



扬州绿泉 环保工程技术有限公司

YANGZHOU LVQUAN
ENVIRONMENTAL ENGINEERING TECHNOLOGY CO.,LTD

>>> VOCS废气处理设备著名品牌制造商之一
A FAMOUS VOCS WASTE GAS TREATMENT EQUIPMENT
BRAND MANUFACTURER



扬州绿泉环保工程技术有限公司

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企业简介

BRIEF INTRODUCTION

扬州绿泉环保工程技术有限公司, 座落于“苏北门户”之地——扬州高邮市境内。由具有从事 30 年以上 VOCs 设备设计制造丰富经验的及相近理念人才合作建立的股份制企业, 公司注册资金 2200 万元, 现拥有固定资产近 4000 万元, 资产总额近 6000 万元, 厂房建筑面积达 9800 平方米, 各类机加工设备 200 余台套, 现有职工人数 120 名, 企业年生产能力达 10000 万元。

Lv Quan Environmental Protection Engineering Technology Co., Ltd. is located in the city of Gaoyou, Yangzhou, the “north gate” of Jiangsu. It is a joint-stock enterprise established through cooperation by talents with rich experience in VOCs equipment design and manufacturing for over 30 years and similar concepts. The company has a registered capital of 22 million yuan, with fixed assets of nearly 40 million yuan, a total assets of nearly 60 million yuan, and a factory building area of 9,800 square meters. It has more than 200 sets of various types of machining equipment and 120 employees, with an annual production capacity of 100 million yuan.

2200

公司注册资金 / 万元
Company registered capital / million yuan

4000

固定资产 / 万元
Fixed assets / million yuan

6000

资产总额 / 万元
Total assets / million yuan

9800

厂房建筑面积/平方米
Plant building area/square meter

10000

年生产能力 / 万元
Annual production capacity / million yuan

The company's products cover many industries such as vehicle manufacturing, coil coating, petrochemicals, pharmaceuticals, electronics, machinery, printing, furniture building materials, etc. Organic waste gas treatment equipment, under the Lv Quan brand, stands out in the industry and maintains a fast-growing market share.

绿泉秉承“专一、技术、质量、服务、满意”的精神, 通过消化吸收国外先进技术制造的吸附、焚烧技术, 总结、提升产品的安全性、稳定性、可靠性, 已经达到了国内同类产品的先进水平, 已经逐步替代进口设备的使用。

Lv Quan adheres to the spirit of “professionalism, technology, quality, service, and satisfaction”. By digesting and absorbing advanced foreign technology for the manufacture of adsorption and incineration technology, the company has summarized and improved the safety, stability, and reliability of its products, which have reached the advanced level of similar products in China and have gradually replaced imported equipment.

公司一直并始终坚持专注于 VOCs 有机废气处理“吸附、焚烧、回收、预处理”等环保设计、制造为主的科技型实业公司。十多年来, 绿泉一直致力于有机废气处理设备的研究、设计、制造、安装、售后服务。公司拥有江苏省环境污染设计、治理双乙级资质、江苏高新技术企业、环保专业三级承包资质, 顺利通过 ISO9001、ISO14001 体系认证。

The company has always focused on the environmental protection design and manufacturing of VOCs organic waste gas treatment such as “adsorption, incineration, recovery, pretreatment”, and has been committed to the research, design, manufacturing, installation, and after-sales service of organic waste gas treatment equipment for more than a decade. The company has Jiangsu Province environmental pollution design and governance double-grade qualifications, Jiangsu high-tech enterprises, environmental protection professional third-level contracting qualifications, and has successfully passed the ISO9001, ISO14001 system certification. The company has 13 practical utility model patent products and two high-tech invention patent products, and has been selected as a member of the Jiangsu Province Environmental Protection Industry Association.

拥有十三项实用型专利产品、两项高新发明专利产品。被选为江苏省环境保护产业协会会员单位。产品市场涉及至车辆制造、卷材涂膜、石油化工、医药、电子、机械、印刷、家具建材等众多行业, 有机废气治理设备在行业中绿泉品牌独树一帜, 市场占有率保持较快的增长。



企业理念/Enterprise philosophy

因为专业, 所以超越 Professionalism leads to excellence

经营理念/Business philosophy

以人为本 科学管理 不断创新 持续提升

People-oriented, scientific management Constantly innovate and continuously improve

企业目标/Corporate goal

引导环保设备行业潮流 Leading the trend in the environmental protection equipment industry

打造中国环保设备研发基地 Building China's environmental protection equipment R&D base

企业精神/Corporate spirit

企业精神是企业的血液, 在创造高质量产品的同时, 绿泉环保也在创造一种文化, 一种尊重个人回馈社会的绿色文化。绿泉环保尊重人, 尊重每个员工的每一份辛勤努力, 绿泉环保为员工创造公平的竞争环境, 让每一个员工的潜能充分发挥。绿泉环保正是以这种博大的胸襟, 吸引着众多的优秀人才, 共同缔造着绿泉环保事业的辉煌执着、务实、创新、协作这是绿泉环保的精神。

Corporate spirit is the blood of a company. While creating high-quality products, Lv Quan Environmental Protection is also creating a culture - a green culture that respects individuals and gives back to society. Lv Quan Environmental Protection respects people and every employee's hard work. It creates a fair competitive environment for its employees, allowing everyone to fully unleash their potential. It is with this broad mind that Lv Quan Environmental Protection attracts many excellent talents to jointly create the brilliant career of Lv Quan Environmental Protection with persistence, pragmatism, innovation, and cooperation. This is the spirit of Lv Quan Environmental Protection.

服务理念/Service philosophy

• 专业 Professional • 品质 Quality • 服务 Service • 守信 Integrity

管理理念/Management philosophy

塑造人的品质, 建立管理根基! 科技是第一生产力! 人才是第一个资源, 没有执行力, 就没有竞争力! 自强不息的精神, 坚韧不拔之信念。

Shaping people's qualities and building the foundation of management! Science and technology are the primary productivity! Talent is the first resource. Without execution, there is no competitiveness! The spirit of self-improvement and the belief of perseverance.

企业荣誉 CORPORATE HONORS



4 发明专利
INVENTION PATENT

32 实用新型
UTILITY MODEL

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设备篇

EQUIPMENT ARTICLE

LQ-RTO蓄热式高温焚化设备

LQ-RTO: Heat storage high-temperature incineration equipment

LQ-RRTO旋转式蓄热式高温焚化设备

LQ-RRTO: Rotary heat storage high-temperature incineration equipment

LQ-YRTO废液焚烧炉

LQ-YRTO: Waste liquid incinerator

LQ-TO直燃式高温焚化设备

LQ-TO: Direct combustion high-temperature incineration equipment

LQ-CO I 催化燃烧设备I

LQ-CO I: Catalytic combustion equipment I

LQ-CO II 催化燃烧设备 II

LQ-CO II: Catalytic combustion equipment II

LO-RCO蓄热式催化焚烧设备

LO-RCO: Heat storage catalytic incineration equipment

LQ-TF变频式沸石转轮（筒式）

LQ-TF: Variable frequency zeolite wheel (short type)

LQ-TT变频式活性炭转轮（筒式）

LQ-TT: Variable frequency activated carbon wheel (short type)

LQ-YFCO有机废气处理设备一体机系统

LQ-YFCO: Integrated organic waste gas treatment equipment system

LQ-ACF活性炭纤维有机溶剂净化回收装置

LQ-ACF: Activated carbon fiber organic solvent purification and recovery device

LQ-ACA颗粒活性炭净化回收设备

LQ-ACA: Granular activated carbon purification and recovery equipment

LQ-TT-CO气气换热器

LQ-TT-CO: Gas-to-gas heat exchanger



LQ-RTO

蓄热式高温焚化设备/OVERVIEW OF TOWER-TYPE RTO

一、塔式RTO概述 OVERVIEW OF TOWER-TYPE RTO

蓄热式热力焚烧炉设备(REGENERATIVE THERMAL OXIDIZER简称RTO)是将高温氧化与多塔式蓄热技术相结合的一种有机废气处理设备。有效的降低热量损耗，节约能源。
Regenerative Thermal Oxidizer (RTO) is an organic waste gas treatment equipment that combines high-temperature oxidation with multi-tower thermal storage technology. It effectively reduces heat loss and saves energy.

二、适用行业与范围 APPLICABLE INDUSTRIES AND RANGE

应用行业 Application Industries	石油化工、印刷、涂布/涂胶、涂装烘干、漆包线、医药化工等。 Petrochemical, printing, coating/gluing, coating drying, wire enameling, pharmaceuticals, and chemicals, etc.
浓度范围 Concentration Range	500~5000mg/m ³ (2~12% LEL).

三、工作原理 WORKING PRINCIPLE

塔式 RTO 其原理是把有机废气加热到 760 摄氏度以上，使废气中的 VOC 高温氧化分解成二氧化碳和水。氧化产生的高温气体流经特制的陶瓷蓄热体，使陶瓷体升温而“蓄热”，此“蓄热”用于预热后续进入的有机废气。从而节省废气升温的燃料消耗。陶瓷蓄热体应分成三个以上（含三个）的区或室，每个蓄热室依次经历蓄热-放热-清扫等程序，周而复始，连续工作。

The tower-type RTO heats the organic waste gas to above 760 degrees Celsius, causing the VOC in the waste gas to be oxidized and decomposed into carbon dioxide and water. The high-temperature gas produced by oxidation flows through specially designed ceramic heat storage bodies, causing the ceramic bodies to heat up and "store heat," which is used to preheat the subsequent incoming organic waste gas. This saves fuel consumption for waste gas heating. The ceramic heat storage body should be divided into three or more (including three) zones or chambers, and each heat storage chamber undergoes a cycle of heat storage-release-cleaning, continuously working.

四、技术特点 TECHNICAL FEATURES

- 能耗低:进气浓度在1500~2000MG/M3时基本维持自然，无需燃料补给;
- 余热回收效率高:采用新材料(蓄热陶瓷)技术，热回收效率达95%;
- 操作方便:采用传统电控或采用工业控制器控制，在参数校准完毕后一键启停，实现无人值守看管。

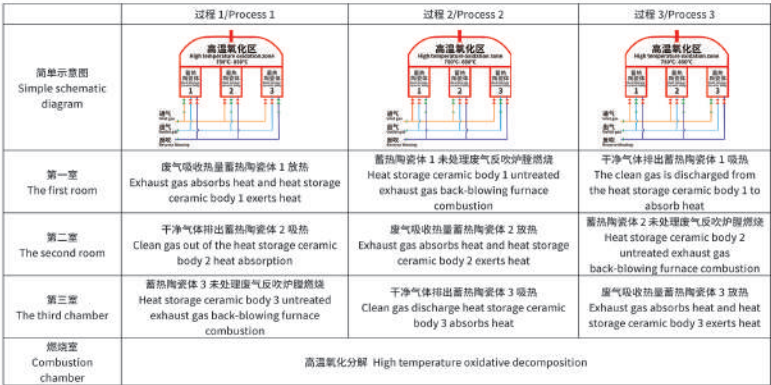
- Low energy consumption: When the inlet concentration is between 1500~2000mg/m³, it can be maintained naturally without fuel supply.
- High heat recovery efficiency: Using new materials (heat storage ceramics) technology, heat recovery efficiency can reach 95%.
- Convenient operation: It can be controlled by traditional electrical control or industrial controllers, and after parameter calibration, it can be activated or deactivated with a single button, realizing unmanned supervision.

阀门选择 Valve selection	提升阀 Poppet valve	蝶阀 Butterfly valve
净化率 Purification rate	≤98%	< 99.3%
安装方式 Installation method	整体安装 Integral installation	单个安装 Single installation

五、工艺流程 PROCESS FLOW

蓄热式热力焚烧炉设备(REGENERATIVE THERMAL OXIDIZER简称RTO)是将高温氧化与多塔式蓄热技术相结合的一种有机废气处理设备。有效的降低热量损耗，节约能源。

Regenerative Thermal Oxidizer (RTO) is an organic waste gas treatment equipment that combines high-temperature oxidation with multi-tower thermal storage technology. It effectively reduces heat loss and saves energy.



六、设备选型 EQUIPMENT SELECTION

蓄热式热力焚烧炉设备(REGENERATIVE THERMAL OXIDIZER简称RTO)是将高温氧化与多塔式蓄热技术相结合的一种有机废气处理设备。有效的降低热量损耗，节约能源。
Regenerative Thermal Oxidizer (RTO) is an organic waste gas treatment equipment that combines high-temperature oxidation with multi-tower thermal storage technology. It effectively reduces heat loss and saves energy.

规格型号 Specification Model	RTO-20	RTO-50	RTO-100	RTO-150	RTO-200	RTO-250	RTO-300	RTO-350	RTO-450	RTO-500
处理风量 Treatment air volume m ³ /h	2000	5000	10000	15000	20000	25000	30000	35000	45000	50000
有机气体浓度 Organic gas concentration	500~5000mg/m ³ (混合气体 mixed gas)									
治理对象 Treatment object	三苯、醇、醚、醛、酮、酯、胺、酯等 VOC、恶臭气体等 Trichlorobenzenes, alcohols, ethers, aldehydes, phenols, ketones, esters and other volatile organic compounds (VOCs); malodorous gases and so on.									
蓄热效率 Heat storage efficiency	≤95%									
净化效率 Purification efficiency	≥97%(按 GB16297-1996 标准执行 executed according to GB16297-1996 standard)									
燃烧器热功率 Burner heating capacity × 10 ⁴ kcal/h	8.4	21	42	63	84	105	126	168	189	210
燃料耗量 Fuel consumption	初始运行 Initial operation: 燃烧器为最大输出 The burner is set at maximum output 正常运行 Normal operation: 根据废气浓度确定，当浓度 1500mg/Nm ³ 以上时，燃烧机维持小火即可 Based on the waste gas concentration, a lower flame can be maintained by the combustion machine when the concentration is above 1500mg/Nm ³									
床层压降 Bed pressure drop	≤ 3200pa									

说明:表中参数仅供参考，若有特殊要求，可根据实际情况设计。

Note:The parameters in the table are for reference only. If there are specific requirements, they can be designed based on actual conditions.

• 选用条件 Selection Criteria

- 废气中如含有硫、氯等腐蚀性成份，在选型时需要特别告知，对此类气体需要采用 SUS2205 或以上耐腐蚀材料材料加工制造，同时后段需要对此类气体作特别处理。
- 进入蓄热式高温焚化设备的混合废气浓度 < 1/4LEL 爆炸下限范围。
- 蓄热式高温焚化设备使用的极限温度为≤960℃，高热物质、高浓度气体需要经过稀释处理，如有特别要求的可注明告知，以便在设计内保温时对此做出明确要求。
- 进入蓄热式高温焚化设备的气体中不得含有会堵塞或引起回火的粉尘颗粒物以及油雾，防止回火以及堵塞蓄热陶瓷。
- 部分地区对高温焚化设备排口氮氧化物有要求的需要特别告知，以便采购燃烧机时选用低氮燃烧系统，同时如废气中含氮成分较多的即使选用低氮燃烧系统也无法达标排放，后续需经脱氮处理。

- If the exhaust gas contains corrosive components such as sulfur and chlorine, it is necessary to inform the manufacturer during the selection process. Corrosion-resistant materials such as SUS2205 or higher need to be used for processing and manufacturing, and special treatment is required for such gases in the later stage.
- The concentration of the mixed waste gas entering the energy storage high-temperature incineration equipment shall be within the range of less than 1/4 LEL lower explosion limit.
- The maximum temperature used by the energy storage high-temperature incineration device is ≤ 960° C. High-energy substances and high-concentration gases need to be diluted. If special requirements exist, they should be indicated to make specific requirements when designing thermal insulation.
- The gas entering the energy storage high-temperature incineration equipment shall not contain dust particles or oil mist that may cause blockage or tempering, so as to prevent tempering or blocking of the energy storage ceramic.



LQ-RRTO

旋转式蓄热式高温焚化设备/ ROTARY ENERGY STORAGE HIGH-TEMPERATURE INCINERATION EQUIPMENT

一、旋转式RTO概述 OVERVIEW OF ROTARY RTO

旋转式RTO我公司分为旋转RTO和单桶式多阀门RTO两种。

旋转式RTO，也称旋转式蓄热氧化炉。其原理是在高温下将可燃废气氧化成对应的氧化物和水，从而净化废气，并回收废气分解时所释放出来的热量，废气分解效率达到95%~99%以上，热回收效率达到95%以上。

Our company offers two types of rotary RTO, which are the rotary RTO and the single barrel multi-valve RTO.

The rotary RTO, also known as a rotary energy storage oxidation furnace, oxidizes combustible waste gas into corresponding oxides and water under high temperature, purifying the exhaust gas and recovering the heat released during the decomposition of exhaust gas. The decomposition efficiency of exhaust gas is over 95% to 99%, and the heat recovery efficiency is over 95%.

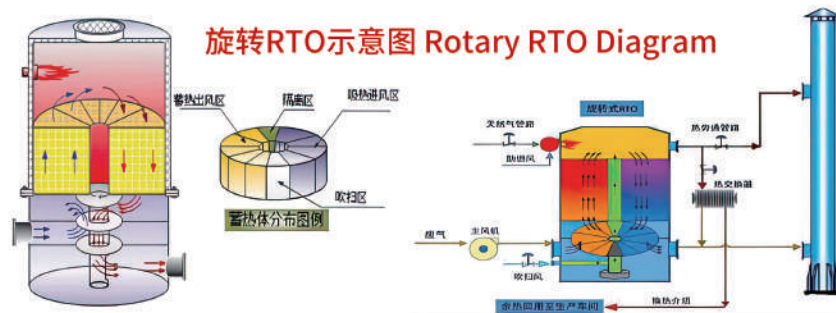
二、适用行业与范围 APPLICABLE INDUSTRIES AND RANGE

应用行业 Application Industries	石油化工、印刷、涂布/涂胶、涂装烘干、漆包线、医药化工等。 Petrochemical, printing, coating/gluing, coating drying, wire enameling, pharmaceuticals, and chemicals, etc.
浓度范围 Concentration Range	500~5000mg/m ³ (2~12% LEL).

三、工作原理 WORKING PRINCIPLE

旋转 RTO 主要由燃烧室、陶瓷填料床和旋转阀等组成。炉体分成 12 个陶瓷填料床，5 个进气室（预热区）、5 个出气室（冷却区）、1 个吹扫室和 1 个隔离室。废气经进气分配器进入预热区，使废气预热到一定温度后进入顶部的燃烧室，并完全氧化分解。净化后的高温气体离开燃烧室，进入冷却区，将热量传给陶瓷蓄热体，而气体被冷却，并通过气体分配器排出。冷却区的陶瓷蓄热体吸热，“储存”大量的热量（用于下个循环加热废气）。如此不断地交替进行，废气在燃烧室内氧化分解，当废气中 VOCs 浓度超过一定值，氧化分解释放热量足以维持燃烧室的反应温度时，则不需要用燃料进行加热，最大限度的保证能量循环利用。

The rotary RTO mainly consists of a combustion chamber, ceramic packing bed, and rotary valves, etc. The furnace body is divided into 12 ceramic packing beds, 5 inlet chambers (preheating zone), 5 outlet chambers (cooling zone), 1 purge chamber, and 1 isolation chamber. The waste gas enters the preheating zone through the intake distributor, and after being preheated to a certain temperature, it enters the top combustion chamber for complete oxidation and decomposition. The purified high-temperature gas leaves the combustion chamber, enters the cooling zone to transfer heat to the ceramic energy storage material, and the gas is cooled and discharged through the gas distributor. The ceramic energy storage material in the cooling zone absorbs heat and stores large amounts of energy for heating the waste gas in the next cycle. In this way, the waste gas is alternately oxidized and decomposed in the combustion chamber. When the VOC concentration in the exhaust gas is above a certain value, and the heat released from the oxidative decomposition is sufficient to maintain the reaction temperature of the combustion chamber, there is no need to use fuel to heat it, thus maximizing the utilization of energy cycling.

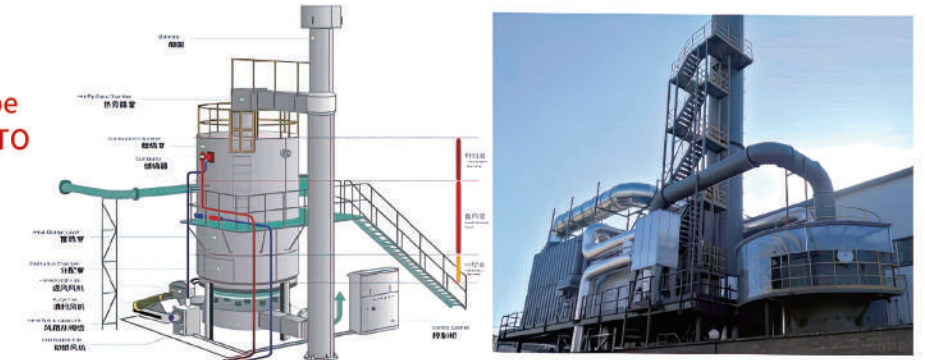


单筒式多阀门 RTO 的主体由气体总管道、切换阀、分配室、蓄热层和燃烧室组成，分配室和蓄热层分成七个扇区，轮换交替作为进气扇区、吹扫扇区和排气扇区，每个扇区独立配置进气阀、排气阀、吹扫阀 3 个阀门，通过开关阀门实现各扇区的功能切换。

The single barrel multi-valve RTO consists of a gas main pipeline, switching valve, distribution chamber, energy storage layer, and combustion chamber. The distribution chamber and energy storage layer are divided into seven sectors, which rotate and alternate as the intake sector, purge sector, and exhaust sector. Each sector is independently equipped with an intake valve, exhaust valve, and purge valve, and the functions of each sector are switched through opening and closing these valves.

单筒式多蝶阀

RTO Single cylinder type multi-butterfly valve RTO



四、与传统式RTO对比 COMPARISON WITH TRADITIONAL TYPE RTO

	三室 RTO Three-room RTO	旋转 RTO Rotary RTO	单筒多蝶阀 RTO Single cylinder multi-butterfly valve RTO
蓄热室数量 No. of heat storage chambers	3	12	7
阀门数量 No. of valves	9	1	21
阀门形式 Valve form	推缸阀、蝶阀 Push cylinder valve, butterfly valve	旋转阀 Rotary valve	硬密封蝶阀 Hard seal butterfly valve
净化率 Purification rate	99%	98%	99%
管道压力波动 Pipeline pressure fluctuation	±250Pa	±50Pa	±50Pa
占地 Area occupied	占地面积大 Large footprint	占地小 Small footprint	占地小 Small footprint
蓄热体用量 Amount of heat accumulator	多 more	少 less	少 less
热效率 Thermal efficiency	95%	95%	95%
阀门故障率 Valve failure rate	高 High	低 Low	低 Low
阀门特点 Valve	通用型阀门可快速更换 Universal valves can be changed quickly	专用阀门，需专业厂家维护 Specialized valve, need professional factory maintenance	知名阀门品牌 Well-known valve brands

五、选用条件 SELECTION CRITERIA

- 1、废气中如含有硫、氯等腐蚀性成分，在选型时需要特别告知，对此类气体需要采用 SUS2205 或以上耐腐蚀材料，材料加工制造，同时后段需要对此类气体作特别处理。
- 2、进入蓄热式高温焚化设备的混合废气浓度 < 1/4 LEL 爆炸下限范围。
- 3、蓄热式高温焚化设备使用的极限温度为 ≤960℃，高热物质、高浓度气体需要经过稀释处理，如有特别要求的可注明告知，以便在设计内保温时对此作出明确要求。
- 4、进入蓄热式高温焚化设备的气体中不得含有会堵塞或弓起回火的粉尘颗粒物以及油雾，防止回火以及堵塞蓄热陶瓷。
- 5、部分地区对高温焚化设备排口氮氧化物有要求的需要特别告知，以便采购燃烧机时选用低氮燃烧系统，同时如废气中含氮成份较多的即使选用低氮燃烧系统也无法达标排放，后续需经脱氮处理。

1. It is necessary to specifically indicate during selection if the exhaust gas contains corrosive components such as sulfur and chlorine, and SUS2205 or higher corrosion-resistant materials need to be used for such gases. The material processing and manufacturing must also include special treatment for these gases in the latter stage.
2. The mixed waste gas entering the heat storage type high-temperature incineration equipment should have a concentration range of less than 1/4 of the lower explosive limit (LEL).
3. The maximum temperature used for heat storage type high-temperature incinerators is ≤960℃. High heat substances and highly concentrated gases need to undergo dilution treatment, and if there are special requirements, they should be specified to ensure specific insulation requirements during design.
4. The gas entering the heat storage type high-temperature incineration equipment must not contain dust particles or oil mist that could cause clogging or bowing/reheating, to prevent reheating and blockage of the heat storage ceramic.
5. For some regions with requirements on nitrogen oxides emissions from high-temperature incineration equipment outlets, it needs to be specifically indicated, so that low nitrogen combustion systems can be selected when purchasing combustion engines. Additionally, even if low nitrogen combustion systems are used, if the waste gas contains a high concentration of nitrogen components that fail to meet the emissions standards, subsequent denitrification treatment is required.



LQ-YRTO

废液焚烧炉/LIQUID WASTE INCINERATOR

一、废液焚烧炉概述 OVERVIEW

废液焚烧炉是蓄热式热力焚烧炉的另一种应用。是将废液压缩后通过喷头雾化喷入燃烧室，结合并利用RTO蓄热节能的特点对废液进行高温氧化并安全排放。该设备有效的降低热能损耗，节约能源并具有极高的净化效率，且不产生二次污染。

The liquid waste incinerator is another application of the heat storage type thermal incinerator. Compressed waste liquid is atomized and sprayed into the combustion chamber through a nozzle, and high-temperature oxidation is applied to the waste liquid through the characteristics of RTO heat storage and energy efficiency, resulting in safe emission. This equipment effectively reduces heat energy loss, saves energy, has a high purification efficiency, and does not produce secondary pollution.

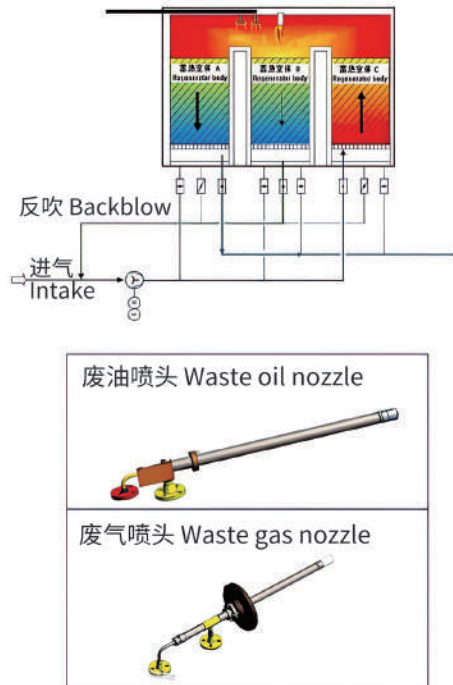
二、适用行业与范围 APPLICABLE INDUSTRIES AND RANGE

应用行业 Application Industries	石油化工、固废处理、医药化工等。 Petrochemicals, solid waste treatment, pharmaceuticals, and chemical industries.
浓度范围 Concentration Range	500~ 5000mg/m ³ (2~12%LEL)。

三、工作原理 WORKING PRINCIPLE

废液焚烧炉其原理是把燃烧室加热到 800℃ 以上，将废液压缩后通过喷头雾化喷入燃烧室使。与高温空气充分混合后氧化分解成二氧化碳和水。氧化产生的高温气体流经特制的陶瓷蓄热体，使陶瓷体升温而“蓄热”，此“蓄热”用于预热后续进入的新鲜空气。从而节省气体升温的燃料消耗。陶瓷蓄热体应分成三个（含三个）以上的区或室，每个蓄热室依次经历蓄热 - 放热 - 清扫等程序，周而复始，连续工作。

The liquid waste incinerator heats the combustion chamber to above 800 ° C. The compressed waste liquid is atomized and sprayed into the combustion chamber and fully mixed with high-temperature air to oxidize and decompose into carbon dioxide and water. The high-temperature gas produced by oxidation flows through specially designed ceramic heat storage bodies, which raises the temperature and the "heat storage" of the ceramic is used to preheat the subsequent fresh air entering the chamber, thus saving fuel consumed for gas heating. The ceramic heat storage bodies should be divided into three or more zones or chambers, and each heat storage chamber undergoes heating, releasing, and cleaning procedures, working continuously in cycles.



四、技术特点 TECHNICAL FEATURES

- 1、能耗低:进气浓度在1500 ~ 2000MG/M3时基本维持自然，无需燃料补给；
 - 2、余热回收效率高:采用新材料(蓄热陶瓷)技术，热回收效率达95%；
 - 3、操作方便:采用传统电控或采用工业控制器控制，在参数校调完后一键启停，实现无人值守看管。
1. Low energy consumption: When the intake concentration is between 1500~2000mg/m³, the system can basically operate naturally without requiring any fuel supply.
2. High waste heat recovery efficiency: The use of new materials (heat storage ceramics) technology allows for waste heat recovery efficiency of up to 95%.
3. Easy operation: The system can be controlled by either traditional electronic controls or an industrial controller. After parameter calibration, the one-key start-stop function can be used to achieve unattended operation.

阀门选择 Valve selection	提升阀 Poppet valve	蝶阀 Butterfly valve
净化率 Purification rate	≤98%	<99.3%
安装方式 Installation method	整体安装 Integral installation	单个安装 Single installation

五、工艺流程 PROCESS FLOW

废液焚烧炉是蓄热式热力焚烧炉的另一种应用。是将废液压缩后通过喷头雾化喷入燃烧室，结合并利用RTO蓄热节能的特点对废液进行高温氧化并安全排放。该设备有效的降低热能损耗，节约能源并具有极高的净化效率，且不产生二次污染。

The liquid waste incinerator is another application of the heat storage type thermal incinerator. Compressed waste liquid is atomized and sprayed into the combustion chamber through a nozzle, and high-temperature oxidation is applied to the waste liquid through the characteristics of RTO heat storage and energy efficiency, resulting in safe emission. This equipment effectively reduces heat energy loss, saves energy, has a high purification efficiency, and does not produce secondary pollution.

	过程 1/Process 1	过程 2/Process 2	过程 3/Process 3
简单示意图 Simple schematic diagram			
第一室 The first room	新鲜空气吸收热量蓄热陶瓷体 1 放热 Fresh air absorbs heat and heat storage ceramic body 1 exerts heat	蓄热陶瓷体 1 未处理废气反吹炉膛燃烧 Heat storage ceramic body 1 untreated exhaust gas back-blowing furnace combustion	干净气体排出蓄热陶瓷体 1 吸热 The clean gas is discharged from the heat storage ceramic body 1 to absorb heat
第二室 The second room	干净气体排出蓄热陶瓷体 2 吸热 Clean gas out of the heat storage ceramic body 2 heat absorption	新鲜空气吸收热量蓄热陶瓷体 2 放热 Fresh air absorbs heat and heat storage ceramic body 2 exerts heat	蓄热陶瓷体 2 未处理废气反吹炉膛燃烧 Heat storage ceramic body 2 untreated exhaust gas back-blowing furnace combustion
第三室 The third chamber	蓄热陶瓷体 3 未处理废气反吹炉膛燃烧 Heat storage ceramic body 3 untreated exhaust gas back-blowing furnace combustion	干净气体排出蓄热陶瓷体 3 吸热 Clean gas discharge heat storage ceramic body 3 absorbs heat	新鲜空气吸收热量蓄热陶瓷体 3 放热 Fresh air absorbs heat and heat storage ceramic body 3 exerts heat
燃烧室 Combustion chamber	温度达到 800℃ 后喷头喷射废液从而高温氧化分解 After the temperature reaches 800°C, the nozzle sprays the waste liquid and thus decomposes by high temperature oxidation.		

• 选用条件 Selection Criteria

- 1、废气中如含有硫、氯等腐蚀性成份，在选型时需要特别告知，对此类气体需要采用 SUS2205 或以上耐腐蚀材料材料加工制造，同时后段需要对此类气体作特别处理。
 - 2、蓄热式高温焚烧设备使用的极限温度为≤960℃，高热物质、高浓度气体需要经过稀释处理，如有特别要求的可注明告知，以便在设计内保温时对此做出明确要求。
 - 3、进入蓄热式高温焚烧设备的气体中不得含有会堵塞或引起回火的粉尘颗粒物以及油雾，防止回火以及堵塞蓄热陶瓷。
 - 4、部分地区对高温焚烧设备排口氮氧化物有要求的需要特别告知，以便采购燃烧机时选用低氮燃烧系统，同时如废气中含氮成分较多的即使选用低氮燃烧系统也无法达标排放，后续需经脱氮处理。
1. If the exhaust gas contains corrosive components such as sulfur and chlorine, it is necessary to inform the supplier during the selection process. Corrosion-resistant materials such as SUS2205 or higher grade materials must be used for manufacturing, and special treatment is required for such gases in the later stage.
2. The maximum temperature limit for a heat storage high-temperature incineration device is ≤960°C. High-heat materials and high-concentration gases require dilution treatment. If there are special requirements, please inform the supplier to make specific demands on insulation in the design stage.
3. The gas entering the heat storage high-temperature incineration device must not contain dust particles that will cause blockages or tempering, as well as oil mist to prevent tempering and blockage of the heat storage ceramics.
4. For areas where there are emission requirements for nitrogen oxides from high-temperature incineration devices, special attention must be given so that low-ammonia combustion systems are used when purchasing combustion equipment. If there are higher nitrogen contents in the exhaust gas, even with low-nitrogen combustion systems, the emissions standards cannot be met, and further denitrification treatment is required.



LQ-TO

直燃式高温焚烧设备 / DIRECT COMBUSTION HIGH-TEMPERATURE INCINERATION EQUIPMENT

一、概述 OVERVIEW

直燃式高温焚烧设备简称TO，其原理是利用辅助燃料燃烧所发生热量，把可燃的有害气体的温度提高到反应温度，从而发生氧化分解的设备。

Direct combustion high-temperature incineration equipment, abbreviated as TO, utilizes the heat generated by the combustion of auxiliary fuel to increase the temperature of the combustible harmful gas to the reaction temperature, thus inducing oxidation and decomposition of the gas.

二、反应机理 REACTION MECHANISM



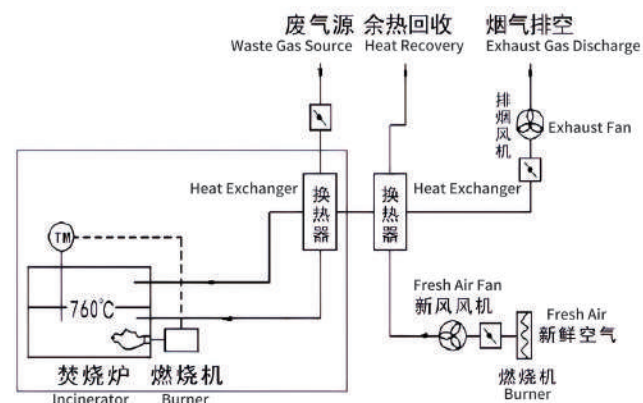
三、适用行业与范围 APPLICABLE INDUSTRIES AND RANGE

应用行业 Application Industries	石油化工、印刷、涂布/涂胶、涂装烘干、漆包线、医药化工等。 Petrochemical, printing, coating/gluing, coating drying, wire enameling, pharmaceuticals, and chemicals, etc.
浓度范围 Concentration Range	500~3500mg/m ³ (2~8% LEL).

四、特点 FEATURES

余热可回收利用 Waste heat can be recycled	排气温度达450~500℃，余热可加导热油、热水、新风 Exhaust gas temperature up to 450~500 °C, waste heat can be heated heat transfer oil, hot water, fresh air
净化效率高 High purification efficiency	排气温度达450~500℃，余热可加导热油、热水、新风 The higher the purification efficiency with the increase of furnace temperature, the higher the theoretical value can reach 99%.
操作方便 Easy to operate	排气温度达450~500℃，余热可加导热油、热水、新风 Traditional electric control or industrial controller control can be used to start and stop with one key after the parameters are adjusted to achieve unattended supervision

五、工艺流程 PROCESS FLOW



六、产品编号 PRODUCT CODE

LQ	绿泉公司代码 Company Code for Lv Quan Inc.
TO	产品类型 Product Type for Direct Combustion High-Temperature Incineration Equipment
500	处理风量1/10 Processing Air Volume (1/10).

七、设备规格型号 EQUIPMENT SPECIFICATIONS

规格型号 Specification Model	200	400	500	600	800	900	1500
处理风量 Treatment air volume (m ³ /h)	2000	4000	5000	6000	8000	9000	15000
加热功率 Heating power (KW)	400	800	1000	1200	1600	1800	2950
外形尺寸 Dimension	直径 Diameter (mm)	1800	2200	2500	2500	2900	3100
	长度 Length (mm)	4500	4900	5000	6300	7500	8500
重量 Weight (T)		4.5	7.5	9	10	11	13.2

说明:其他未在表格中显示的均为非标风量，如有需求可另行设计制造

Note: Other air volumes not shown in the table are non-standard, and can be designed and manufactured separately if required

八、选用条件 SELECTION CRITERIA

- 废气中如含有硫、氯等腐蚀性成份，在选型时需要特别告知，对此类气体需要采用SUS2205或以上耐腐蚀材料加工制造，同时后段需要对此类气体作特别处理。
- 进入直燃式高温焚烧设备的混合废气浓度<1/4LEL爆炸下限范围。
- 直燃式高温焚烧设备使用的极限温度为≤900℃，高热物质、高浓度气体需要经过稀释处理。
- 进入直燃式高温焚烧设备的气体中不得含有会堵塞或引起回火的粉尘颗粒物以及油雾，防止回火以及堵塞换热器。
- 部分地区对高温焚烧设备排口氮氧化物有要求的需要特别告知，以便采购燃烧机时选用低氮燃烧系统，同时如废气中含氮成份较多的即使选用低氮燃烧系统也无法达标排放，后续需经脱氮处理。

- If the waste gas contains corrosive components such as sulfur and chlorine, it is necessary to specify this when selecting the equipment. Corrosion-resistant materials such as SUS2205 or above must be used for processing, and special treatment is required for such gases at the later stage.
- The concentration of the mixed waste gas entering the direct combustion high-temperature incineration equipment should be < 1/4 of the lower explosive limit (LEL) range.
- The maximum temperature for the incinerator should not exceed ≤900°C. High-temperature substances and high-concentration gases need to be diluted before entering the equipment.
- The gas entering the direct combustion high-temperature incineration equipment should not contain dust particles or oil mist that can block or arch up the reheater to prevent clogging.
- Some regions have requirements for the nitrogen oxide emissions from high-temperature incineration equipment. It is necessary to specify this to select a low-nitrogen combustion system when purchasing the burner. If the waste gas contains a large amount of nitrogen, even a low-nitrogen combustion system may not meet the emission standards, and additional denitration treatment is required.



LQ-CO I

CO系列催化燃烧设备/CO SERIES CATALYTIC COMBUSTION EQUIPMENT

一、概述 OVERVIEW

CO系列催化净化设备采用低温氧化技术，即在贵金属催化剂的作用下，将有机气体加热到分解温度使气体净化。
The CO series catalytic purification equipment uses low-temperature oxidation technology, which is to heat organic gases to the decomposition temperature under the action of precious metal catalysts to purify the gas.

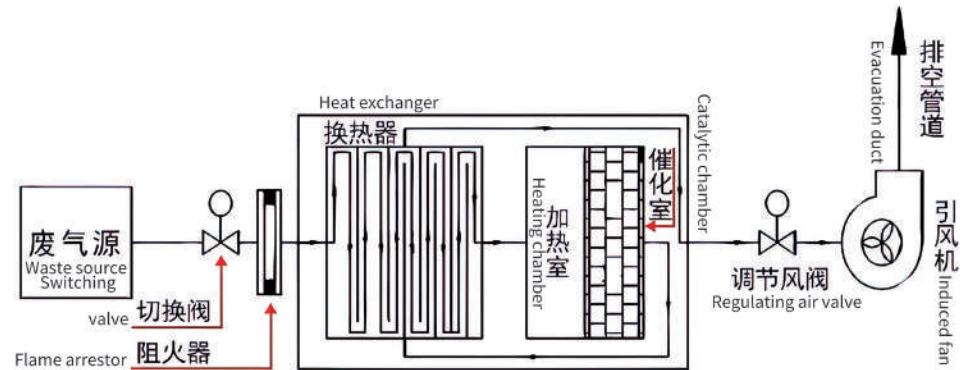
二、用途、范围 APPLICATION AND SCOPE

- 1、行业应用:石油化工、轻工、塑料、印刷、涂料等行业排放的常见污染物。
2、废气类型应用:烃类化合物(芳烃、烷烃、烯烃)、苯类、酮类、酚类、醇类、醚类、烷类等化合物。
1. Industry Application: Common pollutants discharged from industries such as petrochemicals, light industry, plastics, printing, and coatings, etc.
2. Waste Gas Type Application: Hydrocarbon compounds (aromatic hydrocarbons, alkanes, alkenes), benzene, ketones, phenols, alcohols, ethers, alkanes, and other compounds.

三、工作原理 WORKING PRINCIPLE

有机气体源通过引风机作用送入净化装置换热器换热，再送入到加热室，通过加热装置，使气体达到催化反应温度，再通过催化床内催化剂作用，使有机气体分解成二氧化碳、水和热能，反应后的气体再进入换热器与低温气体进行热交换，使进入的气体升温预热。这样加热系统仅需通过自控系统实现补偿加热，即可完全燃烧，这样节省了能源，废气有效去除率达到97%以上，符合国家排放标准。

The organic gas source is sent into the purification device through the induced draft fan for heat exchange in the heat exchanger before entering the heating chamber. The gas is heated through the heating device to the catalytic reaction temperature, and then the organic gas is decomposed into carbon dioxide, water, and heat energy through the catalyst in the catalytic bed. The post-reaction gas enters the heat exchanger again to exchange heat with the low-temperature gas and preheat the incoming gas. The heating system only needs to compensate for the heating through the control system to achieve complete combustion, saving energy, and the removal efficiency of the waste gas reaches over 97%, meeting national emission standards.



四、特点 CHARACTERISTICS

- 1、能耗低:催化起燃温度低仅为250 ~ 300℃，设备预热时间短，仅需15 ~ 30分钟，高浓度时耗能仅为风机功率，浓度较低时自动间歇补偿加热。
 - 2、阻力小，净化率高:采用贵金属钯、铂浸渍的蜂窝状陶瓷载体催化剂，比表面积大，使用寿命长，且可再生。
 - 3、余热回用:余热用于预热将被处理的废气，降低整个主机的消耗功率；
 - 4、安全可靠:设备配有阻火除尘系统、防爆泄压系统、超温报警系统及全自动控制系统。
 - 5、占地面积小:仅为同行业同类产品的70% ~ 80%。
 - 6、净化效率高:催化净化装置净化效率高达97%以上。
 - 7、操作方便:工作时，系统自动控制。
1. Low Energy Consumption: The catalytic ignition temperature is only 250-300℃, and the equipment has a short preheating time of only 15-30 minutes. It consumes only the power of the blower when dealing with high concentrations, and automatically compensates for heating in low concentration intervals.
2. Low Resistance and High Purification rate: The honeycomb ceramic catalyst carrier impregnated with precious metals such as palladium and platinum is used, with a large surface area, long service life, and regenerative capabilities.
3. Waste Heat Recovery: The waste heat is used to preheat the gas to be treated, reducing the power consumption of the entire unit.
4. Safe and Reliable: The equipment is equipped with flame arrester and dust removal systems, explosion-proof venting systems, over-temperature alarm systems, and fully automatic control systems.
5. Small Footprint: Only 70% to 80% of similar products in the same industry.
6. High Purification Efficiency: The purification efficiency of the catalytic purification equipment can reach 97% or higher.
7. Easy Operation: The system is automatically controlled during operation. The CO series catalytic purification equipment uses low-temperature oxidation technology, which is to heat organic gases to the decomposition temperature under the action of precious metal catalysts to purify the gas.

五、设备选型 EQUIPMENT SELECTION

规格型号 Specification Model	VOC-CO20	VOC-CO50	VOC-CO100	VOC-CO200	VOC-CO300	VOC-CO500	VOC-CO600	VOC-CO800	VOC-CO1000	VOC-CO1800	VOC-CO2000
处理风量 Treatment air volume (m3/h)	200	500	1000	2000	3000	5000	6000	8000	10000	18000	20000
有机气体浓度 Organic gas concentration	500-10000mg/m3(混合气体 mixture gas)										
气体预热温度 Gas preheating temperature	250-300℃										
净化效率 Purification efficiency	≥97%										
加热功率 Heating powerkw	27	37.8	66	82.5	92.4	113.4	120	148.5	198	283.5	336
配型风机 Mating fan	型号 Model	BYX9-35 No4C	BYX9-35 No4.5C	BYX9-35 No5C	BYX9-35 No5C	BYX9-35 No6.3C	BYX9-35 No6.3C	BYX9-35 No6.3C	BYX9-35 No8C	BOZGF100 OC	选配
	风量 Air volume (m³/h)	600	1700	2706	4881	6610	9474	12595	15840	15627	27729
	风压 Wind pressure (Pa)	1700	1600	1800	2226	2226	2452	2500	2128	2540	2730
	转速 Rotational speed rpm	2000	2200	2000	2240	2240	1800	1450	1800	1450	1360
	功率 Power (kw)	1.5	3	4	5.5	7.5	11	15	15	18.5	37
设备尺寸 Equipment size	长 Length (m)	0.9	0.955	1.2	1.2	1.45	1.45	1.8	2.73	3.01	2.6
	宽 width (m)	0.6	0.66	0.9	1.28	1.28	1.54	1.76	1.43	1.48	2.4
	高 height (m)	1.45	1.83	2.08	2.15	2.31	2.31	2.54	2.2	2.73	3.14
	管道 Pipe	φ120	φ160	φ200	φ280	φ360	φ450	φ500	φ630	φ700	φ900
重量 Weight(T)	0.8	1.2	1.7	2.1	2.4	3.2	5.36	6.5	8	12	15

注:如所需风量表中未列出，可另行设计。Note: If the required air volume is not listed in the table, it can be designed separately.

六、选型计算方式 SELECTION CALCULATION METHOD

1. 确保有机气体不外溢的最小风量 Q
 $Q=K \cdot F \cdot V \cdot 3600 \text{ m}^3/\text{h}$
K—安全系数 1.05~1.10
F—通风管道的面积之和 m^2
V—气体不外溢的最小吸入速度 0.5 ~ 0.7m/s
 2. 确保溶剂的挥发浓度小于 1/4 混合气体爆炸下限安全浓度
- Ensure the minimum air volume Q to prevent organic gas from spilling over
 $Q=K \cdot F \cdot V \cdot 3600 \text{ m}^3/\text{h}$
K is a safety factor of 1.05-1.10
F is the sum of the area of the ventilation ducts in m^2
V is the minimum intake velocity to prevent gas from spilling over, which is 0.5-0.7 m/s.
2. Ensure a safe concentration when the solvent's evaporation concentration is less than 1/4 of the lower explosive limit (LEL) of the mixed gas.

$$M = \frac{\text{每有机溶剂消耗量 (g)}}{\text{混合气体的安全浓度 (g/m}^3\text{)} \cdot \text{每班实际工作时间 (h)}}$$
$$M = \frac{\text{the amount of organic solvent consumption per shift (g)}}{\text{the safe concentration of the mixed gas (g/m}^3\text{)} \cdot \text{the actual working time per shift (h)}}$$



LQ-CO II

CO系列催化燃烧设备/CO SERIES CATALYTIC COMBUSTION EQUIPMENT

B、新型高端催化燃烧设备 A NEW HIGH-END CATALYTIC COMBUSTION EQUIPMENT

一、概述 OVERVIEW

催化燃烧是用催化剂使废气中可燃物质在较低温度下氧化分解的净化方法。

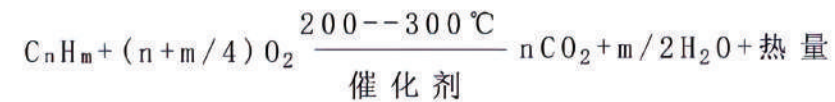
所以，催化燃烧又称为催化化学转化。由于催化剂加速了氧化分解的历程，大多数碳氢化合物在250~300℃的温度时，通过催化剂就可以氧化完全。

新式CO采用更合理的布局，结构更加优化；更换维修便捷；换热效率高等优点。主要适用于石化等行业对净化效率要求较高的场合。

Catalytic combustion is a purification method that uses catalysts to oxidize and decompose combustible substances in exhaust gas at low temperatures. Therefore, catalytic combustion is also known as catalytic chemical conversion. Since the catalyst accelerates the process of oxidation and decomposition, most hydrocarbons can be completely oxidized by the catalyst at temperatures between 250~300℃.

The new CO series adopts a more reasonable layout and a more optimized structure, making it more convenient to replace and maintain and with a high heat exchange efficiency. It is mainly suitable for industries such as petrochemicals that require high purification efficiency.

二、反应机理 REACTION MECHANISM



三、适用行业与范围 APPLICABLE INDUSTRIES AND SCOPE

应用行业 Applicable industries	石油化工、印刷、涂料生产、涂布/涂胶等 petrochemicals, printing, paint production, coating/laminating, etc.
有机物 Organic compounds	排气温度达450~500℃，余热可加导热油、热水、新风 alkanes, aromatic hydrocarbons, ketones, phenols, alcohols, ethers, and alkanes.
浓度范围 Concentration range	1000~6000MG/M ³

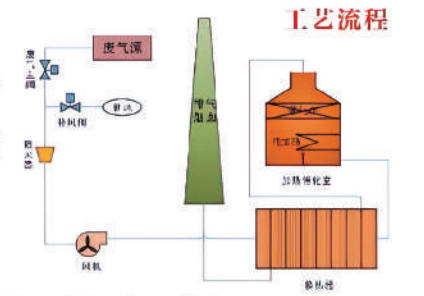
四、特点 FEATURES

能耗低 Low energy consumption	开机预热仅需30~45MIN,预热温度一般为250~300C Only 30~45min preheat is required for start-up, and the preheat temperature is generally 250~300C
阻力小 Low resistance	优化换热器结构，催化剂设计空速低(10000~15000HT-1) Optimized heat exchanger structure, low catalyst design air velocity (10000~15000ht-1)
余热回收效率高 High efficiency of waste heat recovery	与同类型产品相比，采用多种规格凹凸板制作，热回收效率达70% Compared with the same type of products, the heat recovery efficiency can reach 70% by using various specifications of concave and convex plates.
净化效率高 High purification efficiency	换热器采用新型焊接技术，保证冷热交替时焊缝无撕裂串气，本体净化效率最高可达98.5%以上 The heat exchanger adopts new welding technology to ensure no tearing and stringing of gas in the weld seam during hot and cold alternation, and the maximum purification efficiency of the body can reach 98.5% or more
操作方便 Easy to operate	采用传统电控或采用工业控制器控制，在参数校调完毕后一键启停，实现无人值守 Adopt traditional electric control or adopt industrial controller control, one key start and stop after the parameters are adjusted to realize unattended supervision

五、选用条件 SELECTION CONDITIONS

- 1、废气中不得含有使催化剂中毒或永久失活的成份，如：含氯、含硫、卤素、重金属等。
- 2、进入催化燃烧设备的混合废气浓度 < 1/4LEL 爆炸下限范围。
- 3、催化燃烧使用的极限温度为≤600C，高热物质、高浓度气体需要经过稀释处理，防止反应室温度超温导致催化剂失活无法进行催化还原反应。
- 4、进入催化燃烧的气体中不得含有会堵塞或引起回火的粉尘颗粒物以及油雾。

1. The exhaust gas must not contain ingredients that poison or permanently deactivate the catalyst, such as: chlorine, sulfur, halogens, heavy metals, etc.
- 2, the concentration of mixed exhaust gas into the catalytic combustion equipment < 1/4 LEL explosion lower limit range.
- 3, the limit temperature of catalytic combustion is ≤ 600C, high heat substances, high concentration of gas need to be diluted to prevent the reaction chamber temperature over temperature leads to catalyst inactivation can not be catalytic reduction reaction.
- 4, The gas entering the catalytic combustion must not contain dust particles or oil mist that will block or cause tempering.



六、产品编号 PRODUCT NUMBER

LQ 绿泉公司代码 50 处理风量1/10
Company Code for Lv Quan Inc. Processing Air Volume (1/10).

ECO/GCO 电加热式催化燃烧/天然气加热式催化燃烧
catalytic combustion heating method

ECO-- 电加热式催化燃烧
GCO-- 天然气加热式催化燃烧
ECO - electric heating type catalytic combustion
GCO - natural gas heating type catalytic combustion

注：根据催化燃烧加热方式不同产品编号缩写代码：

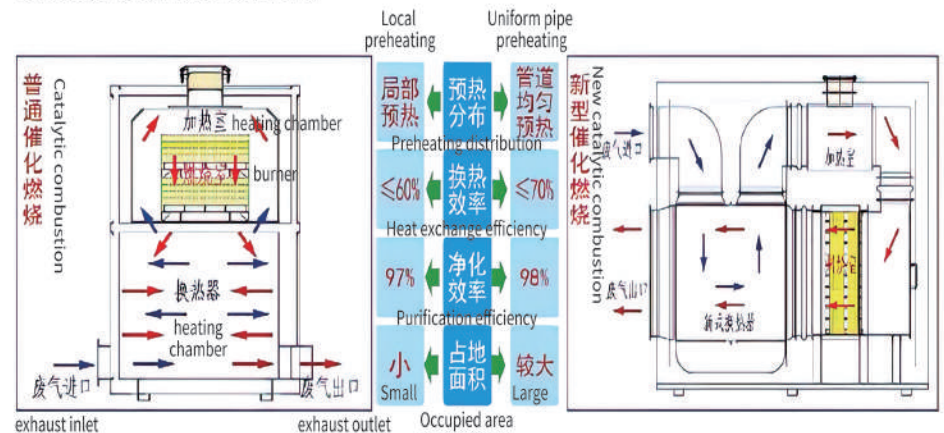
Note: According to the catalytic combustion heating method different product number abbreviation code

七、设备规格型号 EQUIPMENT SPECIFICATION MODEL

处理风量 Handling air capacity m ³ /h	200	500	1000	2000	3000	5000	6000	8000	10000	12000	15000	18000	20000	25000	30000
功率 Power (Kw)	27	37.8	66	82.5	92.4	113.4	120	148.5	198	210	243	283.5	336	/	/
供电电压 Supply voltage (V)	AC380V 50Hz, 供电方式: power supply mode 3L+1N+1P										AC380V 50Hz, 供电方式: power supply mode 3L+1N+1P				
燃气压力 Gas pressure	0.2~0.3bar(20~30Kpa, 0.2~0.3kgf/cm ²)										0.2~0.3bar(20~30Kpa, 0.2~0.3kgf/cm ²)				
天然气流量 Natural gas flow	1.7~4.3m ³ /h		4.8~10m ³ /h			5~16m ³ /h			6~20.5m ³ /h		10~28m ³ /h		8~41m ³ /h		
燃烧器型号 Burner model	BTG3		BTG11			BTG15			BTG20		BTG28		BTG35		
换热面积 Heat exchange area (m ²)	6.3	15.8	31.6	63.2	94.7	157.9	189.4	252.6	315.7	378.8	473.5	568.2	631.4	789.2	947.1
系统阻力 System resistance (Pa)	1500	1500	1500	1500	1500	2000	2500	2500	2500	3000	3000	3000	3000	3500	3500
设备自重 Equipment self-weight (Kg)	1.2	1.7	2.1	2.4	3.2	5.4	6.5	7.2	8	10	12.4	14.5	16.3	18.1	20.4

说明：其他未在表格中显示的均为非标风量，如有需求可另行设计制造。

Note: The others not shown in the table are non-standard air volume, which can be designed and manufactured separately if there is demand.



L Q-RCO

蓄热式催化焚烧设备/THERMAL STORAGE CATALYTIC INCINERATION EQUIPMENT

一、概述 OVERVIEW

蓄热式催化净化 (REGENERATIVE CATALYTIC OXIDIZER 简称 RCO), 是将低温催化氧化与蓄热技术相结合的一种有机废气处理设备。本设备有效的降低热量损耗及能耗资源, 同时大大降低净化后气体排出温度。

Thermal storage catalytic oxidation (Regenerative Catalytic Oxidizer, RCO for short) is an organic waste gas treatment equipment that combines low-temperature catalytic oxidation with heat storage technology. This equipment effectively reduces heat loss and energy consumption, while greatly reducing the temperature of the discharged gas after purification.

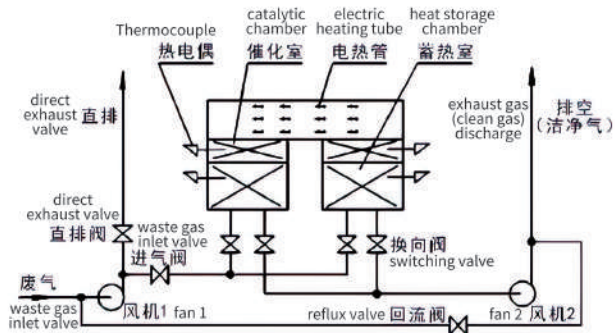
二、适用行业与范围 APPLICABLE INDUSTRIES AND SCOPE

适用于汽车及机械制造业、涂装线及烘房有机废气处理; 电子制造业、印刷线路板 (PCB) 有机废气处理; 电气制造业、漆包线绝缘有机废气处理; 轻工业、制鞋涂胶有机废气处理; 印刷彩印有机废气处理。适用于冶金钢铁业、碳素电极生产有机废气处理; 化学工业、化学合成工艺 (ABS 合成) 有机废气处理。适用于石油炼化工艺有机废气等各种产生有机废气场所。

It is applicable to the treatment of organic waste gases in the automotive and machinery manufacturing industry, painting lines and ovens; the electronic manufacturing industry, the treatment of organic waste gases from printed circuit boards (PCBs); the electrical manufacturing industry, the insulation treatment of wire enamels; the light industry, the treatment of organic waste gases from shoe-making and glue-coating; and the treatment of organic waste gases from printing and color printing. It is also applicable to the treatment of organic waste gases generated in various places, such as the metallurgical and steel industry, the production of carbon electrodes, the chemical industry, the synthesis of chemical processes (ABS synthesis), and the petroleum refining process.

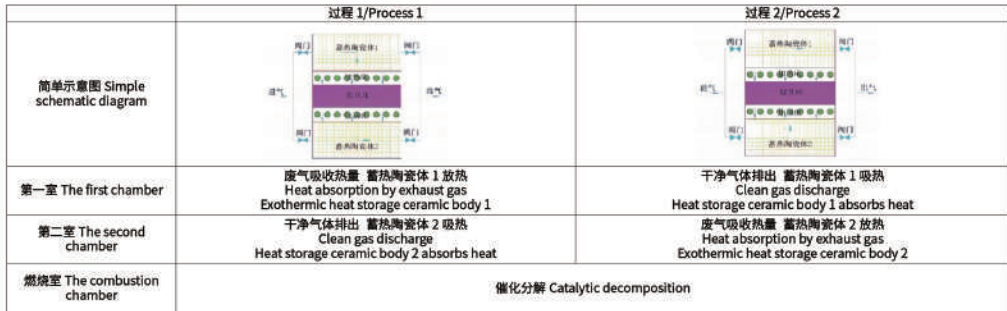
三、工作原理 OPERATING PRINCIPLE

炉体在进行废气处理之前, 先将加热室、蓄热床进行预热。预热完毕后, 将废气源接入设备。有机废气在配套风机作用下, 首先经预热的蓄热陶瓷体 1: 进行热交换, 废气经过一次提温后进入加热区, 在加热区废气得到第二次提温, 此时废气温度达到与催化剂反应的温度要求后进入催化室进行反应, 生成二氧化碳与水排出并释放热能。处理后的洁净气体再经过蓄热陶瓷体 2 进行蓄热由风机排出。经排风机进口测温棒进行温度检测后达到设定温度时, 进行阀门切换由蓄热陶瓷体 2 进入废气、由蓄热陶瓷体 1 排出, 如此循环往复。



Before starting the process of waste gas treatment, the heating chamber and heat storage bed of the furnace are preheated. After preheating, the waste gas source is connected to the equipment. Under the action of the matching fan, the organic waste gas first undergoes heat exchange with the preheated heat storage ceramic body 1, enters the heating zone after a temperature increase, and then receives a second temperature increase in the heating zone until the temperature of the waste gas reaches the temperature required for the catalytic reaction. The waste gas enters the catalytic room to react, generating carbon dioxide and water, and releasing heat energy. The treated clean gas undergoes heat storage with the heat storage ceramic body 2 and is discharged by the fan. After reaching the set temperature through temperature detection with an inlet thermocouple for the exhaust fan, the valve is switched, and the waste gas enters the heat storage ceramic body 2, which is then discharged from the heat storage ceramic body 1. This cycle repeats continuously.

四、工艺流程 PROCESS FLOW



五、技术特点 TECHNICAL FEATURES

1. 无二次污染, 由于在 250 ~ 500C 低温氧化分解, 无 NOX 产生;
 2. 净化效率高, 二室可达 95%, 三室可达 98% 以上;
 3. 能耗低, 采用先进的蓄热换热技术, 耗能低至 8W · HR/NM³;
 4. 自动化程度高、运行安全可靠、管理方便。
 5. RCO 具有排烟温度低、运行费用低的优点, 其热回收效率 - 一般均可达 95% 以上。
1. No secondary pollution, no NOx generated due to low-temperature oxidation and decomposition at 250 ~ 500C.
 2. High purification efficiency, up to 95% for two chambers and over 98% for three chambers.
 3. Low energy consumption, using advanced heat storage and heat exchange technology, energy consumption can be as low as 8W · Hr/Nm³.
 4. High degree of automation, safe and reliable operation, and easy management.
 5. RCO has the advantages of low exhaust gas temperature and low operating costs, and its thermal recovery efficiency can generally reach over 95%.

六、设备选型 EQUIPMENT SELECTION

型号 Model	RCO-10	RCO-15	RCO-20	RCO-30	RCO-40	RCO-50	RCO-60	RCO-80	RCO-100	RCO-150	RCO-180	RCO-200
处理风量 Treatment air volume (m³/h)	1000	1500	2000	3000	4000	5000	6000	8000	10000	15000	18000	20000
处理废气种类 Type of waste gas to be treated	苯、酮、酯、醇、醚、醛、酚等各种有机废气和臭气 Benzene, ketone, fat, alcohol, ether, aldehyde, phenol and other organic waste gases and odors.											
催化温度 Catalytic temperature	300°C~500°C											
净化效率 Purification efficiency	≥ 99%											
防爆形式 Explosion-proof form	膜片式 Membrane type											
蓄热体用量 Amount of heat accumulator (L)	288	512	548	970	1160	1570	1800	2600	3200	4610	5410	6280
催化剂用量 Amount of catalys (L)	72	128	162	242	288	392	450	648	800	1160	1360	1570
加热功率 Heating power (kw)	30	36	42	54	65	75	90	120	150	200	250	300
长 Length L(mm)	1350	1650	1800	2100	2300	2600	2700	3200	3500	4100	4400	4700
宽 Width B(mm)	1350	1650	1800	2100	2300	2600	2700	3200	3500	4100	4400	4700
高 HeightH(mm)	2600	2700	2800	3100	3200	3300	3500	4000	4500	5000	6000	6500
风管 Air duct(mm)	φ200	φ220	φ250	φ300	φ350	φ400	φ450	φ500	φ600	φ700	φ750	φ800

说明:表中参数仅供参考, 若有特殊要求, 可根据实际情况设计。
注: 1、其他风量规格可另行设计; 2、如需燃料预热, 订货时强调说明; 3、可以设计二室体、三室RCO。
Remark: The parameters in the table are for reference only. If there are special requirements, the design can be based on the actual situation.
Note 1: Other air volume specifications can be designed separately.
Note 2: If fuel preheating is required, it should be emphasized when ordering.
Note 3: The RCO can be designed with two chambers or three chambers.



LQ-TF

变频式沸石转轮(筒式)/VARIABLE FREQUENCY ZEOLITE TURTLE (DRUM TYPE)

一、变频式沸石转轮概述 OVERVIEW OF VARIABLE FREQUENCY ZEOLITE TURTLE

我公司的沸石浓缩转轮使用组合式沸石模块，沸石含量高，具有吸附率高，吸附速度快。
经独有的工艺加工而成，使得在脱附阶段的耐受温度更高，脱附更为彻底。结构的特殊性，使得后期的沸石模块更换简单便捷。

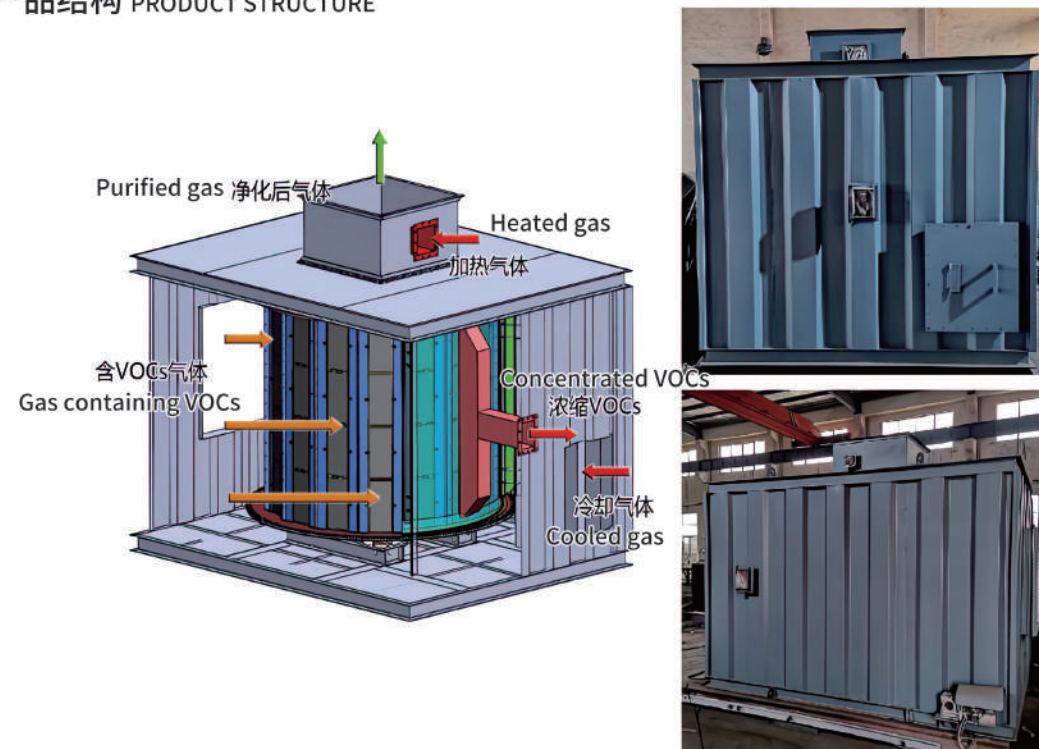
Our company's zeolite concentration turntable uses a combination of zeolite modules, with a high zeolite content and high adsorption rate, and fast adsorption speed. It is processed by unique technology to make it more thermally tolerant during desorption and more thoroughly desorbed. Due to the special structure, the replacement of zeolite modules in the later stage is simple and convenient.

二、适用行业与范围 APPLICABLE INDUSTRIES AND SCOPE

适用的VOCs Applicable VOCs	苯、甲苯、二甲苯、乙醇、异丙醇、丁醇、MEK、MIBK、丙酮、环己酮、NMP、乙酯、丙酯、J酯及各种氯体系溶剂等。 benzene, toluene, xylene, ethanol, isopropanol, butanol, MEK, MIBK, acetone, cyclohexanone, NMP, esters, propionates, J-esters, and various chlorinated solvent systems.
应用行业 Application industries	油漆喷涂、印刷、医药化工、半导体制造等。 painting, printing, pharmaceuticals, semiconductor manufacturing, etc.

注意事项:气体中含聚合物及粘性物质需在前处理中处理，否则会造成吸附剂微孔结构的阻塞，导致吸附剂失效。
Note: Polymer and viscous substances in the gas need to be treated in the pretreatment stage, otherwise it will cause blockage of the adsorbent microporous structure, resulting in the failure of the adsorbent.

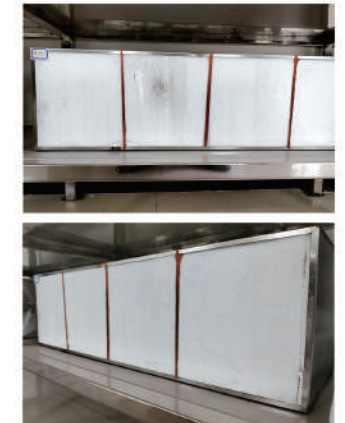
三、产品结构 PRODUCT STRUCTURE



四、设备特点与优势 EQUIPMENT FEATURES AND ADVANTAGES

- 1、高性能、高效率:将吸附性能极好的疏水性分子筛作为吸附剂使用，对于范围广泛的VOCs种类，不同的各种运转条件，都可以充分提供足够的性能。
- 2、高沸点溶剂的处理:使用疏水性沸石分子筛，利用不燃性、高耐热性的特点可以在高温条件先再生。因此，对于使用活性炭时因为有再生温度的限制而无法处理的高沸点VOCs，也能够处理。
- 3、惰性:即使是苯乙烯和环己酮等具有热聚合性高的VOCs，也能使用疏水性的分子筛高效率的进行处理。
- 4、清洗和活化:沸石分子筛转桶因为是在高温下烧结处理而成的，完全是无机物的结合体。如果发生蜂窝通路堵塞时，可以进行水洗。另外，分子筛转桶也可以根据实际情况通过热处理进行高温活化。

1. High performance and efficiency: Using hydrophobic molecular sieves with excellent adsorption performance as an adsorbent can provide sufficient performance for a wide range of VOCs types and different operation conditions.
2. Processing of high boiling point solvents: Using hydrophobic zeolite molecular sieves, which are non-flammable and highly heat-resistant, can regenerate at high temperatures. Therefore, it can also process high boiling point VOCs that cannot be processed due to the temperature limitation when using activated carbon.
3. Inertness: Even VOCs with high thermal polymerization properties, such as styrene and cyclohexanone, can be effectively processed using hydrophobic molecular sieves.
4. Cleaning and activation: The zeolite molecular sieve turntable is completely an inorganic complex formed by sintering at high temperature. If the honeycomb pathway is blocked, it can be washed with water. In addition, the molecular sieve turntable can be activated at high temperature through heat treatment according to actual conditions.



五、产品编号 PRODUCT NUMBER

LQ	TFC	2000	16	10
• 绿泉公司产品 Lv Quan company products	• 筒式沸石浓缩转轮 Variable Frequency Zeolite Turntable (Drum Type)	• 处理风量 Handling air capacity • 2000 • 3000 • 4000 • 5000	• 转轮扇区数 Number of Rotor Sectors • 16 • 20 • 24 • 28 • 36	• 浓缩倍率 Concentration ratio • 5 • 8 • 10

例Example: LQ-TFC-20001610

解读:绿泉公司筒式沸石浓缩转轮处理风量20000m³/h,处理扇区数16区，浓缩倍率10倍。

Interpretation: Lv Quan's drum-type zeolite concentration turntable processes an air volume of 20000m³/h, has 16 processing sections, and a concentration ratio of 10 times.

六、部分选型 PARTIAL SELECTION

型号 Model	处理风量 Handling air capacity (Nm³/h)	L(mm)	W(mm)	H(mm)	重量 Weight(T)
LQ-TFC-20001610	20000	3200	2500	2150	3.6
LQ-TFC-25002010	25000	3450	2750	2150	4.3
LQ-TFC-30002410	30000	3750	3050	2150	5.1
LQ-TFC-40002410	40000	3750	3050	2550	5.9
LQ-TFC-50002410	50000	3750	3050	2950	6.6
LQ-TFC-60002410	60000	3750	3050	3350	7.4
LQ-TFC-100003610	100000	4550	3850	3750	11.8



LQ-TT

变频式活性炭转轮(筒式)/ INVERTER TYPE ACTIVATED CARBON ROTOR (CARTRIDGE TYPE)

一、变频式活性炭转轮概述 OVERVIEW OF INVERTER TYPE ACTIVATED CARBON RUNNER

绿泉公司的活性炭浓缩转轮使用纯煤质活性炭，碳含量高达98.5%，具有吸附效率更高，吸附速度更高的特点。经特殊工艺加工而成，使得在脱附阶段的耐受温度更高，脱附更为彻底，相对于传统的固定箱活性炭吸附装置具有吸附能力更强、结构更为紧凑、活性炭使用寿命更长的优势。

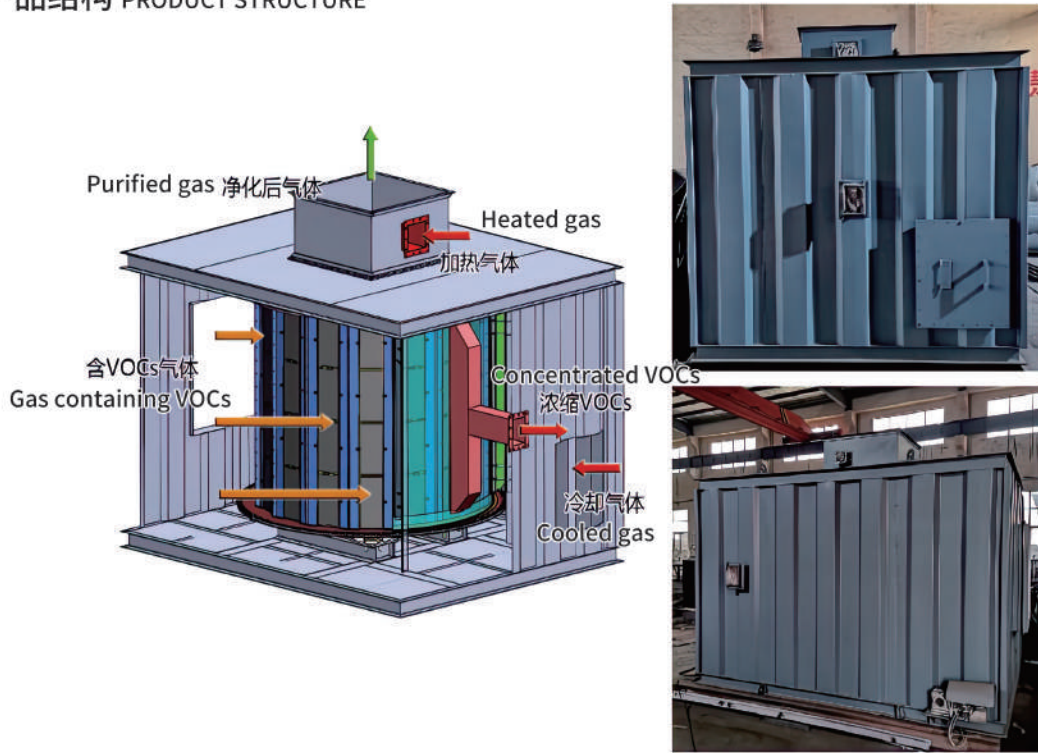
Lv Quan's activated carbon concentrator rotor uses pure coal activated carbon with a carbon content of 98.5%, which has the characteristics of higher adsorption efficiency and higher adsorption speed. It is processed by special technology, which makes the desorption stage withstand higher temperature and more complete desorption. Compared with the traditional fixed box activated carbon adsorption device, it has the advantages of stronger adsorption capacity, more compact structure and longer service life of activated carbon.

二、适用行业与范围 APPLICABLE INDUSTRIES AND SCOPE

适用的VOCs Applicable VOCs	苯、甲苯、二甲苯、乙醇、异丙醇丁醇MEK、MIBK、NP、乙酯、丙酯丁酯及各种每体系溶剂等。 Benzene, toluene, xylene, ethanol, isopropanol, butanol, MEK, MIBK, NP, esters, butyl acetate, and various solvent systems.
应用行业 Application industries	油漆喷涂、印刷、医药化工、半导体制造等。 painting, printing, pharmaceuticals, semiconductor manufacturing, etc.

注意事项:气体中含聚合物及粘性物质需在预处理设备中处理掉，否则会造成吸附剂微孔结构的阻塞，导致吸附剂失效。
Note: Polymers and viscous substances in the gas need to be treated in the pretreatment equipment, otherwise, they may block the microporous structure of the adsorbent and render the adsorbent ineffective.

三、产品结构 PRODUCT STRUCTURE



四、产品编号 PRODUCT NUMBER

LQ	TTC	1000	16	10
•绿泉公司产品 Lv Quan company products	•筒式活性炭浓缩转轮 Cartridge type activated carbon concentration rotor	•处理风量 Handling air capacity •1000 •2000 •3000 •4000 •5000	•转轮扇区数 Number of Rotor Sectors •16 •20 •24 •28 •36	•浓缩倍率 Concentration ratio •5 •8 •10

例Example: LQ-TTC-10001610
解读:绿泉公司筒式活性炭浓缩转轮处理风量10000m³/h,处理扇区数16区，浓缩倍率10倍。
Interpretation: Lv Quan's cylinder-type activated carbon concentration rotor has a processing air volume of 10000m³/h, a processing sector of 16 zones, and a concentration multiplier of 10 times.

五、部分选型 PARTIAL SELECTION

型号 Model	处理风量 Handling air capacity (Nm³/h)	L(mm)	W(mm)	H(mm)	重量 Weight(T)
LQ-TTC-10001610	10000	3200	2500	2150	3.6
LQ-TTC-15002410	15000	3750	2500	2150	5.1
LQ-TTC-20002410	20000	3750	3050	2550	5.8
LQ-TTC-25002410	25000	3750	3050	2950	6.5
LQ-TTC-30002810	30000	3950	3300	2950	7.5
LQ-TTC-40002810	40000	3950	3300	3750	9.1
LQ-TTC-50003610	50000	4550	3850	3750	11.6



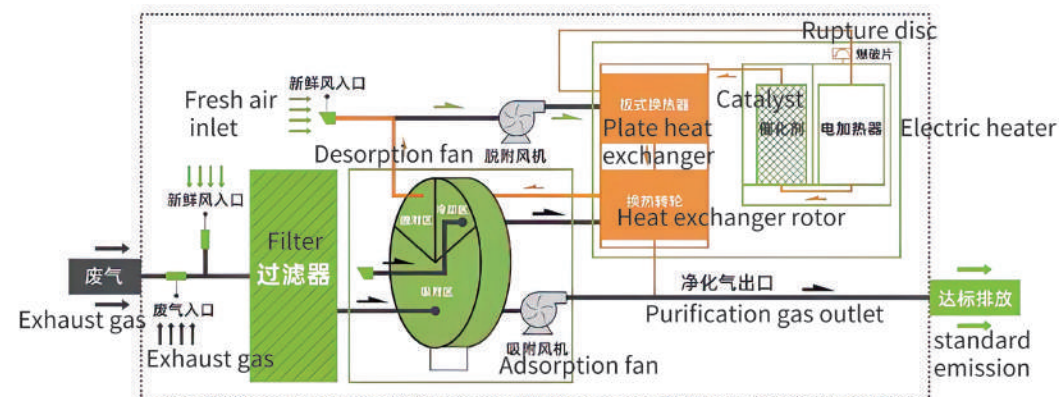
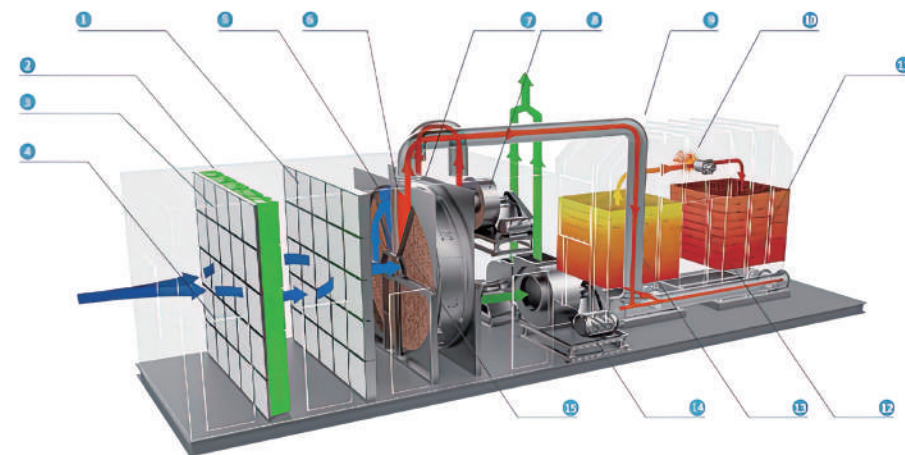
LQ-YFCO

有机废气处理设备一体机系统/INTEGRATED SYSTEM FOR ORGANIC WASTE GAS TREATMENT

一、有机废气处理设备一体机概述 OVERVIEW OF INTEGRATED SYSTEM FOR ORGANIC WASTE GAS TREATMENT

有机废气处理一体机是由过滤器、沸石转轮、吸附风机、脱附风机、换热器、催化燃烧炉有机融合一体的系统设备。沸石浓缩转轮利用“吸附-脱附-冷却”三个分区循环运行模式，首先大风量的吸附风机把车间内的VOCs经过过滤箱过滤掉大颗粒物，而后经过沸石分子筛转轮吸附，通过沸石转轮的气体可直接排放。吸附有大量VOCs的分子筛转轮进入高温脱附区，小风量的热空气(温度约200-220°C)将沸石转轮上的VOCs分子脱附出来转换成高浓度废气，浓缩倍数一般3-20倍。吸附完成之后利用脱附风机送入后端的CO/RCO系统或TO/RTO系统进行燃烧处理;再生后的沸石分子筛转轮在冷却区被冷却。经过冷却区的空气，经过加热后作为再生空气使用，达到节能的效果。

The Integrated System for Organic Waste Gas Treatment is a system that integrates a filter, zeolite wheel, adsorption fan, desorption fan, heat exchanger, catalytic combustion furnace, and other equipment into one. The zeolite concentration wheel operates on a cycle of "adsorption-desorption-cooling" in three zones. First, the high-volume adsorption fan filters out large particles from VOCs in the workshop through a filter box. The VOCs are then adsorbed by the zeolite molecular sieve wheel, and the gas from the zeolite wheel can be directly discharged. The sieve that absorbs a large amount of VOCs enters the high-temperature desorption zone, where a low-volume stream of hot air (with a temperature of about 200-220°C) removes the VOCs from the zeolite wheel, resulting in a high-concentration waste gas with a concentration multiplication factor typically ranging from 3 to 20. After adsorption, the desorption fan sends the waste gas to the back-end CO/RCO system or TO/RTO system for combustion treatment. The regenerated zeolite molecular sieve wheel is cooled in the cooling zone. The air passing through the cooling zone is heated and used as regenerating air, achieving energy-saving effects.



二、适用行业与范围 APPLICABLE INDUSTRIES AND SCOPE

应用行业 Application industries	涂装、制药、化工、涂布等多种行业 Multiple industries such as coating, pharmaceuticals, chemical engineering, and coating.
浓度范围 Concentration Range	100-500 MG/M ³ (2-12%LEL)
处理风量 Processing Air Volume	6000-50000 M ³ /H.

三、有机废气处理设备一体机的特点 CHARACTERISTICS OF THE INTEGRATED SYSTEM FOR ORGANIC WASTE GAS TREATMENT

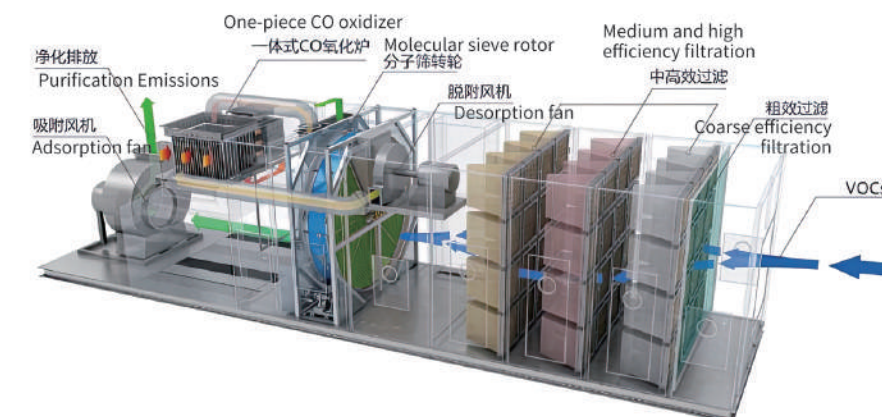
- 净化效率高：转轮吸附理论去除率高达 98.5% (特殊成分除外)。
脱附效率高：沸点低于 220°C 的有机物基本可以脱出。
占地面积小：与同类吸附法治理成套设备相比较小。
消防风险低：与活性炭吸附相比沸石转轮无可燃性，脱附过程中无着火风险。
快吸快脱：吸附时间短易饱和脱附效率高周期短。
1. High Purification Efficiency: Theoretical removal efficiency of the wheel adsorption method is up to 98.5% (excluding special components).
 2. High Desorption Efficiency: Organic substances with boiling points below 220°C can be desorbed.
 3. Small Footprint: The system has a smaller footprint compared to other complete sets of adsorption equipment.
 4. Low Fire Risk: Compared with activated carbon adsorption, the zeolite wheel has no flammability, and there is no risk of ignition during the desorption process.
 5. Fast Adsorption and Desorption: The short adsorption time, high saturation point, high desorption efficiency, and short cycle time make the system work quickly.

四、设备选型 EQUIPMENT SELECTION

规格 Specification	处理风量 Handling air capacity (Nm ³ /h)	处理浓度 Treatment concentration (mg/Nm ³)	设备占地尺寸 Equipment area size (m)	装机功率 Installed power (Kw)
LQ-1000	10000	100-500	13×3	100
LQ-2000	20000	100-500	13×3	110
LQ-3000	30000	100-500	14×3	140
LQ-4000	40000	100-500	15×3.5	150
LQ-5000	50000	100-500	15×3.5	190

注: 1、上述表格参数以常规喷涂废气组分、浓度为依据，实际选型需与本公司进行确认。
2、上表催化加热方式为电加热，工程应用中催化燃烧加热方式可选择电加热或者燃料加热。

Note: 1. The above table parameters are based on the components and concentrations of conventional spray waste gas, and the actual selection needs to be confirmed with our company.
2. The heating method for catalytic combustion in the above table is electric heating, but the heating method for catalytic combustion can be selected as electric heating or fuel heating in engineering applications.



LQ-ACF

活性炭纤维有机溶剂净化回收装置

OVERVIEW OF ACTIVATED CARBON FIBER ORGANIC SOLVENT PURIFICATION RECOVERY DEVICE

一、活性炭纤维有机溶剂净化回收装置概述 INTRODUCTION

活性炭纤维有机溶剂净化回收系统简称 ACF。VOC-ACF 系列有机溶剂净化回收装置是利用优质活性炭纤维作吸附介质，采用微电脑、全自动控制，并采取减振、隔声、防爆、超温、超压保护措施，安全性好、重量轻、占地面积小、运行操作简单、性能可靠，是一台机电一体化的净化处理有机废气、回收有机溶剂的新一代环保成套装置。

The Activated Carbon Fiber Organic Solvent Purification Recovery System (ACF) is a new generation of environmentally-friendly equipment for the purification and recovery of organic waste gas equipped with high-quality activated carbon fibers as the adsorption medium. The VOC-ACF series of organic solvent purification recovery devices use microcomputers and automatic controls, as well as measures such as shock absorption, sound insulation, explosion prevention, over-temperature and over-pressure protection for good safety performance, light weight, small footprint, easy operation, and reliable performance.

二、适用行业与范围 APPLICABLE INDUSTRIES AND SCOPE

本系统适用于机械、电子、化工、医药、轻工、印刷、造船、电器等行业处理集中排放的 (-10°C ~+15°C) 有机废气，有机溶剂的种类可以是下列一种或几种混合溶剂。

芳香族类：苯、甲苯、二甲苯、苯乙烯等；

酮类：丙酮、环己酮、甲乙酮等；

酯类：醋酸乙酯类、醋酸丁酯、异戊酸甲酯、香蕉水；

醇类：甲醇、乙醇、异丙醇等；

石油类：挥发性汽油、柴油等。

This system is applicable to the centralized discharge of (-10°C to +15°C) organic waste gas in industries such as mechanical, electronic, chemical, pharmaceutical, light industry, printing, shipbuilding, and electrical appliances. The types of organic solvents that can be purified and recovered include the following single or mixed solvents:

-Aromatic hydrocarbons: benzene, toluene, xylene, styrene, etc.

-Ketones: acetone, cyclohexanone, methyl ethyl ketone, etc.

-Esters: ethyl acetate, butyl acetate, methyl isobutyl ketone, banana oil, etc.

-Alcohols: methanol, ethanol, isopropyl alcohol, etc.

-Petroleum products: volatile gasoline, diesel, etc.

三、技术参数及性能特点 TECHNICAL PARAMETERS AND PERFORMANCE CHARACTERISTICS

参数 Parameter	型号 Model	WOV-TXW-40 型 SERIES	WOV-TXW-60 型 SERIES	WOV-TXW-80 型 SERIES	备注
处理废气量 Volume of treated exhaust gas(Nm³)		3000-4000	4500-6000	6000-8000	
处理废气浓度 Exhaust gas concentration(mg/m³)		≤4000			温度(-10~15°C)
外形尺寸 Dimension(mm)		2300×2200×3600	3200×2700×4100	4200×2800×4700	
阻力 Resistance (Mpa)		0.3-0.5	0.3-0.5	0.3-0.5	
电功率 Electric power(KW)		11	18.5	28	
进口中心高 Inlet center height(mm)		735	915	119.5	
水流量 Water Flow	压力 Pressure(Mpa)	0.1	0.1	0.1	
	用量 Consumption(m³/h)	15	40	60	
解吸蒸汽 Desorption steam	压力 Pressure(Mpa)	0.4	0.4	0.4	
	用量 Consumption(m³/h)	20-50	60-100	150-230	
压缩空气 Compressed air	压力 Pressure(Mpa)	0.4-0.5	0.4-0.5	0.4-0.5	
	用量 Consumption(m³/h)	0.3	0.36	0.45	
设备重量(kg)		2800	3900	5100	

四、设备特点与优势 EQUIPMENT CHARACTERISTICS AND ADVANTAGES

- 1、装置采用比表面积大 (1000~ 1500m²/G)、微孔结构均匀的活性炭纤维作为吸附材料，具有净化效率高，吸附材料填充量少的优点。
- 2、有机溶剂的吸附、脱附时间短、速度快、回收的溶剂品质好。
- 3、整套设备运行采用微电脑程序控制，同时，具备手动、自动两种操作方式，可任意选择。运行操作简单，可靠性强。
- 4、系统所有设备、部件采用组合装配式，结构紧凑。安装方便，占地面积小。
- 5、对系统中的有关设备采取减振、隔声、防爆、超温、超压保护措施，运行安全性好，适于安装在车间地面、楼板及屋顶等各种场合。
- 6、风量根据用户的要求进行设计。

1. The device uses activated carbon fibers with a large specific surface area (1000~1500m²/g) and uniform microporous structure as the adsorption material, which has the advantages of high purification efficiency and less filling amount of adsorption materials.
2. The adsorption and desorption time of organic solvents are short, the speed is fast, and the quality of recovered solvents is good.
3. The entire system is controlled by microcomputer programs and can be operated manually or automatically, with easy operation and high reliability.
4. The equipment and components in the system are assembled in a compact structure, which is easy to install and occupies a small area.
5. Vibration reduction, sound insulation, explosion prevention, over-temperature, and over-pressure protection measures are adopted for all equipment and components in the system, ensuring safe operation and suitability for installation in various locations such as workshop floors, floors, and roofs.
6. The air flow rate is designed according to the user's requirements.

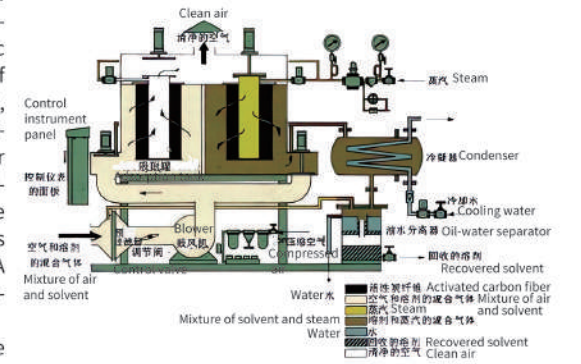
五、工艺流程及工作原理 PROCESS FLOW AND WORKING PRINCIPLE

本装置的工作原理是利用微孔活性物质对溶剂分子或分子团的吸附力，当工业废气通过吸附介质时，其中的有机溶剂即被“阻留”下来。从而使有机废气得到净化处理。又根据分子热运动理论，从外界加给吸附体系热能，提高了被吸附分子或分子团的热运动能量，当分子热运动力足以克服吸附力时，有机溶剂分子便从吸附体系“挣脱”出来，吸附介质得到再生。本装置设有 A、B 两组填充活性炭纤维毡的吸附器，循环进行吸附 - 饱和 - 脱附 - 再生过程。

有机溶剂存在的状态取决于环境的温度和压力。从吸附器脱附出来的有机溶剂，在高温状态下所受的压力低于或接近对应温度下的饱和蒸汽分压力，处于气体状态。经过冷凝器 (热交换器) 使其温度降低，与此温度相对应的饱和蒸汽压也随之降低，系统中的压力将远远高于有机蒸汽分压力，有机溶剂便凝结为液态。溶剂与凝结水混合液自流进入分离器。多数有机溶剂不溶或微溶于水。利用溶剂与水的比重差及重力分离原理，从分离器中回收有机溶剂，凝结水经排气处理后排放。

The working principle of this device is based on the adsorption force of microporous active materials on solvent molecules or clusters. When industrial waste gas passes through the adsorption medium, the organic solvents in it are "trapped" and removed, resulting in the purification of organic waste gas. According to the theory of molecular thermal motion, when thermal energy is added to the adsorption system from the outside, it increases the thermal motion energy of adsorbed molecules or clusters. When the thermal motion force is sufficient to overcome the adsorption force, the organic solvent molecules will "break free" from the adsorption system, and the adsorption medium will be regenerated. This device has two sets of adsorbers filled with activated carbon fiber felts, A and B, for cyclic adsorption-saturation-desorption-regeneration processes.

The state of organic solvents depends on the temperature and pressure of the environment. The organic solvents dissociated from the adsorber are in a gaseous state when the pressure they experience at high temperature is below or close to the saturation vapor pressure corresponding to the temperature. After the temperature of the organic solvents is lowered through a condenser (heat exchanger), the corresponding saturation vapor pressure also decreases, and the pressure in the system will be much higher than the organic vapor pressure; the organic solvents condense into a liquid. The solvent and condensate mixed liquid flows into the separator. Most organic solvents are insoluble or slightly soluble in water. The organic solvents are recovered from the separator by utilizing the principle of gravity separation based on the difference in specific gravity between solvents and water. The condensate is discharged after explosion-proof treatment.



LQ-ACA

颗粒活性炭净化回收设备

ACTIVATED CARBON PARTICLE PURIFICATION AND RECOVERY EQUIPMENT

一、颗粒活性炭净化回收设备概述 OVERVIEW

颗粒活性炭净化回收设备简称 ACA。VOC-ACA 系列有机气体颗粒碳净化回收设备对苯、醇、酮、醚、酚、汽油等有机废气吸附回收和再利用。

The VOC-ACA series organic gas particle carbon purification and recovery equipment is used for the absorption, recovery, and reuse of organic waste gases, such as benzene, alcohol, ketone, ether, phenol, gasoline, etc.

二、适用范围 APPLICATION RANGE

适用于化工、轻工、印刷、橡胶、家具、机电、船舶、汽车、石油等行业；
适用于其他需要回收挥发性有机溶剂行业；
适用于大流量、中高浓度、低温度有机气体。

Applicable to industries such as chemical, light industry, printing, rubber, furniture, electromechanical, shipbuilding, automobiles, and petroleum.
Applicable to other industries that require the recovery of volatile organic solvents.
Applicable to large air volume, medium to high concentration, and low temperature organic gases.

三、工作原理 WORKING PRINCIPLE

吸附过程：废气经空气过滤器出去微小悬浮颗粒后进入罐内，通过填装在罐内的颗粒状活性炭吸附过滤后再由后置风机排空（如气体的浓度较高时可采用多节吸附装置，保证气体达标排放）。脱附过程：活性炭使用一段时间后活性炭处于饱和状态，此时需对活性炭进行再生处理，脱附再生选用加温解析法，将 0.5MPa 高温蒸汽自塔底喷入罐内将有机物从活性炭中剥离，剥离后的气体通过配套的冷凝器降温后进入分离桶，分离回收有机溶剂，残液进曝气桶，经曝气后排出（如需回收高精度溶剂，可在分离桶后置一套精馏设备）。

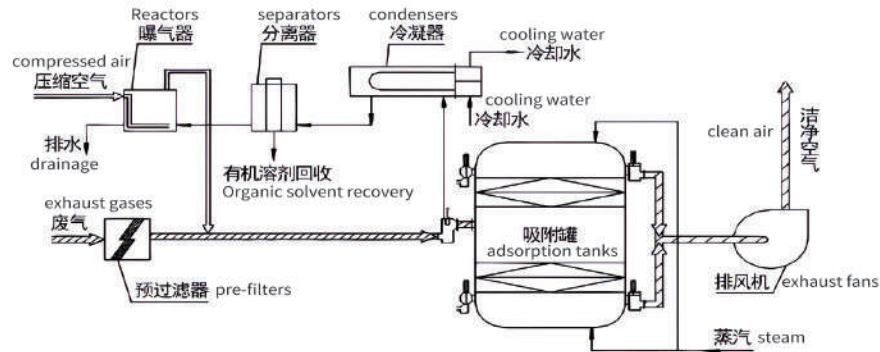
Adsorption process: The waste gas passes through an air filter to remove tiny suspended particles before entering the tank. The gas is then filtered through the activated carbon particles packed in the tank and emptied by the rear fan (if the gas concentration is high, a multi-stage adsorption device can be used to ensure that the gas meets emission standards).

Desorption process: When activated carbon is saturated after a certain period of use, it needs to be regenerated. The desorption and regeneration process uses a heating and analysis method. High-temperature steam at 0.5 Mpa is injected from the bottom of the tower into the tank to detach organic substances from the activated carbon. The detached gas passes through a matching condenser to cool down and enter the separation tank. The organic solvents are recovered during separation, while the remaining solution is aerated and discharged (if high-precision solvents need to be recovered, a distillation device can be added to the separation tank).

四、结构特点 STRUCTURAL FEATURES

设备主要由：吸附罐、截止阀、过滤器、冷凝器、曝气桶、蒸汽管路、给排水管路、风机及配套管道等部件组成。采用低压蒸汽为解析介质，必要时可配备蒸汽过滤器提高蒸汽温度，以用于较高沸点的溶剂解析。设备设有多种安全措施，风机过载保护、碳层超温保护、防火连锁、止回阀。正常使用时能耗低，仅为排风机功率。

The equipment mainly consists of adsorption tanks, shut-off valves, filters, condensers, aerating tanks, steam pipelines, water supply and drainage pipelines, fans, and supporting pipelines. Low-pressure steam is used as the desorption medium. When necessary, a steam filter can be equipped to increase the steam temperature for the analysis of solvents with higher boiling points. The equipment has multiple safety measures, such as fan overload protection, carbon layer overheating protection, fire interlocking, and check valves. The energy consumption is low during normal use, only requiring the power of the exhaust fan.



五、设备选型 EQUIPMENT SELECTION

5.1 单层活性炭技术参数及外形尺寸

Technical parameters and external dimensions of single-layer activated carbon

系列规格 Series specification		XF-I-1000	XF-I-1800	XF-I-3000	XF-I-5000	XF-I-7000	XF-I-8000	XF-I-10000
设计处理风量 Design treatment air volume (m³/h)		1000	1800	3000	5000	7000	8000	10000
吸附罐直径 Diameter of adsorption tank Dg (mm)		φ800	φ1000	φ1100	φ1600	φ1800	φ2000	φ2100
活性炭充填量 Activated carbon filling capacity(kg/罐 tank)		100	200	300	380	500	750	800
冷凝器冷却水耗量 Cooling water consumption of condenser (m³/h)		2	3	5	8	12	15	16
压缩空气压力及耗量 Compressed air pressure and consumption		1kg/cm² 少量 little	同左 Same as left	同左 Same as left	同左 Same as left	同左 Same as left	同左 Same as left	同左 Same as left
风机型号 Fan model		9-19,4A	9-19,4.5A	9-19,4.5A	9-19,5A	9-19,5.6A	9-19,5.6A	9-19,6.3A
电机型号 Motor model		Y-2P2.2KW	Y-2P 4KW	Y-2P 5.5KW	Y-2P 15KW	Y-2P 22KW	Y-2P30KW	Y-2P45KW
解热蒸汽耗量 Desorption steam consumption kg/h (4kg/cm²)		30	45	75	100	130	150	180
外形尺寸 Dimension (mm)	A		3400	4200	5100	6000	5800	7000
	B		2900	3100	3400	3920	4500	6000
	H		100	120	140	160	160	160
装置总重 Total weight of the device			3.2T	3.8T	4.8T	5.2T	8.5T	9.5T

5.2 双层活性炭技术参数及外形尺寸

Technical parameters and external dimensions of double-layer activated carbon

系列规格 Series specification		XF-II-5000	XF-II-8000	XF-II-10000	XF-II-15000	XF-II-30000
设计处理风量 Design treatment air volume (Nm³/h)		5000	8000	10000	15000	30000
吸附罐直径 Diameter of adsorption tank D(mm)		1500	1800	2000	另定 Separately determined	另定 Separately determined
外形尺寸 Outline dimensions	A(mm)	3800	4500	4900	另定 Separately determined	另定 Separately determined
	B(mm)	3000	3500	3800	另定 Separately determined	另定 Separately determined
	C(mm)	1000	1100	1100	另定 Separately determined	另定 Separately determined
	H(mm)	4200	4600	5000	另定 Separately determined	另定 Separately determined
净化系统 Purification system	进口 Inlet φmm	400	530	560	另定 Separately determined	另定 Separately determined
	出口 Outlet φmm	280	380	400	另定 Separately determined	另定 Separately determined
干燥系统 Drying system	进口 Inlet φmm	280	380	400	另定 Separately determined	另定 Separately determined
	出口 Outlet φmm	200	280	300	另定 Separately determined	另定 Separately determined
活性炭充填量(单罐) Activated carbon filling capacity (single tank) kg		另定	另定	另定	另定 Separately determined	另定 Separately determined
解析蒸汽耗量 Consumption of analysis steam (0.4MPa)kg/h		350	460	550	另定 Separately determined	另定 Separately determined
冷却水耗量 Cooling water consumption (t1=30°C,t2=36°C)³m/h		22	30	35	另定 Separately determined	另定 Separately determined
压缩空气 Compressed air (0.4MPa)		少量 Few	少量 Few	少量 Few	少量 Few	少量 Few
电力装机总功率(蒸汽过热器) Total power installed (steam superheater) KW		另定 Separately determine	另定 Separately determine	另定 Separately determine	另定 Separately determined	另定 Separately determined
净化效率 Purification efficiency		≥90%	≥90%	≥90%	另定 Separately determined	另定 Separately determined
每套设备重量 Weight of each set of equipment (T)		7.5	9.5	12	另定 Separately determined	另定 Separately determined



LQ-TT-CO

气气换热器/AIR TO AIR HEAT EXCHANGER

一、产品介绍 PRODUCT INTRODUCTION

气体换热器主要用于节能减排产业中各行业烟气的余热回收及各工艺系统中所必须的热量置换。通过热量置换使废热烟气降温，热量回用系统从而达到节能的目的，进而提高企业经济效益，降低运行成本，提高竞争力。已经成功用于各个 VOCS 处理设备。

Gas heat exchanger is mainly used for energy saving and emission reduction industries in the waste heat recovery of flue gas in various industries and the heat replacement necessary in various process systems. Through heat replacement to make the waste heat flue gas cooling, heat reuse system so as to achieve the purpose of energy saving, and then improve the economic efficiency of enterprises, reduce operating costs and improve competitiveness. Has been successfully used in various VOCS treatment equipment.

二、气体板式换热器特点 THE GAS PLATE HEAT EXCHANGER FEATURES

- 1、适用范围广：换热组件全为不锈钢材质，能满足低温到高温工况要求；

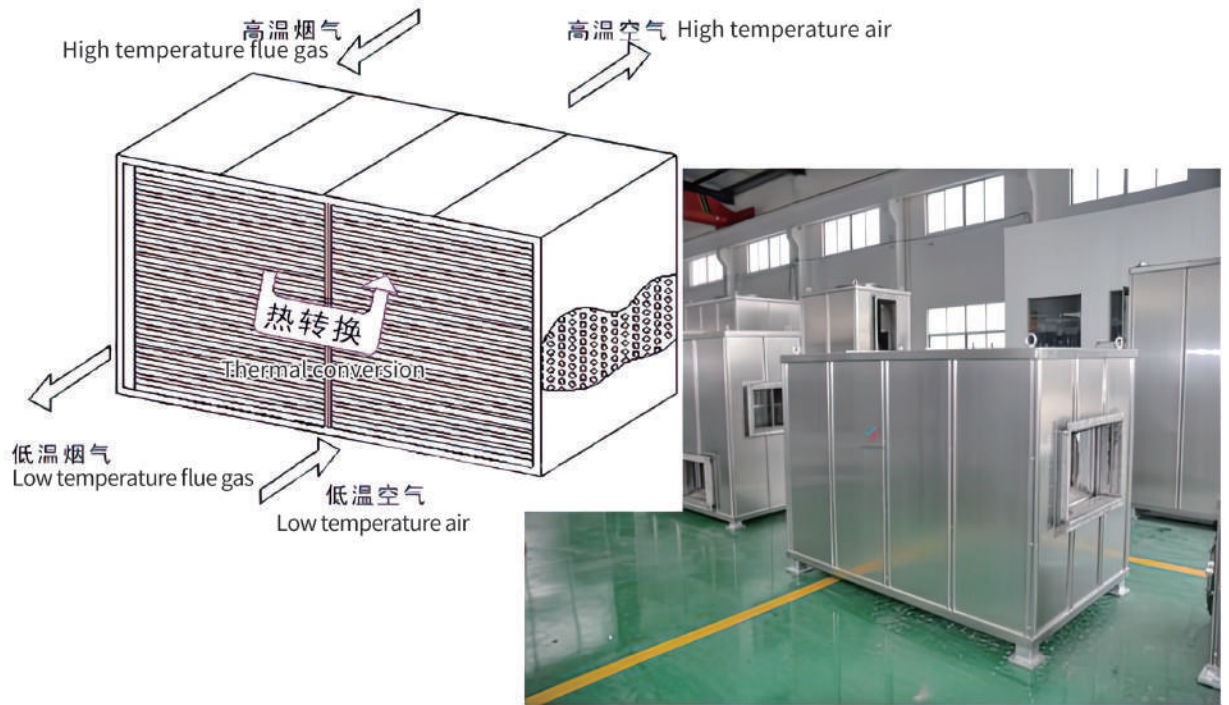
2、安全可靠：设备整体弹性设计能克服高温环境下材质热膨胀产生的热应力，且设备在制作完成后会进行压力试验，确保无泄漏才能合格出车间；

3、占地面积小：换热器与废气处理系统进行整体设计、安装。充分利用空间，减少现场用地。
- 1、Wide range of application: Heat exchanger components are all stainless steel, to meet the requirements of low to high temperature working conditions.

2, safe and reliable: the overall elastic design of the equipment can overcome the thermal stress generated by thermal expansion of the material in high-temperature environments, and the equipment will be made after the completion of the pressure test to ensure that no leakage in order to qualify out of the workshop.

3, small footprint: heat exchanger and exhaust gas treatment system for the overall design, installation. Make full use of space and reduce the site land.

三、结构形式 STRUCTURAL FORMS

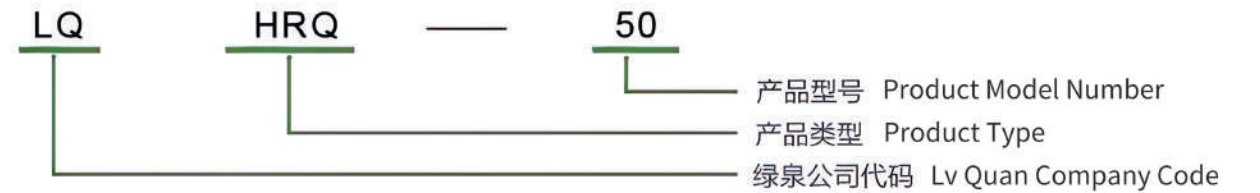


四、应用领域 APPLICATION FIELDS

废气处理系统：蓄热式焚烧炉 (RTO) 系统、催化燃烧 (CO)、直接燃烧 (TO) 系统及组合工艺中等。

Waste gas treatment systems: Regenerative Thermal Oxidizer (RTO) systems, Catalytic Oxidation (CO), Direct Oxidation (TO) systems and combination processes, etc.

五、产品编号 PRODUCT NUMBER



六、选型表 SELECTION TABLE

型号 Model	换热面积 Heat exchange area	规格 Specification	设备重量 Equipment weight (t)	低温换热器 Low temperature heat exchanger ≤450℃		
				换热片 Heat exchangers	数量 No.	重量 Weight (kg)
范围 RangeRange1	0-20m²	---	---	1220*610	---	---
范围 Range2	20-50m²	---	---	1220*610	---	---
HRQ-50	50	2600*1000*1200	1.7	1220*610	54	378
范围 Range3	50-100m²	---	---	1220*610	---	---
HRQ-100	100	2600*2000*1200	2.6	1220*610	106	742
范围 Range4	100-200m²	---	---	1220*610	---	---
HRQ-150	150	2800*2800*1200	3.6	1220*610	160	1120
HRQ-200	200	2400*2000*2750	4.3	1220*610	212	1484
范围 Range5	200-300m²	---	---	1220*610	---	---
HRQ-250	250	2400*2400*2750	5.2	1220*610	268	1876
HRQ-300	300	2400*2800*2750	5.8	1220*610	320	2240
范围 Range6	300-400m²	---	---	1220*610	---	---
HRQ-400	400	3750*2000*2750	6.9	1220*610	424	2968
范围 Range7	400-500m²	---	---	1220*610	---	---
HRQ-500	500	3750*2400*2750	8	1220*610	536	3752
范围 Range8	500m²	---	---	1220*610	---	---

备注：1、以上为常温换热器，最高耐温 450℃，需客户提供要求的换热面积，报价为 M² 的含税价格。

2、外壳为 1.2MM 厚度的 SUS201 制成，换热片材质均为 SUS304 不锈钢。

Note:1. The above is a room temperature heat exchanger with a maximum temperature of 450℃. The customer needs to provide the required heat exchange area. The quotation is the price per square meter (including tax).

2. The shell is made of SUS201 with a thickness of 1.2mm, and the heat exchange sheet material is all made of SUS304 stainless steel.



工程篇

ENGINEERING

LQ-ADW-RTO沸石转轮+RTO
LQ-ADW-RTO Zeolite wheel + RTO

LQ-TT-CO变频转筒式沸石(活性炭) + 催化燃烧
LQ-TT-CO Variable frequency rotary type zeolite (activated carbon) + catalytic combustion

LO-CFT-CO固定床蜂窝活性炭+催化燃烧
LO-CFT-CO Fixed bed honeycomb activated carbon + catalytic combustion

LQ-CF-CO固定床沸石+催化燃烧
LQ-CF-CO Fixed bed zeolite + catalytic combustion

LQ-ADW-CO沸石转轮+催化燃烧
LQ-ADW-CO Zeolite wheel + catalytic combustion

LQ-ADW-TO沸石转轮+直燃式高温焚化
LQ-ADW-TO Zeolite wheel + direct-fired high-temperature incineration

配件篇

ACCESSORIES

LQ-GXF高温泄压阀
LQ-GXF high temperature relief valve

LQ-PDF偏心蝶阀
LQ-PDF eccentric butterfly valve

LQ-WPG卧式喷淋柜
LQ-WPG horizontal spray cabinet



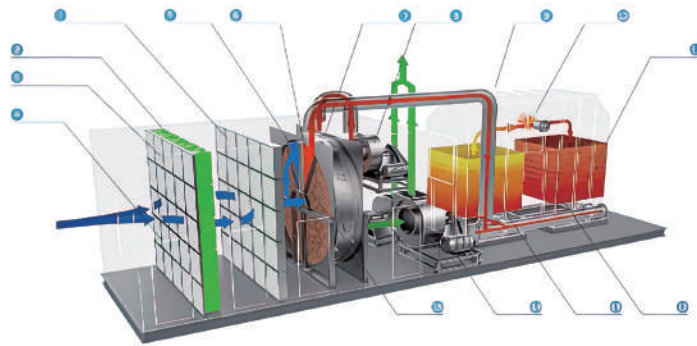
LQ-ADW-RTO

沸石转轮+RTO/ZEOLITE WHEEL + RTO

一、沸石转轮+RTO成套设备概念 CONCEPT OF ZEOLITE WHEEL+RTO SYSTEM

利用沸石转轮吸附有机废气，将低浓度、大风量的废气浓缩到高浓度、小风量，从而减低设备费用和运行成本，实现高效率 VOCs 处理。利用 RTO 的高温气体换热后进行脱附再生，实现不间断吸附脱附过程。

Using zeolite wheel to adsorb organic waste gas, the low concentration and high air volume waste gas is concentrated into high concentration and small air volume, thereby reducing the equipment cost and operating cost, and achieving efficient VOC treatment. The RTO uses high temperature gas heat exchange to achieve continuous adsorption and desorption processes.

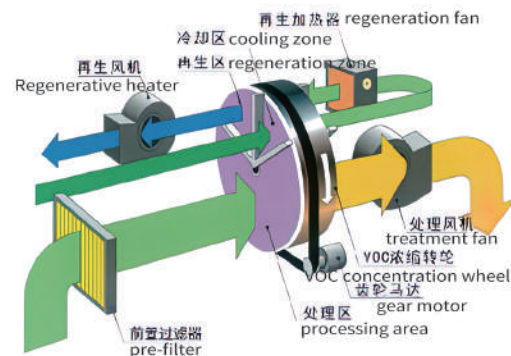


二、工作原理 OPERATING PRINCIPLE

含有 VOC 的被处理空气通过前置过滤后，送到浓缩转轮的处理区。在处理区 VOC 被吸附剂吸附除去，空气被净化后从浓缩转轮的处理区间排出。吸附于浓缩转轮中的 VOC，在再生区经热风处理而被脱附、浓缩（5~30 倍的程度）。

经高度浓缩后的 VOC 脱附后进入预热完毕的 RTO 蓄热室预热，预热后的高温 VOC 进入燃烧室充分燃烧，氧化分解成二氧化碳和水，氧化产生的高温气体流经特制的陶瓷蓄热体，使陶瓷体升温而“蓄热”，此“蓄热”用于预热后续进入的有机废气。从而节省废气升温的燃料消耗。陶瓷蓄热体应分成两个（含两个）以上的区或室，每个蓄热室依次经历蓄热 - 放热 - 清扫等程序，周而复始，连续工作。

Air containing VOCs to be treated is sent to the processing area of the concentration wheel after pre-filtering. In the processing area, VOCs are adsorbed and removed by the adsorbent, and the purified air is discharged from the processing area of the concentration wheel. The VOCs adsorbed on the concentration wheel are desorbed and concentrated (5~30 times) in the regeneration area through hot air treatment. After the highly concentrated VOCs are desorbed, they are preheated in the RTO heat storage chamber and the high-temperature VOCs are sent to the combustion chamber for complete combustion, oxidizing and decomposing into CO₂ and water. The high-temperature gases generated by oxidation flow through specially designed ceramic heat storage bodies, causing the ceramic bodies to heat up and "store heat", which is used to preheat subsequent organic waste gases entering the system, thereby saving fuel consumption for waste gas heating. The ceramic heat storage body should be divided into two or more zones or chambers, each heat storage chamber experiencing a continuous cycle of heat storage-release-cleaning, and working continuously.



三、VOC浓缩装置的特点及规格 CHARACTERISTICS AND SPECIFICATIONS OF VOC CONCENTRATION EQUIPMENT

净化效率高：转轮吸附理论去除率高达 98.5%（特殊成份除外）

脱附效率高：沸点低于 220° C 的有机物基本可以脱出

占地面积小：与同类吸附法治理成套设备相比较小

消防风险低：与活性炭吸附相比沸石转轮无可燃性，脱附过程中无着火风险

快吸快脱：吸附时间短 易饱和 脱附效率高 周期短

High purification efficiency: The adsorption efficiency of the wheel can reach up to 98.5% (excluding special components).

High desorption efficiency: Organic compounds with boiling points below 220°C can be almost completely desorbed.

Small footprint: Compared with similar adsorption-based equipment, the concentration wheel's footprint is relatively small.

Low fire hazard: Compared with activated carbon adsorption, the zeolite wheel is non-flammable and there is no risk of ignition during the desorption process.

Fast adsorption and desorption: Short adsorption time, easy saturation, high desorption efficiency, and short cycles.

四、RTO的选用条件及特点 THE SELECTION CONDITIONS AND CHARACTERISTICS OF RTO

能耗低 Low energy consumption	进气浓度在1500~2000MG/M3时基本维持自燃，无需燃料补给 Inlet gas concentration at 1500~2000mg/m ³ basically maintain self-ignition, no fuel replenishment
余热回收效率高 High efficiency of waste heat recovery	采用新材料(蓄热陶瓷)技术，热回收效率95% Adopting new material (thermal storage ceramic) technology, the heat recovery efficiency is 95%
净化效率高 High purification efficiency	采用普通提升阀时效率最高可达98%以上，采用双偏心结构密闭阀时效率最高可达99.3%以上 The efficiency can reach up to 98% or more when using ordinary lifting valve, and up to 99.3% or more when using double eccentric structure closed valve
操作方便 Easy to operate	采用传统电控或采用工业控制器控制，在参数校调完后一键启停，实现无人值守看管 Adopt traditional electric control or industrial controller control, one key to start and stop after the parameters are adjusted, realize unattended supervision

结构形式 Structure form	塔式固定床 Tower type fixed bed		圆形多床 Round Multi-Bed	
	三塔结构 Three tower structure	五塔结构 Five-tower structure	旋转式结构 Rotary structure	多阀结构 Multi-valve structure
最高处理风量 Maximum air handling capacity	≤65000m ³ /h	≤100000m ³ /h	≤100000m ³ /h	≤100000m ³ /h
占地面积 Floor space	大 Large	较大 Larger	一般 General	一般 General
净化效率 Purification efficiency	≥90-98%			
阀门结构形式 Valve structure form	提升阀/密闭蝶阀 Poppet valve/closed butterfly valve	提升阀/密闭蝶阀 Poppet valve/closed butterfly valve	旋转阀 Rotary valve	密闭蝶阀 Airtight Butterfly Valve
阀门驱动形式 Valve drive form	气动 Pneumatic	气动 Pneumatic	伺服电机驱动 Servo motor drive	气动 Pneumatic
加热方式 Heating method	天然气/有机溶剂废液 Natural gas / organic solvent waste liquid			
反吹风方式 Blowback air mode	正压反吹/负压反吸 Positive pressure reverse blowing/negative pressure reverse absorption			
系统进风方式 System air inlet mode	一般为全正压送风(即反应区为正压) Generally full positive pressure air supply (i.e. positive pressure in the reaction area)			
安全设计 Safety design	一般选用泄压/泄温阀以及弹跳式泄爆门，RTO 总进气口设置标准阻火器 Generally choose pressure/temperature relief valve and pop-up explosion relief door, RTO total inlet set standard flame arrestor			

1. 项目地点在极寒地区 (≤-10°C) 时考虑压缩空气结露导致气阀或气缸结冰时可以将气动驱动改为电机驱动。

2. 如采用有机溶剂废液时，需要提供废液成份以及热值，以便燃烧机选型；风量≤5000NM³/H 时可采用电辅热。

1. When the project site is located in extremely cold areas (≤-10°C), consideration should be given to the possibility of compressed air condensation leading to the icing of gas pipelines or cylinders. In such cases, pneumatic drive can be replaced with electric drive.

2. If organic solvent waste liquid is used, it is necessary to provide its composition and calorific value for the selection of combustion equipment. Electric heating can be used when the air volume is less than or equal to 5000 Nm³/h.

五、选用条件 SELECTION CRITERIA

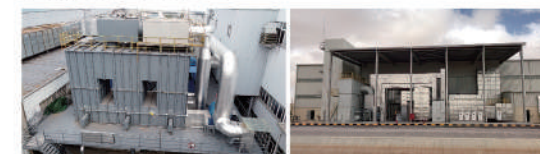
1. 废气中如含有硫、氯等腐蚀性成份，在选型时需要特别告知，对此类气体需要采用 SUS2205 或以上耐腐蚀材料加工制造，同时后段需要对此类气体作特别处理。

2. 进入蓄热式高温焚烧设备的混合废气浓度 < 1/4LEL 爆炸下限范围。

3. 蓄热式高温焚烧设备使用的极限温度为 ≤960° C，高热物质、高浓度气体需要经过稀释处理，如有特别要求的可注明告知，以便在设计内保温时对此做出明确要求。

4. 进入蓄热式高温焚烧设备的气体中不得含有会堵塞或引起回火的粉尘颗粒物以及油雾，防止回火以及堵塞蓄热陶瓷。

5. 部分地区对高温焚烧设备排口氮氧化物有要求的需要特别告知，以便采购燃烧机时选用低氮燃烧系统，同时如废气中含氮成份较多的即使选用低氮燃烧系统也无法达标排放，后续需经脱氮处理。



1. If the exhaust gas contains corrosive components such as sulfur and chlorine, this must be communicated during the selection process. Corrosion-resistant materials such as SUS2205 or higher must be used for processing and manufacturing to ensure proper treatment of such gas in the downstream process.

2. The mixed concentration of exhaust gases entering the heat storage high-temperature incineration equipment should be within 1/4 of the lower explosive limit (LEL) range.

3. The maximum operating temperature for the heat storage high-temperature incineration equipment is ≤960 ° C. High-energy materials and high-concentration gases must be treated with dilution. If there are special requirements, they should be clearly stated to make specific demands during insulation design.

4. The gas entering the heat storage high-temperature incineration equipment must not contain dust particles or oil mist that can cause blockages or backfire, in order to prevent flashing and blockage of the thermal storage ceramic.

5. Some regions have specific nitrogen oxide emission requirements for high-temperature incineration equipment, which must be communicated to the purchaser during the procurement process. Low-ammonia combustion systems should be used for the combustion equipment, and if the exhaust gas contains a high concentration of nitrogen, even a low-nitrogen combustion system may not meet the emission standards and will require additional denitrification treatment.

LQ- ADW-RTO

变频转筒式沸石+催化燃烧/VARIABLE FREQUENCY ROTARY ZEOLITE + CATALYTIC COMBUSTION

一、沸石转轮+RTO成套设备概念 THE CONCEPT OF THE COMPLETE SET OF EQUIPMENT

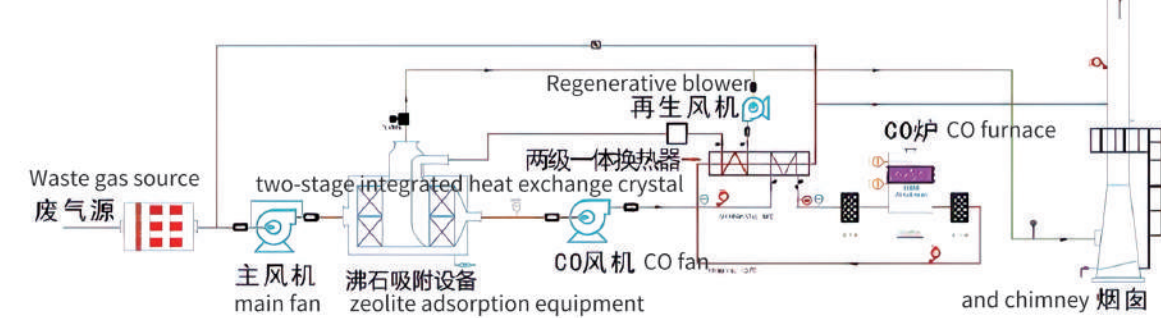
利用转筒沸石吸附有机废气，将低浓度、大风量的废气浓缩到高浓度、小风量，从而减低设备费用和运行成本，实现高效率VOCS处理。利用催化燃烧后的高温气体混合后进行脱附再生，实现不间断吸附脱附过程。

using rotary zeolite adsorption and catalytic combustion is to concentrate low-concentration, large-volume waste gas to high-concentration, small-volume, thereby reducing equipment costs and operating costs, and achieving high-efficiency VOCs treatment. The high-temperature gas after catalytic combustion is mixed for desorption and regeneration to achieve uninterrupted adsorption and desorption process.

二、工作原理 OPERATING PRINCIPLE

含有VOCS的被处理空气通过前置过滤后，送到浓缩沸石转筒的处理区。在处理区VOCS被吸附剂吸附除去，空气被净化后从浓缩活性炭转筒的处理区间排出。吸附于浓缩转筒中的VOCS，在再生区经热风处理而被脱附、浓缩(5~20倍的程度)。经高度浓缩后的VOCS脱附后进入换热器进一步升温后再送入加热室，通过加热装置，使气体达到催化反应温度，再通过催化床内催化剂作用，使有机气体分解成二氧化碳、水和热能，反应后的气体再进入换热器与低温气体进行热交换，使进入的气体升温预热。这样加热系统仅需通过自控系统实现补偿加热即可完全燃烧，大大节省了能源并达到国家排放标准。

Air containing VOCs to be treated is sent to the treatment area of the concentrated zeolite rotary drum after pre-filtration. In the treatment area, VOCs are removed by the adsorbent, and the air is purified and discharged from the treatment area of the concentrated activated carbon rotary drum. The VOCs adsorbed in the concentrated rotary drum are desorbed and concentrated (by 5 to 20 times) by heat treatment in the regeneration area. After being highly concentrated, the desorbed VOCs enter the heat exchanger for further heating and then are sent into the heating chamber. The gas is heated to the catalytic reaction temperature by the heating device. Then, the organic gases are decomposed into carbon dioxide, water, and heat energy through the action of the catalyst in the catalytic bed. The gas after the reaction enters the heat exchanger and exchanges heat with the low-temperature gas, thus heating and preheating the inlet gas. In this way, the heating system only needs to compensate heating through the self-control system to achieve complete combustion, greatly saving energy and meeting national emission standards.



三、VOCS浓缩装置的特点 CHARACTERISTICS OF VOCS CONCENTRATION EQUIPMENT

净化效率高 High purification efficiency	转筒吸附理论去除率高达90% (特殊成份除外) The theoretical removal rate of the zeolite rotary drum can reach 90% (except for special components)
热脱附效率高 High thermal desorption efficiency	沸点低于140C的有机物基本可以脱出 Organic compounds with boiling points below 140°C can be desorbed
占地面积小 Small footprint	与同类吸附法治理成套设备相比较小 Compared with similar adsorption treatment equipment, it is relatively small
快吸快脱 Fast adsorption and desorption	吸附时间短、易饱和;脱附效率高、周期短 Short adsorption time, easy saturation; high desorption efficiency, short cycle

四、CO催化燃烧的选用条件及特点 TSELECTION CRITERIA AND CHARACTERISTICS OF CO CATALYTIC COMBUSTION

- 1、废气中不得含有使催化剂中毒或永久失活的成份，如：含氯、含硫、卤素、重金属等。
- 2、进入催化燃烧设备的混合废气浓度 < 1/4LEL 爆炸下限范围。
- 3、催化燃烧使用的极限温度为≤600°C，高热物质、高浓度气体需要经过稀释处理，防止反应室温度超温导致催化剂失活无法进行催化还原反应。
- 4、进入催化燃烧的气体中不得含有会堵塞或弓 | 起回火的粉尘颗粒物以及油雾。
- 5、CO 催化燃烧的特点：
 1. The exhaust gas must not contain ingredients that can poison or permanently deactivate the catalyst, such as chlorine, sulfur, halogens, heavy metals, etc.
 2. Mixed waste gas entering the catalytic combustion equipment < 1/4 LEL explosion lower limit range.
 3. The extreme temperature used in catalytic combustion is ≤600° C. High-heat substances and high-concentration gases need to be diluted to prevent the temperature of the reaction chamber from exceeding the limit and causing the catalyst to deactivate, unable to perform catalytic reduction reactions.
 4. The gas entering the catalytic combustion process must not contain dust particles or oil mist that can block or cause flashback.
 5. Characteristics of CO catalytic combustion:

能耗低 Low energy consumption	开机预热仅需 30~45min, 预热温度一般为 250~320°C The start-up preheating only takes 30-45 minutes, and the preheating temperature is generally 250-320°C.
阻力小 Low resistance	优化换热器结构，催化剂设计空速低(10000~15000h-1) The heat exchanger structure is optimized, and the catalyst design has a low space velocity (10,000-15,000 h-1).
余热回收效率高 High heat recovery efficiency	与同类产品相比，采用多种规格凹凸板制作，热回收效率达 70% Compared with similar products, multiple specifications of corrugated panels are used, and the heat recovery efficiency is up to 70%.
净化效率高 High purification efficiency	换热器采用新型焊接技术，保证冷热交替时焊缝无断裂串气，本体净化效率达 98%，在催化剂的保证下整体净化效率达 98.5%以上 The heat exchanger adopts a new welding technology to ensure that there is no cracking and gas leakage at the welds during the alternation of hot and cold. The purifying efficiency of the body reaches 98%, and under the guarantee of the catalyst, the overall purification efficiency is above 98.5%.
操作方便 Easy to operate	采用传统电控或采用工业控制器控制，在参数校准完毕后，一键启停，实现无人值守看管 Traditional electronic control or industrial controllers are used for control. After the parameter calibration is completed, the system can be started and stopped with one button, achieving unmanned monitoring.



LQ-CFT-CO

固定床蜂窝活性炭+催化燃烧/FIXED-BED HONEYCOMB ACTIVATED CARBON + CATALYTIC COMBUSTION

一、固定床蜂窝活性炭+催化燃烧成套设备概念

THE VOC-CFT-CO ADSORPTION CATALYTIC PURIFICATION EQUIPMENT

VOC-CFT-CO 吸附催化净化设备是我公司积累近二十年有机气体治理的经验研制成功的高效节能、无二次污染的新型环保治理设备，经众多的用户使用，该项处理技术已经达到国内同类产品的领先水平。

The VOC-CFT-CO adsorption catalytic purification equipment, consisting of fixed-bed honeycomb activated carbon and catalytic combustion, is a new type of efficient and energy-saving environmental protection equipment that has been developed by our company based on nearly 20 years of experience in organic gas treatment. It is free from secondary pollution and has reached the leading level among similar products in China, as verified by numerous users.

二、用途、范围 APPLICATION AND SCOPE

适用于处理常温、大风量、中低浓度、易挥发的有机废气，可处理有机溶剂种类包括苯类、酯类、醛类、醚类、烷类及其混合类。

广泛用于汽车、造船、摩托车、家具、家用电器、钢琴、钢结构生产厂等行业的喷漆，涂装车间或生产线的有机废气净化，也可与制鞋粘胶、印铁制罐、化工塑料、印刷油墨、电缆、漆包线等生产线配套使用。

The equipment is suitable for treating organic waste gas at room temperature, with high air volume and low to medium concentration, especially for the treatment of volatile organic solvents such as benzene, ester, aldehyde, ether, alkane and mixed types.

It is widely used in industries such as automotive, shipbuilding, motorcycle, furniture, household appliances, piano, steel structure production, etc., for the purification of organic waste gas in painting and coating workshops or production lines. It can also be used in conjunction with production lines such as shoe adhesive, printed iron cans, chemical plastics, printing inks, cables, enameled wires, etc.



三、技术特点 TECHNICAL FEATURES

采用吸附浓缩 + 催化燃烧组合工艺，整个系统实现了净化、脱附过程闭循环，与回收类有机废气净化装置相比，无须备蒸气等附加能源，运行过程不产生二次污染，设备投资及运行费用低。

选用特殊成型的蜂窝活性炭作为吸附材料，吸附剂寿命长，吸附系统阻力低，净化效率高。

用优质贵金属钯、铂载在蜂窝陶瓷上作催化剂，催化燃烧率达 97% 以上，催化剂寿命长、催化剂的分解温度低，脱附预热时间短，能耗低。采用微机集中控制系统，设备运行、操作过程实现全自动化，运行过程稳定、可靠。

前端采用干式高效粉尘过滤装置，净化效率高，确保吸附装置的使用寿命。

安全设施完备，在气源与设备间设置安全防火阀（选配）、脱附时严格控制进入活性炭床的脱附温度，设有阻火器、感温棒、报警器及自动停机等保护措施，国内首创设置制氮机组，增加了设备的安全系数。

可用于净化处理连续或间歇生产所产生的有机废气。

The equipment adopts the combination of adsorption concentration and catalytic combustion processes, with a closed loop for the entire purification and desorption process. Compared with recovery-type organic waste gas purification equipment, it does not require additional energy such as steam, and the operation process does not produce secondary pollution, resulting in low equipment investment and operating costs.

Specially shaped honeycomb activated carbon is used as the adsorption material, with a long lifespan, low resistance, and high purification efficiency. High-quality precious metal palladium and platinum are used as catalysts loaded on honeycomb ceramics, with a catalytic combustion rate of over 97%. The catalyst has a long lifespan, low decomposition temperature, short desorption preheating time, and low energy consumption. The equipment uses a centralized microcomputer control system with fully automated operation and stable and reliable operation.

The front-end adopts a dry high-efficiency dust filtration device, with high purification efficiency, ensuring the lifespan of the adsorption equipment. The equipment is equipped with complete safety facilities, with safety and fire valves (optional) installed between the gas source and the equipment. During desorption, the desorption temperature entering the activated carbon bed is strictly controlled, and protection measures such as flame retardants, temperature sensors, alarms, and automatic shutdowns are in place. The equipment is equipped with a nitrogen generation unit, which is the first of its kind in China, increasing its safety factor. It can be used to purify and treat organic waste gas produced by continuous or batch production.

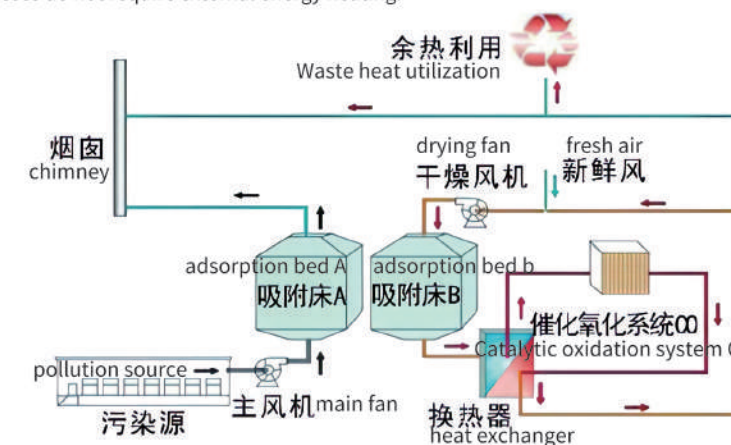
四、工作原理 WORKING PRINCIPLE

设备采用活性炭吸附、热气流脱附和催化燃烧 E 种组合工艺净化有机废气，利用活性炭多微孔及巨大的表面张力等特性将废气中的有机溶剂吸附，使所排废气得到净化为第一工作过程。活性炭吸附饱和后，按一定浓缩比把吸附在活性炭上的有机溶剂用热气流脱出并送往催化燃烧床为第二工作过程。进入催化燃烧床的高浓度有机废气经过进一步加热后，在催化剂的作用下氧气分解，转化成二氧化碳和水，分解释放出的热量经高效换热器回收后用于加热进入催化燃烧床的高浓度有机废气为第三工作过程，上述三个工作过程在运行一定时间达到平衡后，脱附、催化分解过程无需外加能源加热。

The equipment uses a combination of activated carbon adsorption, thermal airflow desorption, and catalytic combustion to purify organic waste gas. It utilizes the characteristics of multiple micropores and huge surface tension of activated carbon to adsorb organic solvents in the waste gas, thereby purifying the discharged waste gas as the first working process.

After the activated carbon adsorption is saturated, the organic solvents adsorbed on the activated carbon are desorbed and sent to the catalytic combustion bed in a certain concentration ratio by a thermal airflow, which is the second working process. The high-concentration organic waste gas entering the catalytic combustion bed is decomposed into carbon dioxide and water under the action of oxygen by the catalytic reaction. The heat released during the decomposition is recovered by the high-efficiency heat exchanger and used for heating the high-concentration organic waste gas entering the catalytic combustion bed, which is the third working process.

After running for a certain time and reaching a balance in the three working processes mentioned above, the desorption and catalytic decomposition processes do not require external energy heating.



五、设备选型 EQUIPMENT SELECTION

规格型号 Specification	XC50~XC2000	净化效率 Purification efficiency	≥75~80%
处理风量 Treatment air volume	5000~200000m³/h	解析温度 Analysis temperature	90~100°C
气体温度 Gas temperature	≤40°C	解析时间 Analysis time	6.5H
有机气体浓度 Organic gas concentration	≤200mg/m³(混合气体 mixed gas)		

注：1、设备选用时注意增加 20% 安全系数；

2、如进气温度高于 40°C 时，需增加冷却装置；

3、如处理气体中含有粉尘、颗粒物需进行前处理后（采用干式过滤器、湿式洗涤——卧式喷淋柜或旋流板塔），保证活性炭使用寿命；

4、设备安装部位需无腐蚀性气体产生，如有腐蚀可选用其他材质制作；

5、设备根据用户及安装场地要求，针对性合理设计及配型。

Note: 1. When selecting equipment, pay attention to increasing the safety factor by 20%.

2. If the inlet temperature is higher than 40 °C, a cooling device needs to be added.

3. If the treated gas contains dust or particulate matter, pre-treatment (using dry filters or wet scrubbers - horizontal spray cabinets or cyclone plate towers) should be carried out to ensure the lifespan of the activated carbon.

4. The equipment installation site should not produce corrosive gases. If there is corrosion, other materials can be used.

5. The equipment should be designed and configured according to user and installation site requirements.



LQ-CF-CO

固定床沸石+催化燃烧/FIXED BED ZEOLITE + CATALYTIC COMBUSTION

一、固定床沸石+催化燃烧成套设备概念

CONCEPT OF FIXED BED ZEOLITE + CATALYTIC COMBUSTION AS A SET OF EQUIPMENT

固定床沸石+催化燃烧装置适用于低浓度、间隙生产（如造船行业）以及UV漆、苯乙烯等挥发性有机物的浓缩吸附处理。能连续性稳定运行、处理风量、处理废气浓度及排放浓度方面有独特的优势。沸石浓缩固定床装置压损低、吸附性能高、损耗少、运行费用低、吸附性能优良、具有较大的比表面积、连续稳定运行、脱附效果良好、能耗低、可靠性高、设计性能卓越、过滤效率≥95%。

The fixed bed zeolite + catalytic combustion device is suitable for the concentration and adsorption treatment of low concentration, intermittent production (such as the shipbuilding industry), and volatile organic compounds such as UV paint and styrene. It has unique advantages in continuous stable operation, treatment air volume, treatment waste gas concentration, and emission concentration. The zeolite concentration fixed bed device has low pressure loss, high adsorption performance, low loss, low operating cost, excellent adsorption performance, large specific surface area, continuous stable operation, good desorption effect, low energy consumption, high reliability, excellent design performance, and filtration efficiency ≥95%.

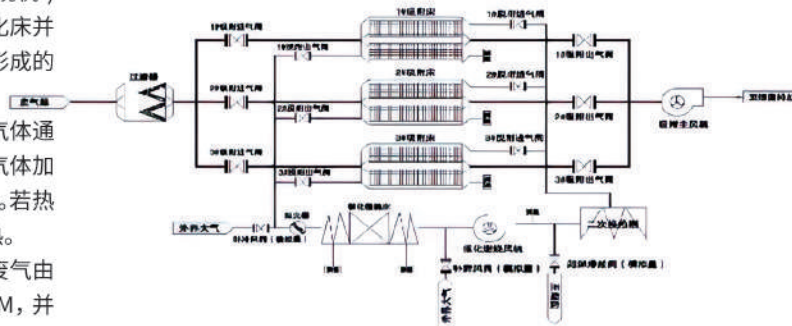
二、工作原理 OPERATING PRINCIPLE

设备采用沸石吸附、热气流脱附和催化燃烧三种组合工艺净化有机废气，利用分子筛多微孔及巨大的表面张力等特性将废气中的有机溶剂吸附，使所排废气得到净化为第一工作过程；分子筛吸附饱和后，按一定浓缩比把吸附在分子筛上的有机溶剂用热气流脱出并送往催化燃烧床为第二工作过程；进入催化燃烧床的高浓度有机废气经过进一步加热后，在催化剂的作用下氧气分解，转化成二氧化碳和水，分解释放出的热量经高效换热器回收后用于加热进入催化燃烧床的高浓度有机废气为第三工作过程，上述三个工作过程在运行一定时间达到平衡后，脱附、催化分解过程无需外加能源加热。

The equipment uses a combination of three processes: zeolite adsorption, hot air flow desorption, and catalytic combustion to purify organic waste gas. It utilizes the characteristics of molecular sieves such as multiple micropores and a huge surface tension to adsorb organic solvents in waste gas, enabling the purified waste gas to be the first working process. After the molecular sieve adsorption is saturated, the organic solvents adsorbed on the molecular sieve are desorbed by a hot air flow and sent to the catalytic combustion bed as the second working process at a certain concentration ratio. The high-concentration organic waste gas entering the catalytic combustion bed is heated and, with the help of the catalyst and oxygen, decomposes into carbon dioxide and water. The heat released from this decomposition is recovered by a high-efficiency heat exchanger and used to heat the high-concentration organic waste gas entering the catalytic combustion bed as the third working process. After a certain period of operation, the desorption and catalytic decomposition processes do not require additional energy heating as they reach equilibrium.

三、工艺流程 PROCESS FLOW

- 1、工况环境下待处理废气先经过干式过滤预处理箱体去除废气中的粉尘等颗粒物，防止该类物质进入到固定床吸附区中导致沸石吸附效率下降，根据实际情况采用G4、F7、F9等材料逐级过滤除去粉尘和粘性物质。
- 2、经预处理后的废气，进入固定床吸附区，废气中的VOCs被吸附、净化后直接达标排放，而吸附VOCs饱和的固定床进行脱附。由催化燃烧风机引入新鲜空气，经换热器加热达到脱附温度后进入吸附饱和的固定床，将沸石中饱和废气脱出，以达到再生效果。
- 3、脱附产生的高浓度废气在CO系统风机作用下经换热器预热升温并用电加热器（天然气燃烧机）加热至催化剂活性温度（300℃）后，进入催化床并发生氧化分解反应、同时放出热量，该反应形成的高温气体再与脱附换热器换热后排放。
- 4、氧化反应放出热量将会使气体升温，高温气体通过换热器将热量转移给低温气体，用于脱附气体加热，以此降低系统在运行过程中所需的能耗。若热量仍有富余，也可用于工厂的其他区域的加热。
- 5、达标气体排放，经过吸附床和氧化分解的废气由统一的烟囱高空排放，烟囱高度一般要求15M，并高出周围建筑物。



1. Under working conditions, the waste gas to be treated first enters the dry filter pre-treatment box to remove particulate matter, such as dust, from the waste gas to prevent this type of substance from entering the fixed bed adsorption area and causing a decrease in zeolite adsorption efficiency. G4, F7, F9, and other materials are used for step-by-step filtration to remove dust and viscous substances based on the actual situation.
2. The pre-treated waste gas enters the fixed bed adsorption area, where VOCs in the waste gas are adsorbed and purified and then directly discharged after meeting the emission standards. After the fixed bed reaches VOCs saturation, it undergoes desorption. Fresh air is introduced by the catalytic combustion fan and heated in the heat exchanger to reach the desorption temperature before entering the saturated fixed bed to remove the saturated waste gas from the zeolite to achieve regeneration.
3. The high-concentration waste gas generated during desorption is preheated and heated by the electric heater (natural gas combustion engine) after being preheated and heated by the heat exchanger under the action of the CO system fan to reach the catalyst activity temperature (300 ° C), enters the catalytic bed, undergoes oxidation and decomposition reactions, and releases heat. The high-temperature gases formed by the reaction are then discharged after heat exchange with the desorption heat exchanger.
4. The heat released by the oxidation reaction will cause the gas to heat up. The high-temperature gas transfers heat to the low-temperature gas through the heat exchanger, which is used to heat the desorbed gas, thereby reducing the energy consumption required during the operation of the system. If there is still a surplus of heat, it can also be used for heating other areas of the factory.
5. The exhaust gas that meets the emission standards, which has been adsorbed and oxidized, is discharged through a single chimney.

四、系统构成 SYSTEM CONFIGURATION

沸石固定床吸附浓缩装置主要由废气预处理系统、沸石固定床浓缩吸附系统、脱附系统、冷却干燥系统、换热系统、催化燃烧系统、排放系统、自动电气控制系统和在线监测系统等组成。

The zeolite fixed bed adsorption concentration device mainly consists of a waste gas pretreatment system, a zeolite fixed bed concentration adsorption system, a desorption system, a cooling and drying system, a heat exchange system, a catalytic combustion system, an emission system, an automatic electrical control system, and an online monitoring system.

五、设备特点与优势 EQUIPMENT FEATURES AND ADVANTAGES

- 1、吸附、脱附效率高、选择性强；
- 2、沸石固定床吸附VOCs所产生的压降极低，可大大减少电力能耗；使原本高风量、低浓度的VOCs废气，转换成低风量、高浓度的废气，浓缩倍数达到10~15倍，运行成本更低，使用寿命更长；
- 3、整体系统采用模块化设计，具备了最小的空间要求，且提供了持续性及无人化的超控模式，维护成本低。

1. High adsorption and desorption efficiency, strong selectivity.
2. The pressure drop produced by the zeolite fixed bed adsorption of VOCs is extremely low, which can greatly reduce electricity consumption. The high air volume and low concentration VOC waste gas is transformed into low air volume and high concentration waste gas, and the concentration can reach 10-15 times, resulting in lower operating costs and longer service life.
3. The overall system adopts modular design, requiring minimal space and providing a continuous and unmanned super control mode, resulting in low maintenance costs.

六、适用条件 APPLICABLE CONDITIONS

- 1、活性炭系统不达标的改进；2、未知成分的有机物的异味处理；3、高沸点物质需要300℃以上高温再生的场合。

1. Improvement of non-compliant activated charcoal systems. 2. Treatment of organic materials with unknown components causing odors. 3. Situations requiring high-temperature regeneration of substances with high boiling points above 300°C.



LQ-ADW-CO

沸石转轮+催化燃烧/ZEOLITE ROTARY WHEEL + CATALYTIC COMBUSTION

一、沸石转轮+催化燃烧成套设备概念

CONCEPT OF ZEOLITE ROTARY WHEEL + CATALYTIC COMBUSTION AS A SET OF EQUIPMENT

在有机废气，废气处理组合工艺中，沸石转轮浓缩吸附 + 催化燃烧装置主要适用于废气风量大，浓度低的处理方式，其成分不能含有 SINCI 等使催化剂中毒的元素，且成分能被沸石转轮吸附且能脱附出来。

沸石转轮 ADW+ 催化燃烧 CO 废气处理工艺是沸石转轮 ADW+RTO 焚烧炉的姊妹产品，它克服了 RTO 燃烧废气时所需的高温，在催化剂的作用下燃烧分解只需要把温度加热到 300 ~ 450°C 即可，同时也节约能源。

沸石转轮 + 催化燃烧有些成分活性炭吸附不了但沸石分子筛可以。比如一些高沸点的废气成分使用活性炭不易脱附，沸石转轮的特点是不可燃的，所以沸石转轮可将脱附温度提高也不用担心着火问题。

In the combined process of organic waste gas and waste gas treatment, the zeolite rotary wheel concentration adsorption + catalytic combustion device is mainly suitable for the treatment of waste gas with high air volume and low concentration. Its components cannot contain elements such as SINCI that can poison the catalyst, and the components can be adsorbed and desorbed by the zeolite rotary wheel.

The zeolite rotary wheel ADW + catalytic combustion CO waste gas treatment process is the sister product of the zeolite rotary wheel ADW + RTO incinerator. It overcomes the high temperature required for incinerating waste gas in RTO combustion. Under the action of the catalyst, combustion and decomposition only require the temperature to be heated to 300~450°C, which also saves energy. Some components that activated carbon cannot adsorb can be adsorbed by the zeolite molecular sieves in zeolite rotary wheel + catalytic combustion. For example, some waste gas components with high boiling points are not easily desorbed using activated carbon. The characteristic of zeolite rotary wheel is that it is non-combustible, so the desorption temperature of zeolite rotary wheel can be increased without worrying about ignition problems.

二、工作原理 OPERATING PRINCIPLE

1、吸附阶段：有机废气经过沸石转轮吸附后直接达标排放，沸石分子筛孔径的大小能根据废气分子的大小不同进行选择性的吸附。

2、脱附阶段：沸石转轮始终保持非常缓慢的旋转，在处理区吸附饱和后，经过再生区把吸附在沸石里的有机废气通过热空气吹扫下脱附出来。

3、催化燃烧阶段：沸石转轮浓缩装置把低浓度大风量度，里的废气分子捕捉、附集到沸石上面。脱附出来的高浓度小风量的废气就可直接进入催化燃烧设备进行低温催化燃烧，燃烧温度 300 ~ 450°C。

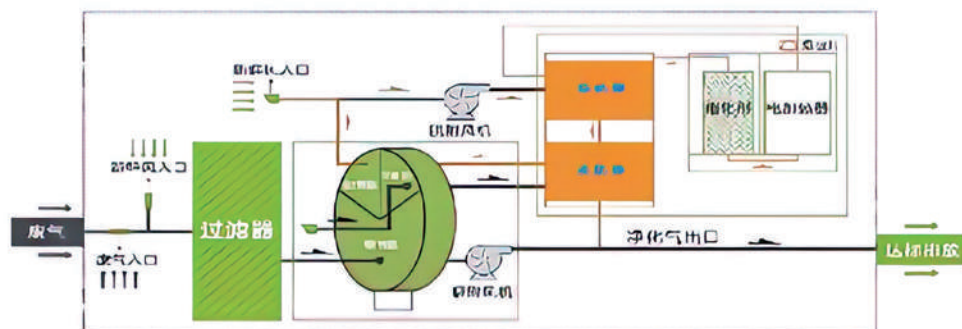
4、沸石转轮恢复阶段：沸石转轮脱附经高温加热再生后，吸附效果会根据沸石温度高而变差。所以要对沸石用冷风机进行降温后使沸石具有循环往复吸附废气的能力。

1. Adsorption stage: Organic waste gas passes through the zeolite rotary wheel for adsorption and can be directly discharged after meeting the standard. The size of the zeolite molecular sieve aperture can selectively adsorb different sizes of waste gas molecules.

2. Desorption stage: The zeolite rotary wheel always maintains a very slow rotation. After the adsorption in the processing area is saturated, the organic waste gas adsorbed in the zeolite is desorbed by blowing with hot air through the regeneration area.

3. Catalytic combustion stage: The zeolite rotary wheel concentration device captures and collects waste gas molecules from the low concentration and high air volume waste gas, and adsorbs them on the zeolite. The high concentration and low air volume waste gas desorbed can directly enter the catalytic combustion equipment for low-temperature catalytic combustion at a combustion temperature of 300~450°C.

4. Zeolite rotary wheel recovery stage: After the zeolite rotary wheel is regenerated by high-temperature heating, the adsorption effect will deteriorate with the increase of the zeolite temperature. Therefore, the zeolite needs to be cooled with a cold blast machine to enable the zeolite to have the ability to cycle and adsorb waste gas back and forth.



三、VOC浓缩装置的特点 CHARACTERISTICS OF VOC CONCENTRATION EQUIPMENT

净化效率高：转轮吸附理论去除率高达 98.5%(特殊成份除外)

脱附效率高：沸点低于 220°C 的有机物基本可以脱出
占地面积小：与同类吸附法治理成套设备相比较小

消防风险低：与活性炭吸附相比沸石转轮无可燃性，脱附过程中无着火风险

快吸快脱：吸附时间短 易饱和 脱附效率高 周期短

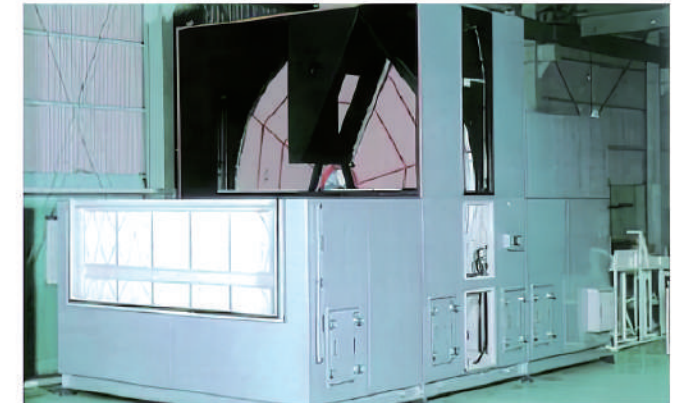
High purification efficiency: Theoretical removal rate of the wheel adsorption can reach up to 98.5% (except for specific chemicals).

High desorption efficiency: Organic compounds with boiling points below 220°C can basically be detached.

Small floor space: Compared with other adsorption equipment, it has a relatively small size.

Low fire risk: Compared with activated carbon adsorption, zeolite wheels are non-combustible and have no risk of ignition during the desorption process.

Fast adsorption and desorption: Short adsorption time, easy saturation, high desorption efficiency, and short cycles.



四、催化燃烧选用条件 CONDITIONS FOR SELECTION OF CATALYTIC COMBUSTION

1、废气中不得含有使催化剂中毒或永久失活的成份，如：含氯、含硫、卤素、重金属等。

2、进入催化燃烧设备的混合废气浓度 < 1/4LEL 爆炸下限范围。

3、催化燃烧使用的极限温度为 ≤600°C，高热物质、高浓度气体需要经过稀释处理，防止反应室温度超温导致催化剂失活无法进行催化还原反应。

4、进入催化燃烧的气体中不得含有会堵塞或弓 | 起回火的粉尘颗粒物以及油雾。

1. The waste gas must not contain components that will poison or permanently deactivate the catalyst, such as chlorine, sulfur, halogen, heavy metals, etc.

2. The mixed waste gas entering the catalytic combustion equipment must have a concentration lower than 1/4 LEL (lower explosive limit) range.

3. The maximum temperature used in catalytic combustion is ≤600 °C. High-heat substances and high-concentration gases need to be diluted to prevent the temperature of the reaction chamber from exceeding the limit and causing catalyst deactivation, thereby preventing the catalytic reduction reaction from being carried out.

4. The gas entering the catalytic combustion must not contain dust particles or oil mist that can cause blockage or cause a fire.



LQ-ADW-TO

沸石转轮+直燃式高温焚化/ZEOLITE WHEEL + DIRECT COMBUSTION HIGH-TEMPERATURE INCINERATION

一、沸石转轮+直燃式高温焚化成套设备概念

THE CONCEPT OF ZEOLITE WHEEL + DIRECT COMBUSTION HIGH-TEMPERATURE INCINERATION EQUIPMENT

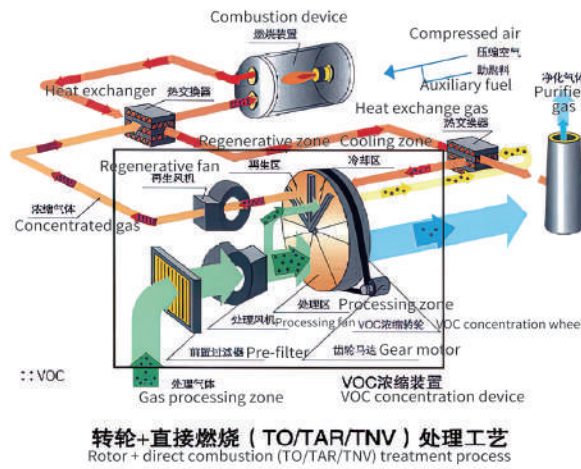
利用沸石转轮吸附有机废气，将低浓度、大风量的废气浓缩到高浓度、小风量，从而减低设备费用和运行成本，实现高效率 VOCs 处理。高温脱附后的高浓度 VOCs 换热升温后进入焚烧炉，通过高温燃烧把可燃有害气体的温度提高到反应温度，从而发生氧化分解。

uses zeolite wheels to adsorb organic waste gas, concentrate low-concentration, large-volume waste gas to high-concentration, small-volume waste gas, thereby reducing equipment costs and operating costs, and achieving efficient VOC treatment. After high-temperature desorption, the high-concentration VOCs are heated and enter the incinerator, where the temperature of combustible and harmful gases is raised to the reaction temperature through high-temperature combustion, and oxidation decomposition occurs

二、工作原理 OPERATING PRINCIPLE

含有 VOCs 的被处理空气通过前置过滤后，送到浓缩转轮的处理区。在处理区 VOCs 被吸附剂吸附除去，空气被净化后从浓缩转轮的处理区间排出。吸附于浓缩转轮中的 VOCs，在再生区经热风处理而被脱附、浓缩（5~15 倍的程度）。经高度浓缩后的 VOCs 脱附后进入换热器进一步升温后再送入直燃式废气焚烧炉，通过高温燃烧把可燃有害气体的温度提高到反应温度，从而发生氧化分解。废气有效去除率达到 98% 以上。达到国家排放标准。

Air containing VOCs is sent to the processing area of the concentrator wheel after passing through a pre-filter. In the processing area, VOCs are removed by adsorbents, and the air is purified and discharged from the processing interval of the concentrator wheel. The VOCs adsorbed in the concentrator wheel are desorbed and concentrated (by 5~15 times) through thermal treatment in the regeneration zone. After being highly concentrated, the VOCs are desorbed and enter the heat exchanger for further temperature increase before being sent to the direct combustion waste gas incinerator, where the temperature of combustible and harmful gases is raised to the reaction temperature through high-temperature combustion, and oxidation decomposition occurs. The effective removal rate of waste gas reaches more than 98%, meeting the national emission standards.



三、VOCs沸石转轮浓缩装置的特点及规格

CHARACTERISTICS AND SPECIFICATIONS OF VOC ZEOLITE WHEEL CONCENTRATION EQUIPMENT

净化效率高：

转轮吸附理论去除率高达 98.5% (特殊成份除外)

脱附效率高：

沸点低于 220°C 的有机物基本可以脱出

占地面积小：

与同类吸附法治理成套设备相比较小

消防风险低：

与活性炭吸附相比沸石转轮无可燃性，脱附过程中无着火风险

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吸附时间短 易饱和 脱附效率高 周期短

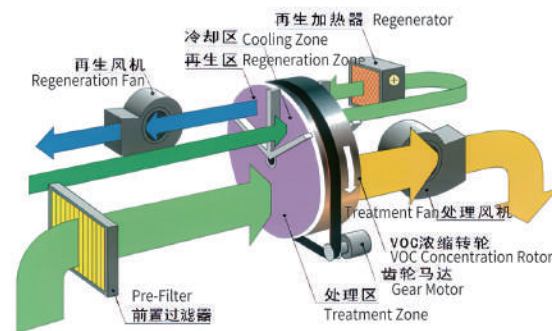
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Low fire risk: Compared with activated carbon adsorption, zeolite wheels are non-combustible and have no risk of ignition during the desorption process.

Fast adsorption and desorption: Short adsorption time, easy saturation, high desorption efficiency, and short cycles.



转轮分类 Rotor classification	饼式转轮 Rotary Wheel (Cake Type)	筒式转轮 Rotary Wheel (Cylinder Type)
分区设置 Zone setting	吸附区、冷却区、脱附区新风或原气进冷却区冷却，从冷却区排出的气体温度为 110°C，脱附按 200°C 设置时温升仅为 90°C，相对较节能。 Absorption Zone, Cooling Zone, Desorption Zone. Fresh or raw gas enters the cooling zone for cooling, and the temperature of the gas discharged from the cooling zone is 110°C. When the desorption is set at 200°C, the temperature rise is only 90°C, which is relatively energy-efficient.	吸附区、脱附区 Absorption Zone, Desorption Zone
吸附区脱附区 Adsorption zone desorption zone	整体更换 Complete replacement	无冷却区，脱附按 200°C 设置时需要将常温气体预热至 200°C，相对较耗能。 No cooling zone, and when desorption is set at 200°C, it is necessary to preheat the gas at room temperature to 200°C, which is relatively energy-consuming.
沸石模组更换 Zeolite module replacement	饼式转轮 Rotary Wheel (Cake Type)	部分损坏可单独更换 Partially damaged rotary wheels can be replaced individually.

四、TO直燃式焚烧设备特点及选用条件 TO DIRECT-FIRED INCINERATION EQUIPMENT FEATURES AND SELECTION CONDITIONS

余热可回收利用 Waste heat can be recycled	排气温度达450~500°C，余热可加导热油、热水、新风 exhaust temperature of 450~500°C, waste heat can be heated thermal oil, hot water, fresh air
净化效率高 High purification efficiency	随炉温升高净化效率越高，理论值可达99% the higher the purification efficiency with the increase of furnace temperature, the theoretical value can reach 99%
操作方便 Convenient operation	采用传统电控或采用工业控制器控制，在参数校调完毕后一键启停，实现无人值守看管 using traditional electric control or industrial controller control, one key to start and stop after the parameters are calibrated, to achieve unattended supervision

- 1、废气中如含有硫、氯等腐蚀性成份，在选型时需要特别告知，对此类气体需要采用 SUS2205 或以上耐腐蚀材料材料加工制造，同时后段需要对此类气体作特别处理。
- 2、进入直燃式高温焚化设备的混合废气浓度 <1/4LEL 爆炸下限范围
- 3、直燃式高温焚化设备使用的极限温度为 ≤900°C，高热物质、高浓度气体需要经过稀释处理
- 4、进入直燃式高温焚化设备的气体中不得含有会堵塞或引起回火的粉尘颗粒物以及油雾，防止回火以及堵塞换热器。
- 5、部分地区对高温焚化设备排口氮氧化物有要求的需要特别告知，以便采购燃烧机时选用低氮燃烧系统，同时如废气中含氮成份较多的即使选用低氮燃烧系统也无法达标排放，后续需经脱氮处理。

1. If the waste gas contains corrosive components such as sulfur or chlorine, it is necessary to inform specifically during the selection process. Corrosion-resistant materials such as SUS2205 or higher must be used for this type of gas, and special treatment is required for this type of gas in the latter stage of processing.
2. The mixed waste gas entering the direct combustion high-temperature incineration equipment should be within the range of < 1/4LEL explosion limit.
3. The maximum temperature used in direct combustion high-temperature incineration equipment is ≤900°C. High-heat materials and high-concentration gases need to be diluted and processed.
4. The gas entering the direct combustion high-temperature incineration equipment should not contain dust particles or oil mist that can cause blockage or flashback, in order to prevent flashback or blockage of the heat exchanger.
5. For areas where emissions of nitrogen oxides from high-temperature incineration equipment are required to be controlled, it is necessary to inform in advance so that low-nitrogen combustion systems can be used when purchasing combustion engines, and exhaust gas treatment equipment should be equipped if the emission exceeds the standard.



LQ-GXF

高温泄压阀/HIGH TEMPERATURE PRESSURE RELIEF VALVE

一、用途 PURPOSE

主要用高温烟气通风量调节比例场所。广泛应用于高温炉高温排烟等对泄漏率要求不高场所。

如：RTO 及其他高温烟气直排场所。

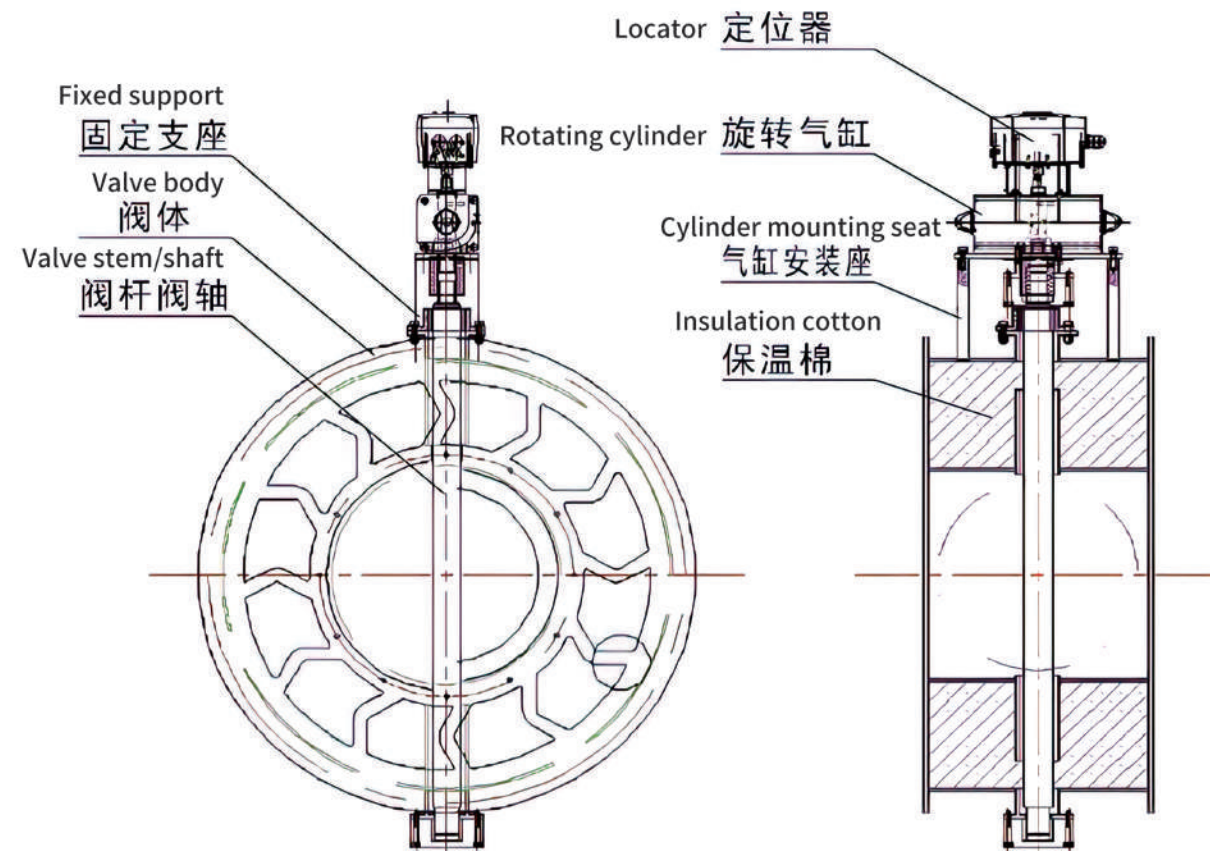
主要由蝶阀阀体和配套气动执行器（GT/RT/AT/AW 系列）组成，可用于低压管道介质的开关控制或调节流量用。蝶阀采用中线式蝶板与短结构钢板焊接的新型结构形式设计制造，结构紧凑、重量轻、便于安装、流阻小、流通量大，避免高温膨胀的影响操作轻便。可以多工位安装，不受介质流向影响。

通过压缩空气为动力源，驱动阀杆来控制圆盘形蝶板绕着轴线转，阀门由初始位置旋转 90°后即为一个动作结束（由开到关，或由关到开），反之则为另外一个动作（由关到开，或由开到关）结束。

Mainly used for proportional ventilation of high-temperature flue gas. It is widely used in places where leak rate requirements are not high, such as RTO and other high-temperature smoke direct discharge places. It is mainly composed of a butterfly valve body and a matching pneumatic actuator (GT/RT/AT/AW series), which can be used for switch control or flow regulation of low-pressure pipeline media. The butterfly valve adopts a new structural form of a centerline butterfly plate and a short structure steel plate welding with a compact structure, light weight, easy installation, small flow resistance, large flow capacity, and avoids the influence of high-temperature expansion, making it easy to operate. It can be installed in multiple positions without being affected by the flow direction of the medium.

Powered by compressed air, the valve stem drives the circular disc butterfly plate to rotate around the axis to control the flow. The valve completes one action (from open to close or from close to open) after rotating 90° from the initial position. The opposite completes the other action (from close to open or from open to close).

二、结构形式 STRUCTURAL FORM

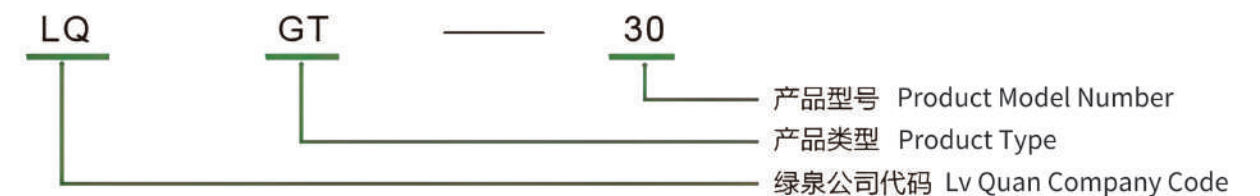


三、特点 FEATURES

1. 耐高温金属材质，结构稳定、无开裂。
2. 单叶片，低泄漏率，泄露量 CV 值的 0.5%。
3. 气动驱动，具有运转灵活、噪声低。
4. 结构简单、易于维护、且开关迅速、提高工作效率、减少检修时间，并根据客户的要求，选用不同材料的密封圈，不同材料的零件，适合于不同的介质、工况，让气动蝶阀达到很大的使用效果。

1. High-temperature resistant metal material with stable structure and no cracking.
2. Single blade with low leakage rate and a Cv value leakage of 0.5%.
3. Pneumatic drive with flexible operation and low noise.
4. Simple structure, easy to maintain, and quick switch, which improves work efficiency and reduces maintenance time. According to customer requirements, different sealing rings and parts made of different materials can be selected for different media and working conditions, making the pneumatic butterfly valve achieve great results.

四、产品编号 FEATURES



五、设备参数 EQUIPMENT PARAMETERS

序号 No.	RTO 风量 RTOairflow m³/h	阀外径 Valve O.D. mm	阀内径 Valve I.D. mm	单边保温厚度 Single side insulation thickness mm
LQ-GT-30	4500	φ800	φ300	250
LQ-GT-35	7000-10000	φ850	φ350	250
LQ-GT-40	12000-20000	φ900	φ400	250
LQ-GT-60	25000-40000	φ1100	φ600	250
LQ-GT-70	55000-70000	φ1200	φ700	250

注意事项：

1. 不能用腐蚀性、粘性、颗粒粉尘流体场所。
2. 防爆场所需整体防爆处理。

Notes:

1. Cannot be used in corrosive, viscous, or particle dust fluid environments.
2. Explosive-proof places require overall explosion-proof treatment.

LQ-GXF

高温泄压阀/HIGH TEMPERATURE PRESSURE RELIEF VALVE

一、用途 PURPOSE

主要用频繁动作、密封性要求较高的场合。如大风量三室或多室 RTO 进出气阀门。

主要由蝶阀阀体和配套气动执行器组成，可用于低压管道介质的开关控制。

蝶阀阀板与偏心轴之间用双连接杆连接，背面采用连杆固定阀板行程限位，此偏心结构极大的提升了阀门的密封性。

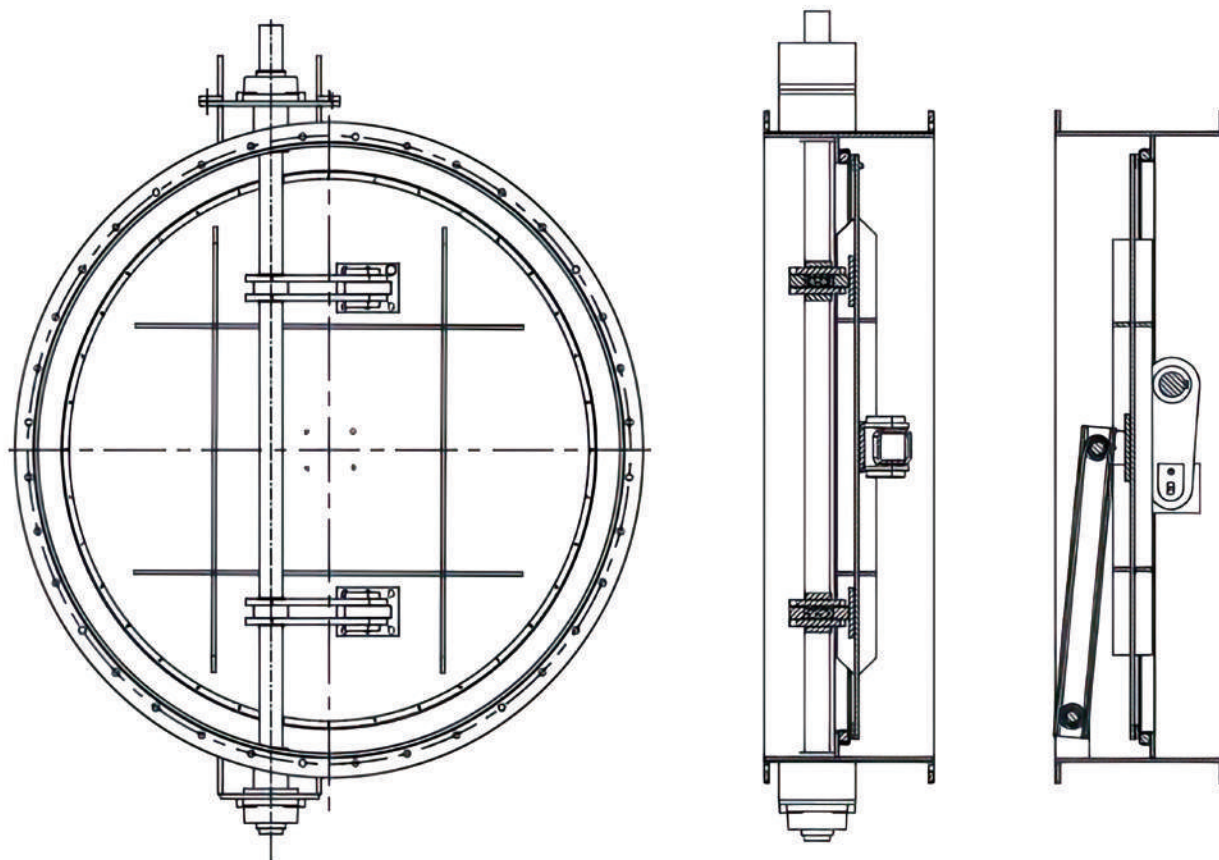
通过压缩空气为动力源，驱动偏心轴来控制连轴杆开关阀板，阀门由初始位置旋转 90°后即为一个动作结束（由开到关，或由关到开），反之则为另外一个动作（由关到开，或由开到关）结束。

Mainly used in applications that require frequent movement and high sealing requirements, such as the inlet and outlet valves of large air volume three or multi-chamber RTOs. It is mainly composed of a butterfly valve body and a matching pneumatic actuator, which can be used to switch and control low-pressure pipeline media.

The double connecting rod is used to connect the butterfly valve disc and the eccentric shaft, and the back is fixed with a connecting rod to limit the valve disc stroke. This eccentric structure greatly improves the sealing of the valve.

Powered by compressed air, the eccentric shaft is driven to control the connecting rod's switching of the valve disc. After the valve is rotated 90° from the initial position, one action is completed (from open to close, or from close to open), and vice versa for the other action (from close to open, or from open to close).

二、结构形式 STRUCTURAL FORM



三、特点 FEATURES

1、偏心轴，低泄漏率。

2、气动驱动，运转灵活、行程时间短、噪声低。

3、结构简单、易于维护、且开关迅速、提高工作效率、减少检修时间，并根据客户的要求，选用不同材料的密封圈。

1、Eccentric shaft, low leakage rate.

2、Pneumatic drive, flexible operation, short travel time, low noise.

3、Simple structure, easy maintenance, and rapid switching, improve work efficiency, reduce maintenance time, and according to customer requirements, the choice of different materials of the seal ring.

注意事项：

1、不能用腐蚀性、粘性、颗粒粉尘流体场所。

2、防爆场所需整体防爆处理。

Caution:

1, cannot be used corrosive, sticky, granular dust fluid places.

2, Explosion-proof places need the whole explosion-proof treatment.

四、工程应用 ENGINEERING APPLICATIONS



LQ-WPG

卧式喷淋柜/HIGH TEMPERATURE PRESSURE RELIEF VALVE

一、概述 OVERVIEW

湿式除尘原理是利用气液两相充分接触，将气相中粉尘颗粒物捕捉分离的工艺除尘方式。

目前常用的按结构形式方式有：

贮水式：内装一定量的水，高速含尘气体冲击形成水滴、水膜和气泡，对含尘气体进行洗涤，如冲激式除尘器、水浴式除尘器、卧式旋风水膜除尘器。

压水喷淋式：向除尘器内供给加压水，利用喷淋或喷雾产生水滴而对含尘气体进行洗涤，如文氏管除尘器、泡沫除尘器、填料塔、湍球塔等。

强制旋转喷淋式：借助机械力强制旋转喷淋，或转动叶片，使供水形成水滴、水膜、气泡，对含尘气体进行洗涤，如旋转喷雾式除尘器。

The wet dust removal principle uses the process of capturing and separating dust particles in the gas phase by fully contacting gas-liquid two phases.

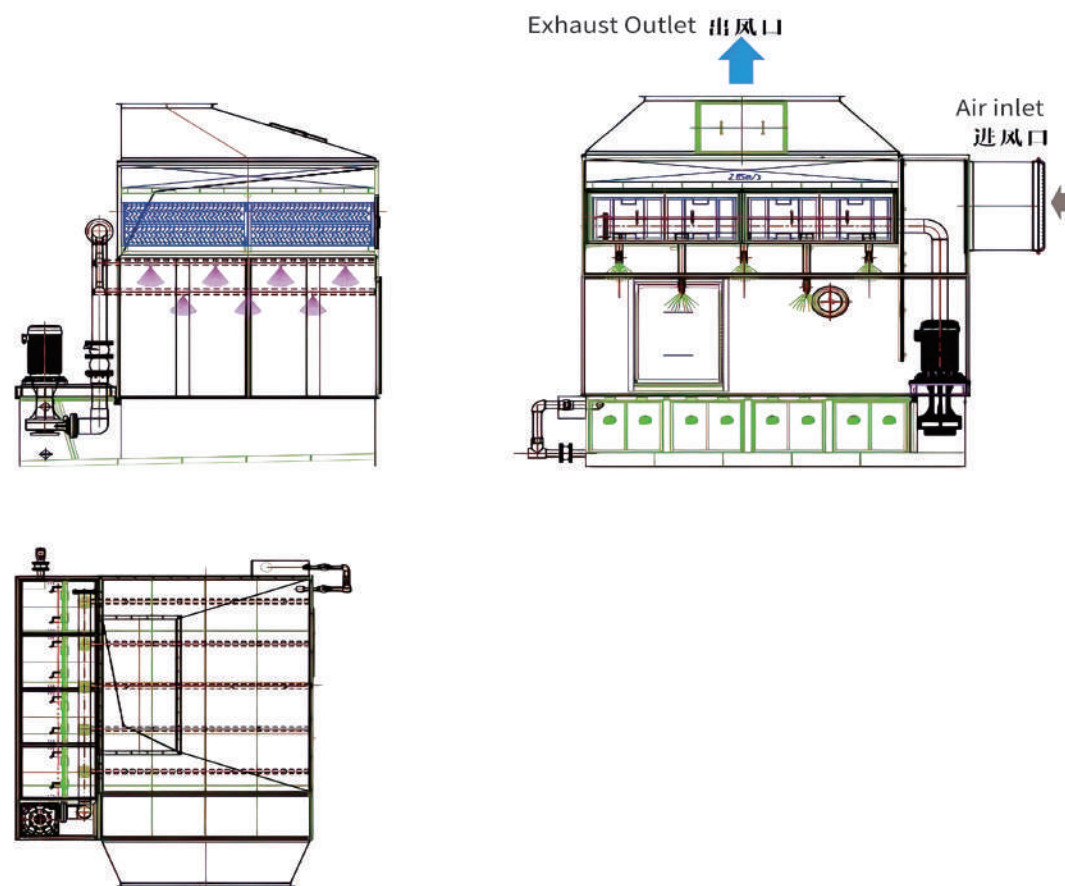
Currently, commonly used structural forms are as follows:

Water storage: a certain amount of water is installed, and the high-speed dust-containing gas hits to form water droplets, water films, and bubbles to wash the dust-containing gas, such as impulse precipitators, water bath precipitators, and horizontal vortex water film precipitators.

Pressurized water spraying: supply pressurized water to the dust collector to wash the dust-containing gas with water droplets produced by spraying or atomization, such as venturi scrubbers, foam scrubbers, packed towers, and turbulent scrubbers.

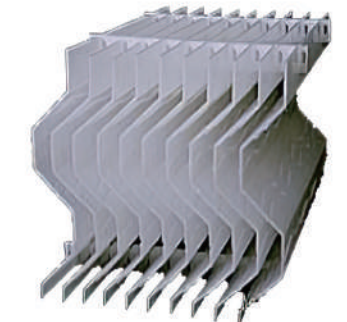
Forced rotary spraying: using mechanical force to force rotary spraying or rotating blades to form water droplets, water films, and bubbles, washing the dust-containing gas, such as rotary spray scrubbers.

二、结构形式 STRUCTURAL FORM



三、工作原理 WORKING PRINCIPLE

卧式喷淋柜在内设置两道水幕板，第一道为不锈钢矩形孔板，第二道为无孔不锈钢板；水从水幕板上方法水槽进入，在不锈钢板上形成一层水膜从上而下流动，废气除尘器端部进入与从上而下流动水膜发生碰撞，这样含尘气体被水膜湿润截留，尘粒随水流到除尘器底部贮水盘中。当经第二道水幕板碰撞后，废气沿水幕板底部冲击积水盘中循环液面，部分粗大的尘粒直接沉降在积水盘内。随后含尘气体高速通过 S 型通道，激起大量水滴，使粉尘与水滴充分接触清除气体中的含尘量。此法对 5 μm 以上的颗粒粉尘去除效率达 85% 以上。



The horizontal spray cabinet is equipped with two water curtains inside. The first is a rectangular stainless steel perforated plate, and the second is a non-perforated stainless steel plate. Water enters from the water trough above the water curtain plate and forms a water film flowing from top to bottom on the stainless steel plate. The exhaust gas enters the end of the dust collector and collides with the downward flowing water film on the stainless steel plate. The dust-containing gas is intercepted and trapped by the wet water film, and the dust particles flow down the water tray at the bottom of the dust collector with the water. After colliding with the second water curtain plate, the exhaust gas hits the water in the lower part of the water curtain plate and circulates. Some of the larger dust particles directly settle in the water tray. Then, the dust-containing gas passes through the S-shaped channel at high speed and stirs up a large number of water droplets, allowing the dust to fully contact with the water droplets and remove the dust content in the gas. This method can achieve a dust removal efficiency of over 85% for particles and dust above 5μm.

四、特点 CHARACTERISTICS

除尘后气体再经出口处的气水分离器去除气体中水分；烟气通过除雾器的弯曲通道，在惯性力及重力的作用下将气流中夹带的液滴分离出来：除尘后的烟气以一定的速度流经除雾器，烟气被快速、连续改变运动方向，因离心力和惯性的作用，烟气内的雾滴撞击到除雾器叶片上被捕集下来，雾滴汇集形成水流，因重力的作用，下落至底部接水盘内，实现了气液分离，使得流经除雾器的烟气达到除雾要求后排出。

卧式喷淋（水幕）除尘柜与立式喷淋除尘塔相比具有检修方便、除尘方式多样等优点。本除尘柜采用水幕 + 冲激涡卷除尘，柜体不锈钢材料制作，接水盘不锈钢材质。柜体侧面开检修门，方便人员进出维护。

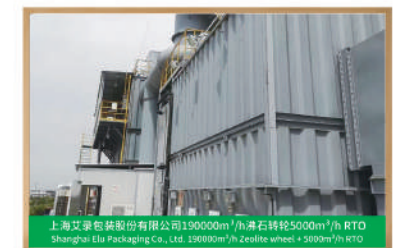
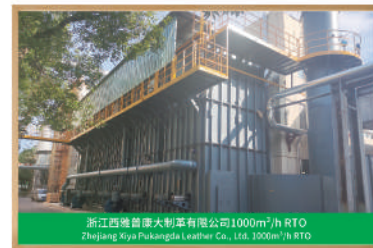
优点：布置方便、净化除尘风量大、除尘效率高、检修方便的特点。

After dust removal, the gas-water separator at the outlet removes the moisture in the gas. The flue gas passes through the bend channel of the demister, and under the action of inertia force and gravity, the liquid droplets carried in the gas flow are separated. After dust removal, the flue gas flows through the demister at a certain speed, and the flue gas changes direction quickly and continuously. Due to the centrifugal force and inertia, the mist drops in the flue gas collide with the demister blades and are collected. The mist droplets are gathered to form a water stream and fall to the bottom water collection tray under the action of gravity, achieving gas-liquid separation, ensuring that the flue gas flowing through the demister meets the defogging requirements and is discharged. Compared with the vertical spray dust removal tower, the horizontal spray (water curtain) dust removal cabinet has the advantage of convenient maintenance and various dust removal methods. This dust removal cabinet adopts water curtain + impulse vortex dust removal, and the cabinet body is made of stainless steel material, with a stainless steel water tray. The side of the cabinet is equipped with a maintenance door, which is convenient for personnel to enter and maintain.

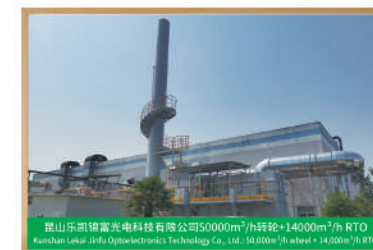
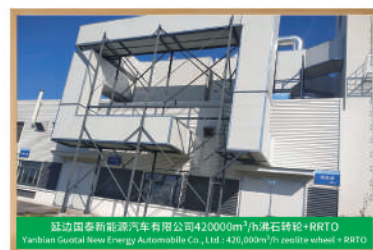
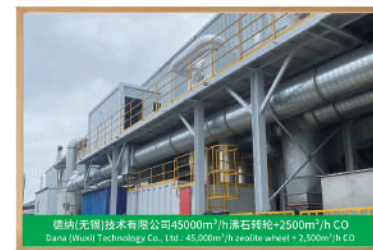
Advantages: easy layout, large air volume for purification and dust removal, high dust removal efficiency, and convenient maintenance.



工程实例 PROJECT EXAMPLE



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经典客户 CLASSIC CLIENTS



