

吸附法环境处理装置

Environmental Processes Featuring Adsorption Technology

公司介绍 Introduction

吸附技术工业股份公司利用独自研究开发的先进吸附技术和吸附剂，设计和制造具有国际先进水平的环境装置和气体分离净化装置。本公司提供性能先进的挥发性有机物(VOC)处理装置，水处理装置，气体分离、浓缩和净化装置。

Adsorption Technology Industries, Ltd. designs and manufactures advanced environmental equipments and gas separation apparatus, using excellent original techniques and high performance original adsorbents. We supply advanced VOC waste gas treatment apparatus, water treatment apparatus, gas separation and purification apparatus.

产品介绍 Products

- 高性能臭氧吸附反应装置 MAXOZONE REACTOR (Gas Treatment)
- 高性能水处理装置 MAXOZONE REACTOR (Water Treatment)
- 高性能变压吸附VOC分离回收装置 PSA-VOC Recovery Unit (High Concentration)
- 高性能变压吸附 (VPSA) 甲烷分离净化浓缩回收装置 PSA-CH₄ Recovery and Purification Unit
- 高性能变压吸附空气分离制氧装置 Small Scale PSA-O₂ from air

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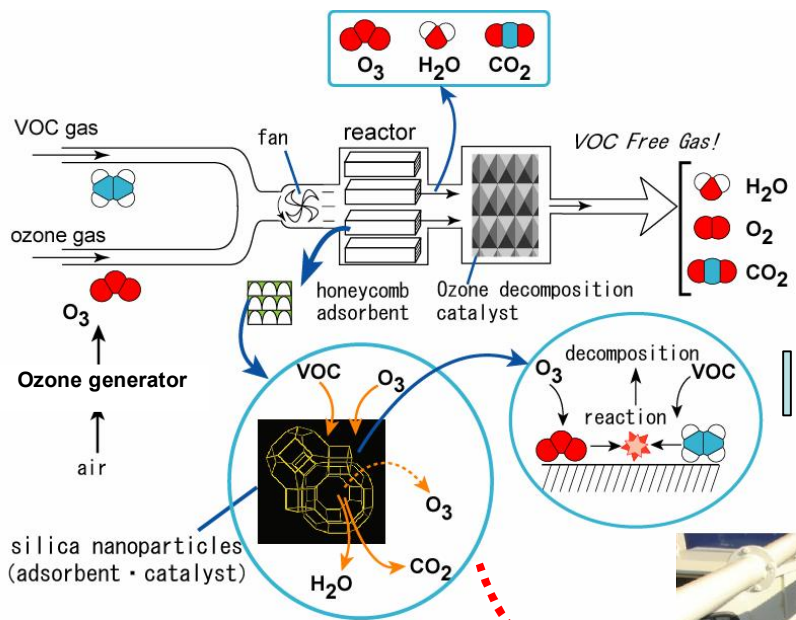
高性能臭氧吸附反应装置 (VOC处理装置)

MAXOZONE REACTOR For VOC Gas Treatment

原理 Principle

本装置是利用在纳米SiO₂的表面挥发性有机物(VOC)被臭氧高效率分解的性质而设计制造的高性能、低成本的VOC处理装置。尤其对低浓度的VOC具有极高的分解性能。

MAXOZONE REACTOR, featuring ozone-VOC adsorption reaction on silica nano-particles, is an economical high performance VOC treatment unit. It especially favors the treatment of VOC gas with concentration lower than 200ppm.

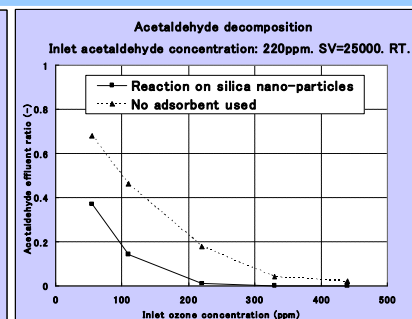
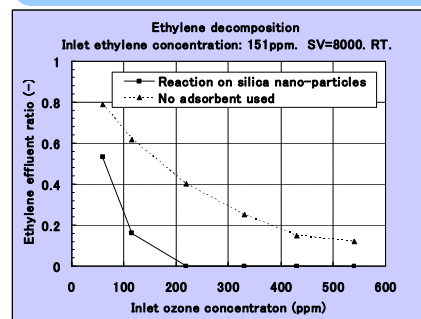


装置特长
Remarks

可被高效率分解的VOC

High decomposition performance for the following VOCs

ethylene, propylene, benzene, xylene, toluene, ethylacetate, trichloroethane, formaldehyde, acetaldehyde etc.



具有非常高的VOC除去能力 *Excellent VOC removal ability*

可用于各种VOC *Applicable to various kinds of VOC*

由于残留臭氧被分解使用安全 *No leakage of ozone*

设计上比同能力装置小型简洁 *Very compact*

应用 Application

- 恶臭除去 Bad smell removal
- 工厂废气净化 VOC removal from off-gas
- 农产品保鲜 Agricultural product preservation

MR-1000



装置主要指标

Specifications

product No.	capacity m ³ /h	low conc.	high conc.	ozone amount for low conc. VOC g/h	ozone amount for high conc. VOC g/h	size		
		bad smell removal ppm	VOC removal ppm					
						w(mm)	D(mm)	H(mm)
MR-10	10	10	200	0.2	4	160	320	160
MR-100	100	10	200	2	40	320	640	320
MR-1000	1000	10	200	20	400	720	1440	720
MR-10000	10000	10	200	200	4000	1800	3600	1800

高性能水处理装置

MAXOZONE REACTOR For Water Treatment

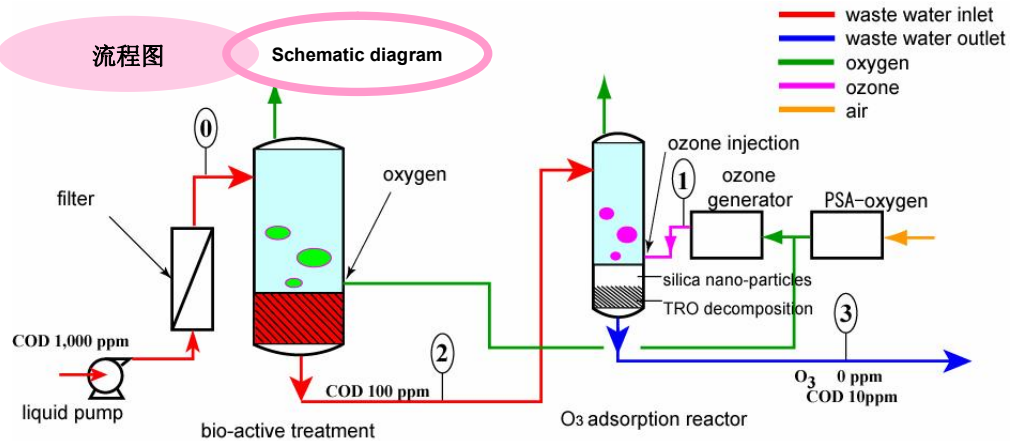
原理 Principle

本装置是利用在纳米SiO₂的表面COD成分被臭氧高效率分解的性质而设计制造的高性能、低成本的废水处理装置。尤其难于被生物分解的成分具有极高的分解性能。

MAXOZONE REACTOR, featuring ozone-COD adsorption reaction on silica nano-particles, is an economical high performance water treatment unit. It especially favors the treatment of anti-biodegradable compounds.

流程图

Schematic diagram



装置特长

Remarks

具有非常高的COD除去能力 *Excellent COD removal ability*

可用于各种COD成分 *Applicable to various kinds of COD compositions*

由于残留臭氧被分解使用安全 *No leakage of ozone*

设计上比同能力装置小型简洁 *Very compact*

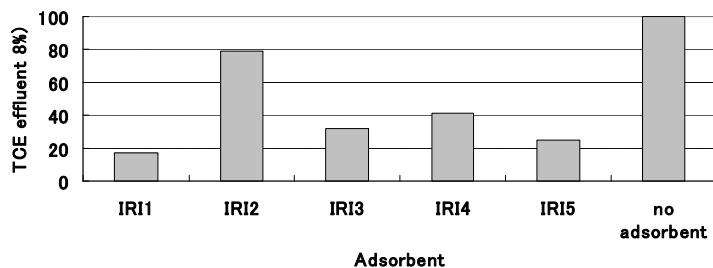
应用 Application

- 高度上水处理
Water supply
- 高度下水处理
Sewage disposal
- 养殖用海水净化
Cultivation, seawater purification



Water treatment unit (2 ton/day)

Decomposition of trichloroethylene



可被高效率分解的COD成分

High decomposition performance for the following COD compositions

EDTA, cis-1,2-di-chloroethylene, trans-1,2- di-chloro ethylene, hydroquinone, naphthalene, phenol, fumaric acid, maleic acid, nitrobenzene, acrylonitonyl, vinyl chloride, bisphenol A, aniline, TCE, 1-buthanol, acetaldehyde, ethanol, diethylether, formaldehyde

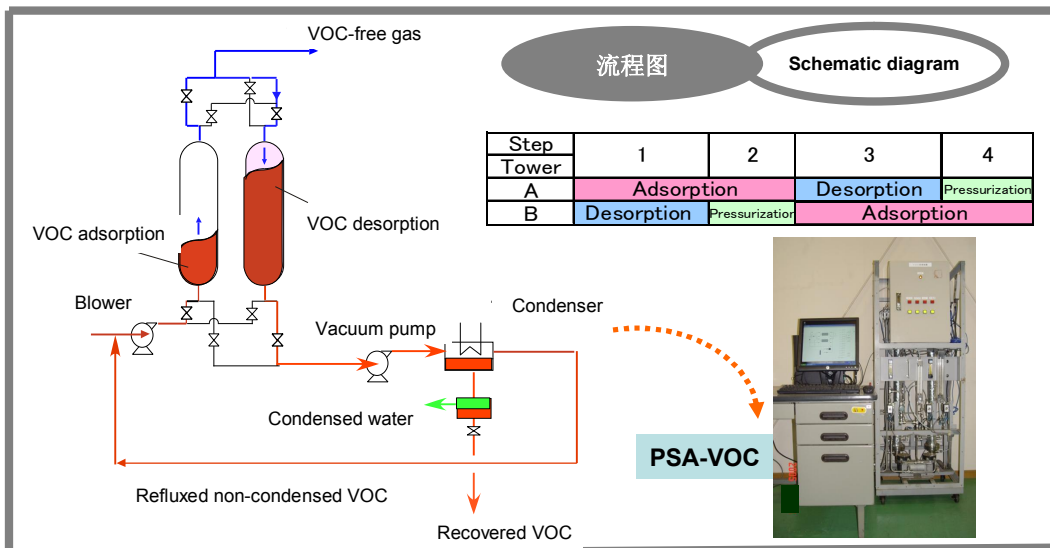
高性能变压吸附VOC分离回收装置

PSA-VOC Recovery Unit (For high concentration VOC)

原理 Principle

本装置是采用独自开发的在水蒸气共存下也能保持高效吸附性能的VOC吸附剂和先进的吸附技术而设计制造的高性能、低成本的VOC回收装置。第一吸附塔在大气压条件下吸附除去VOC，与此同时另一个吸附塔将吸附的VOC解吸浓缩，VOC被低温液化而得以回收。

PSA-VOC (for high concentration VOC) is a high efficient and economical VOC recovery unit, using silica nano-particles which adsorb VOC selectively in humid atmosphere. While one tower adsorbs VOC at atmospheric pressure, another tower desorbs VOC at vacuum pressure to recover and condense VOC at low temperature.



装置主要指标 1 Specifications1

Conditions	Specification
Inlet VOC concentration	economical at concentrations high than 1000ppm
Inlet gas rate	1~10,000m ³ /h
Adsorption pressure	105~150kPa
Desorption pressure	5~30kPa
Adsorption temperature	keeping constant at 10~75℃
Adsorbent	silica nano-particle, carbon nano-particle
Adsorption shape	monolith
VOC recovery unit	Liquefaction-VOC/water density separation
VOC recovery ratio	>80%

装置主要指标 2 Specifications2

Inlet gas rate	VOC conc.	VOC recovery ratio	Recovered VOC rate	Energy/ Recovered VOC	Adsorbent loaded	Size		
						W	D	H
m ³ N/h	ppm	%	m ³ N/h	kW/kg	m ³	m	m	m
10	5,000	90	0.045	0.81	0.02	0.3	0.7	2.1
100	5,000	90	0.45	0.81	0.2	0.7	1.8	3.1
1,000	5,000	90	4.5	0.81	2	2.2	5.5	3.1
10,000	5,000	90	45	0.81	20	7.0	17.5	3.1
1,000	1,000	90	1	3.90	2	2.2	5.5	3.1
1,000	10,000	90	9	0.42	2	2.2	5.5	3.1
1,000	50,000	90	45	0.12	2	2.2	5.5	3.1
1,000	100,000	90	90	0.08	2	2.2	5.5	3.1

特长

具有非常高的VOC回收能力 *High VOC removal ratio*

可用于各种VOC *Applicable to various kinds of VOC*

Applications

由于在低温操作可以避免VOC物质劣化 *No deterioration of recovered VOC*

对高浓度VOC的回收成本很低 *Economical recovery of high conc. VOC*

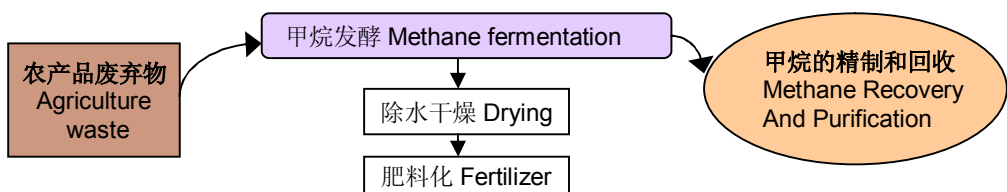
高性能变压吸附甲烷分离净化浓缩回收装置

VPSA-CH₄ Recovery and Purification Unit

简介 Introduction

本装置利用独自开发的高效吸附剂和先进的吸附技术、把生物发酵槽所发生的以甲烷和二氧化碳为主要成分的生物发酵气体中的甲烷回收和高度浓缩。本装置具有高性能、低成本、运行费用低，长期运行可靠的特点。

VPSA-methane (Vacuum pressure swing adsorption) provides the high efficiency, compact, easy operation and easy maintenance process for methane recovery and purification from bio-gas. (CH₄ 65vol%, CO₂ 30vol%, H₂O 5vol%, H₂S 100ppm, CH₃SH 10ppm).



高效H₂S和CO₂吸附剂
High performance H₂S and CO₂ adsorbents

◎本公司独自研究开发的高硅分子筛具有很大的H₂S吸附量和选择性。而且元素硫的残留率很小。

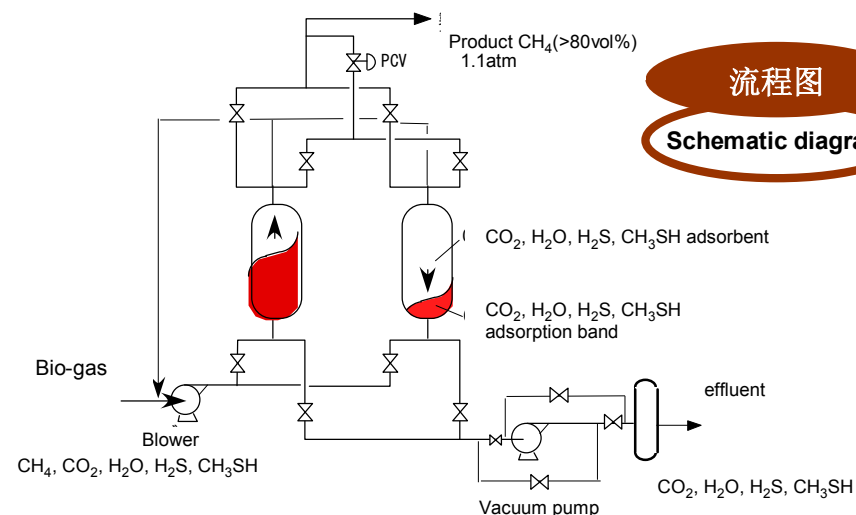
ADSOTECH H₂S adsorbent is a kind of high silica porous material. It has a great adsorption amount of H₂S, a high H₂S/CO₂ selectivity, and a low elementary sulfur deposition.

◎本公司独自研究开发的低硅含量分子筛具有很大的CO₂吸附量。而且还具有很高的CO₂/CH₄选择性。

ADSOTECH CO₂ adsorbent is a kind of low silica porous material. It has a great adsorption amount of CO₂, a high CO₂/CH₄ selectivity.



VPSA-CH₄ recovery and purification unit



流程图

Schematic diagram

装置主要指标 Specifications

Inlet gas compositions	CH ₄ 70vol%, CO ₂ 30vol%, H ₂ O 4vol%, H ₂ S 100ppm, CH ₃ SH 10ppm, siloxanes 10ppm
Inlet gas rate	1500m ³ N/h
H ₂ O, CO ₂ , H ₂ S, CH ₃ SH, siloxanes removal ratio	>99%
CH ₄ recovery ratio	>90%
Energy for H ₂ O, CO ₂ , H ₂ S, CH ₃ SH, siloxanes removal	60 kW
Energy for CH ₄ recovery	100 kW
CH ₄ recovery amount	1000m ³ N/h (CH ₄ concentration > 90vol%)
Energy for CH ₄ recovery per unit volume	0.16 kWh/m ³ N-CH ₄
Energy for VPSA/Electric power output	about 4%

高性能变压吸附空气分离制氧装置

High efficiency PSA-O₂ from air

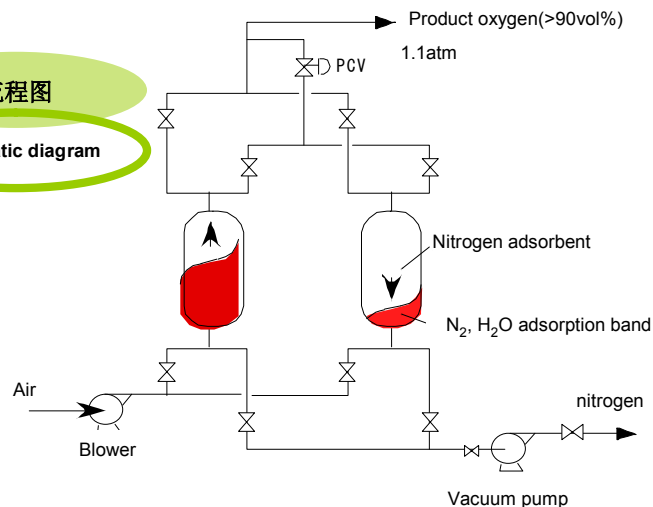
原理 Principle

本装置利用独自开发的高效氮气吸附剂、在大气压的条件下、吸附占空气中79%的氮气而回收氧气。在减压的条件下使氮气脱附，从而连续不断地由空气来分离制造氧气。本装置具有高性能、低成本的特点。尤其适合于制造中小容量的氧气。

Advanced ADSOTECH adsorbent shows a high nitrogen adsorption capacity and a high N₂/O₂ selectivity. One tower adsorbs nitrogen from air at the atmospheric pressure and another tower desorbs nitrogen in the vacuum condition. It especially favors the small and medium scale oxygen separation.

流程图

Schematic diagram



应用 Application

- 臭氧发生器 Ozone generator
- 养殖业 Cultivation
- 水处理 Waste water treatment
- 焊接 Gas welding

装置特长

Remarks

设计上比同能力装置小型简洁 *Very compact*

氧气纯度最高可达95vol% *High concentration oxygen production*

制氧电耗低 *Low electric power consumption*

高性能氮气吸附剂使用 *Advanced nitrogen adsorbent*

吸附剂压力损失小 *Low pressure loss monolith*



PSA-oxygen

装置主要指标

Specifications

Type	Capacity LN/min	O ₂ conc. vol%	Power kW	Size		
				W(mm)	D(mm)	H(mm)
PO-1	1	93	0.1	200	250	400
PO-4	4	93	0.25	250	300	600
PO-15	15	93	0.9	300	400	700
PO-50	50	93	2.3	500	700	900

ADSOTECH

吸附技术工业股份公司

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吸附法环境处理装置

Environmental Processes Featuring Adsorption Technology



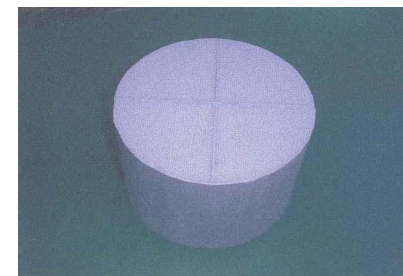
MR-10
A field test for bad smell removal



Water treatment unit (2ton/day)
Sea water purification for cultivation



Sea water purification for small scale cultivation
(Super market, restaurant, etc.)



monolith



MR-1000
Removal of bad smell from a food industry



PSA-VOC recovery unit



PSA-oxygen



VPSA-CH₄ recovery and purification unit

吸附技术工业股份公司制品一览

PSA-oxygen from air

Type	Capacity LN/min	O ₂ conc. vol%	Power kW	Size		
				W(mm)	D(mm)	H(mm)
PO-1	1	93	0.1	200	250	400
PO-4	4	93	0.25	250	300	600
PO-15	15	93	0.9	300	400	700
PO-50	50	93	2.3	500	700	900

PSA-VOC Recovery Unit

Inlet gas rate m ³ N/h	VOC conc. ppm	VOC recovery ratio %	Recovered VOC rate m ³ N/h	Energy/Recovered VOC kW/kg	Adsorbent loaded m ³	Size		
						W	D	H
						m	m	m
10	5,000	90	0.045	0.81	0.02	0.3	0.7	2.1
100	5,000	90	0.45	0.81	0.2	0.7	1.8	3.1
1,000	5,000	90	4.5	0.81	2	2.2	5.5	3.1
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1,000	100,000	90	90	0.08	2	2.2	5.5	3.1

MAXOZONE REACTOR For VOC Gas Treatment

product No.	capacity	low conc. VOC	high conc. VOC	ozone amount for low conc. VOC	ozone amount for high conc. VOC	size		
		bad smell removal	VOC removal					
	m ³ /h	ppm	ppm	g/h	g/h	w(mm)	D(mm)	H(mm)
MR-10	10	10	200	0.2	4	160	320	160
MR-100	100	10	200	2	40	320	640	320
MR-1000	1000	10	200	20	400	720	1440	720
MR-10000	10000	10	200	200	4000	1800	3600	1800

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