，可有效提高热效率。处置合格的炭化物料经加湿降温后排放。

The pretreated materials are sent to the carbonization system by the feed system. The high temperature flue gas produced by natural gas combustion indirectly transfers the heat to the material, and the organic matter and water vapor in the material are desorbed from the solid phase in the form of pyrolysis gas. The generated pyrolysis gas is led into the condensation system for cooling, and the rest of the non-condensable gas （NCG） enters the combustion chamber for high temperature oxidation as auxilary fuel. The chimney is equipped with heat exchangers for waste heat recovery, which can effectively improve the thermal efficiency of the whole system. Qualified carbonized materials are discharge after humidification and cooling.

系统规格 Specification

系统 System	能力 Capacity	进料 Feeding	出料 Discharge	热解吸 TDU	水处理 Water Treatment	自控 Control
一拖一 Single Reactor	1~1.5t/h	√	√	√	×	√
一拖二 Dual Reactor	2~3t/h	√	√	√	×	√

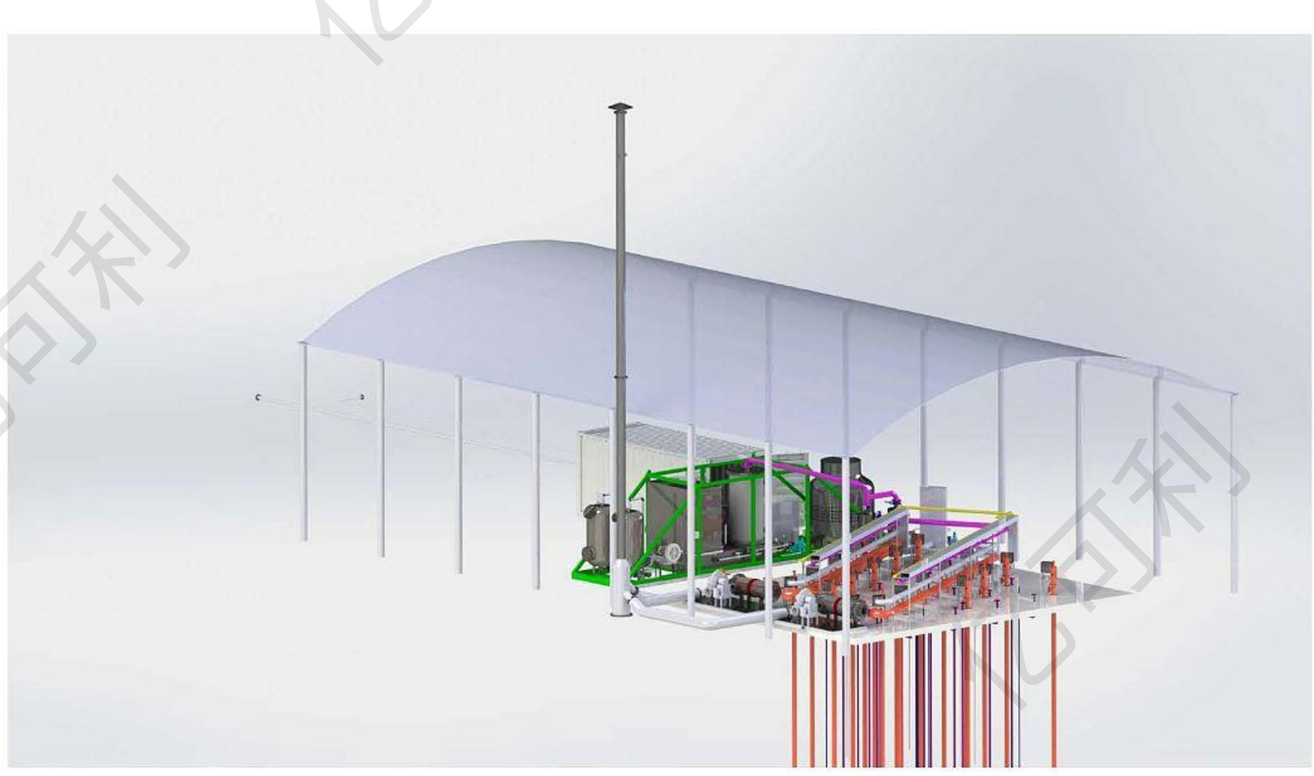
注：
- 以上处理能力基于 20% 含水率。
- 进料单元、出料单元为可选设备。

Note:
- Above capacity are based on 20% moisture.
- Feeding unit, discharging unit are optional.

原位热脱附系统

In-situ Thermal Desorption System

核心装置 Key Unit



装置优点 Advantages

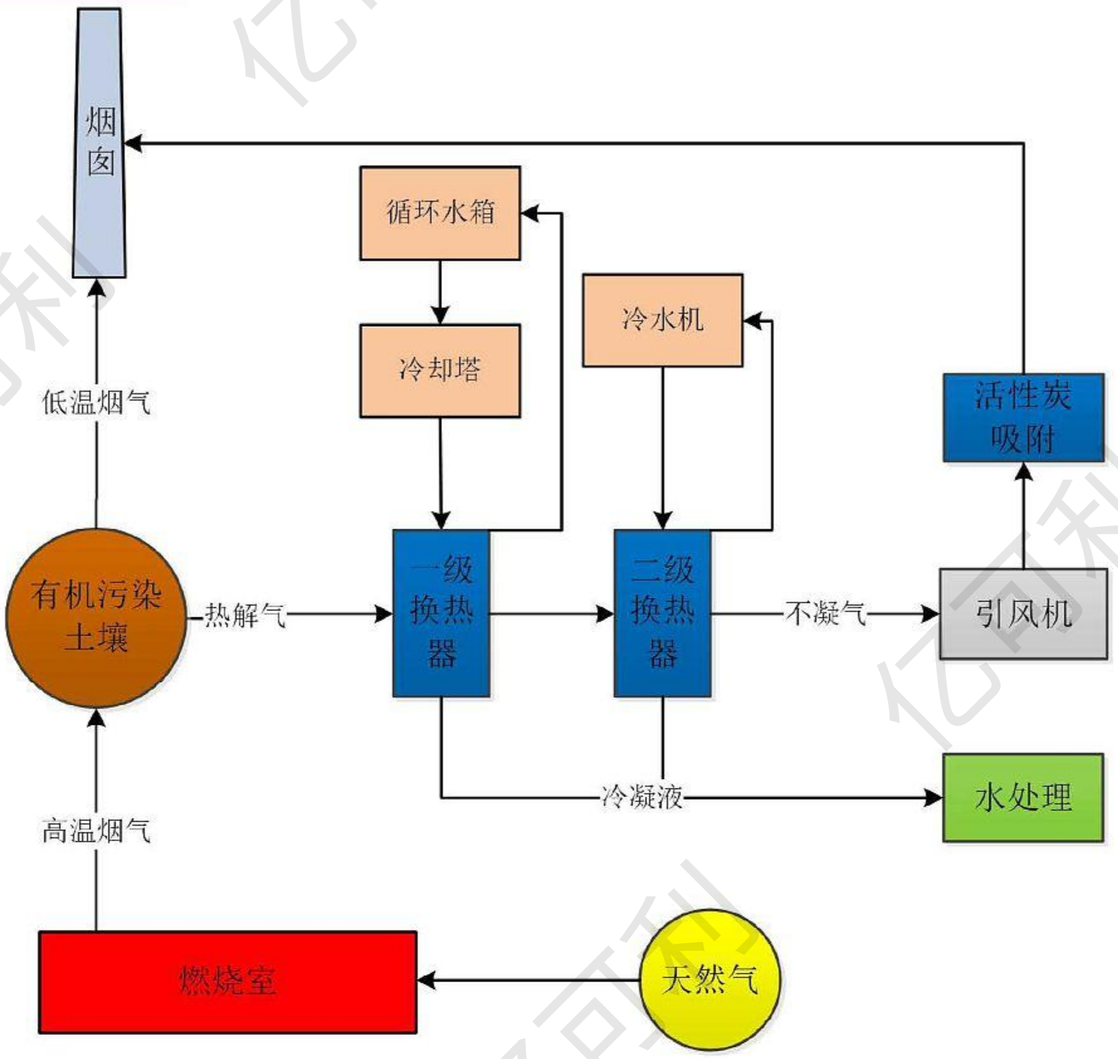
- 实现现场处置，确保 100% 合格，无污染物料运输和开挖的二次污染问题；
- 应用灵活： 易实现规模化修复；
- 对修复地块土质要求低，适用于低渗透性粘性土场合；
- 各个部件橇装设计，便于快速安装和运输，仅需 1-2 周便可在全国各地部署；
- 自动化程度高，每班仅需 1-2 人即可操作。

- Realize on-site disposal, ensure 100% qualified and free from secondary pollution of transportation and excavation of contaminated materials;
- Flexible application, easy to achieve large-scale remediation;
- Low requirements for the soil quality of the contaminated site whch is suitable for low permeability cohesive soil;
- The skid-mounted design of each component facilitates rapid installation and transportation, and can be deployed throughout the country in only 1-2 weeks;
- High degree of automation, only 1-2 people can operate per shift.

典型业绩 Typical Cases

系统介绍
System Introduction

工艺流程 Process



高温烟气通过加热管向地面以下输送热量，将污染土壤加热至目标污染物的沸点以上，使目标污染物与土壤颗粒分离、去除。污染气体在真空泵负压抽提下进入抽提井，通过管道输送至尾气净化单元，经二级换热器降温和二级活性炭过滤，去除有机污染物及水分后从烟囱排放。冷凝收集的污水送第三方处置。

High temperature flue gas transmits heat to the ground through heating pipe. The contaminated soil is heated above the boiling point of the target pollutant and separated from soil particles. The syngas enters into the extraction well under the vacuum pump negative pressure extraction, and is transported to the tail gas purification unit through the pipeline. It is cooled by two heat exchangers and filtered by two activated carbon filters. After removing the organic pollutants and water vapor, it is discharged from the chimney. The sewage collected by condensation is sent to a third party for disposal.

系统规格 Specification

系统 System	加热温度 heating temperature	加热 heating	尾气处置 Tail gas disposal	自控 Control
一套	100-500℃	√	√	√

注：

- 根据污染物的深度和面积布置加热井。
- 废水处置系统可选。

Note:

- Arrange heating wells according to the depth and area of pollutants.
- Waste water treatment system is optional.

工程服务
Engineering Services

亿可利专业团队向您提供专业的固废热脱附、热解工程服务，包括方案设计，中试测试及分包服务。

The professional team of ZJEC offers solid waste thermal desorption and pyrolysis engineering services including scheme design, pilot test and sub-contract.

典型业绩 Typical Cases

工程地点： 天津
处理对象： 有机污染土壤
加热燃料： 柴油
投产时间： 2018 年

工程地点： 湖北武汉
处理对象： 有机污染土壤
加热燃料： 天然气
投产时间： 2019 年

工程地点： 江苏丹阳
处理对象： 有机污染土壤
加热燃料： 电
投产时间： 2019 年

工程地点： 新疆克拉玛依
处理对象： 含油钻屑
加热燃料： 天然气
投产时间： 2020 年

不断创新
Innovation

电磁加热热脱附装置

Elecmagentic Heating TDU

- 采用电加热方式，；
- 排烟烟气余热利用，降低能耗，提高热效率；
- 整体按标准车辆尺寸橇装定制设计，运输方便，安装就位快速；

试 验 台

Test Bench

- 双轴螺旋设计，可作为较复杂、含液率高物料的先导试验机；
- 可作为原料试验机，10kg/h产能更能为中试乃至产业化设备基础；

炭 化 装 置

Carbonization Furnace

- 实现农业垃圾、餐厨垃圾资源化；
- 利用原料解吸出来的气体燃烧加热，可实现低能耗处置；
- 设备橇装设计，便于运输及现场测试或处置。

合作伙伴
Selected Partners

核心客户 Clients

VEOLIA

BGE 高能环境

中节能大地环境修复有限公司
CECEP DADI Environmental Remediation Co.,Ltd.

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ABB

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OMEGA a spectris company

业务流程
Business Process

设备定制 Custom-made Manufacturing

前期交流 → 工艺设计 → 设备设计 → 设备制造 → 安装调试 → 运行培训 → 售后服务

工程服务 Engineering Services

前期交流 → 物料分析 → 场地勘查 → 设备动员 → 安装调试 → 运行处置 → 退场 → 售后服务

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Better Technology, Cleaner World

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