

—— 半导体专用臭氧系统服务商 ——
SERVICE PROVIDER OF SPECIAL OZONE SYSTEM FOR SEMICONDUCTOR



PROFESSIONAL EXPERIENCE FOR 20 YEARS
CHINA OZONE INDUSTRY STANDARD SETTER
STABILITY, SAFETY, NON INTEGRATION

—> 专业沉淀20年 <—
中国臭氧标准制定者
稳定 安全 自主非集成

青岛国林半导体技术有限公司
Qingdao Guolin Semiconductor Technology Co., Ltd.

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企业简介

BRIEF INTRODUCTION OF COMPANY

青岛国林半导体技术有限公司

QINGDAO GUOLIN SEMICONDUCTOR TECHNOLOGY CO., LTD.

青岛国林半导体技术有限公司系青岛国林科技集团股份有限公司（股票代码：300786）全资子公司，专注于研发半导体、光伏新能源、电子光电等相关领域的臭氧应用系统解决方案。

Qingdao Guolin Semiconductor Technology Co., Ltd. is a wholly-owned subsidiary of Qingdao Guolin Technology Group Co., Ltd. (Stock Abbreviation: Guolin Technology; Stock Code: 300786), focusing on the research and development of semiconductor, photovoltaic new energy, electronic optoelectronics and other related fields of ozone application system solutions.

国林科技作为“臭氧产生机理研究、臭氧装备设计与制造、臭氧系统工程方案设计、安装、调试、运行及维护”的专业化公司，是《水处理用臭氧发生器》行业标准及国家标准的主编单位，已成为全球知名的臭氧系统装备专业化企业。

Guolin Technology, as a professional company of "ozone generation mechanism research, ozone equipment design and manufacturing, ozone system engineering scheme design, installation, commissioning,



operation and maintenance", is the editor in chief of the industrial standard and national standard of "Ozone Generator for Water Treatment", and has become a world-famous professional enterprise of ozone system equipment.

在光伏、半导体、电子光电等微观制程应用领域，国林半导体充分发挥臭氧技术优势，为客户提供高纯半导体级臭氧相关装备，全方位满足客户需求，实现国产化替代。公司将始终致力于不断提升中国半导体臭氧装备技术水平，为半导体设备国产化发展做出贡献。

In the micro process application fields such as photovoltaic, semiconductor and electronic optoelectronics, Guolin Semiconductor gives full play to the advantages of ozone technology, provides customers with high-purity semiconductor grade ozone related equipment, comprehensively meets customers' needs and realizes localization substitution. The company will always be committed to continuously improving the technical level of China's semiconductor ozone equipment and contributing to the localization and development of China's semiconductor equipment.

产品分类 PRODUCT CLASSIFICATION



臭氧气体输送系统 OZONE GAS DELIVERY SYSTEM

臭氧气体输送系统，可产生超纯、可靠的臭氧气体。在清洁的半导体环境中，借助臭氧气体反应实现原子层沉积 (ALD) 和蚀刻 (ALE) 等薄膜沉积工艺。高纯度、高浓度臭氧气体能够产生更高的薄膜密度，从而提高产品产量、产品性能和可靠性。

Ozone gas delivery system can produce super pure and reliable ozone gas. In a clean semiconductor environment, thin film deposition processes such as atomic layer deposition (ALD) and etching (ALE) are realized by ozone gas reaction. High purity and high concentration ozone gas can produce higher film density, so as to improve the output, performance and reliability of products.

应用领域:

化学气相沉积 (CVD)
原子层沉积 (ALD)
氧化生长
表面处理
清洁、湿法应用及其他

APPLICATION FIELD:

Chemical vapor deposition
Atomic layer deposition
Oxidation growth
Surface treatment
Cleaning, wet application and others

系统采用高浓度、超纯净臭氧生成技术，精准的臭氧浓度检测、流量、压力控制和稳定的电源，以及安全防护等附加功能。是一种自由组合的、可高度集成的模块化臭氧系统，可以配备多组 GTC 型号发生器，形成多通道系统，满足不同臭氧气体应用需求。

The system adopts high concentration, super pure ozone generation technology, accurate ozone concentration detection, flow, pressure control and stable power supply, safety protection and other additional functions. Is a kind of free combination, can be highly integrated modular ozone system, and can be equipped with multiple groups of GTC model ozone generators, forming a multi-channel system, to meet the needs of different ozone gas applications.

- 臭氧浓度高，浓度高达 400mg/L；
High ozone concentration, up to 400mg/L;
- 高臭氧产量可达 220g/h；
High ozone capacity, up to 220g/h;
- 高气体流量； High gas flow;
- 采用超纯发生技术与超纯材料及工艺制造，避免金属污染及析出；
Super pure generation technology, super pure materials and processes are adopted to avoid metal pollution and precipitation;
- 水冷型，无氮气掺加技术；
Water cooled, no nitrogen additive technology;
- 通道数量 1-4 可选；
Number of channels 1-4 Optional;



电子级超纯臭氧气体发生器

ELECTRON GRADE SUPER PURE OZONE GAS GENERATOR

采用高浓度、超纯净、深度精细工艺的臭氧实现技术是该发生器实现的基础。臭氧被电子工业用于形成 CVD 和 ALD 薄膜、氧化物生长、光刻胶去除和多种清洁应用。

The realization technology of ozone with high concentration, super purity and deep fine process is the basis of the realization of this ozone gas generator. Ozone is used in the electronics industry to form CVD and ALD films, oxide growth, photoresist removal and a variety of cleaning applications.

GTC 发生器能够产生高浓度、大流量、高压力的超洁净臭氧，整体模块化，结构紧凑，简洁、可视化外观。

GTC generator can produce super clean ozone with high concentration, large flow and high pressure. It is modular, compact, concise and visual.

- 臭氧浓度高，浓度高达 400mg/L； High ozone concentration, up to 400mg/L;
- 臭氧输出压力高，压力高达 3.0bar； High ozone output pressure, up to 3.0bar;
- 高气体流量； High gas flow;
- 采用超纯发生技术与超纯材料及工艺制造，避免、减少金属污染及析出；
Super pure generation technology, super pure materials and processes are adopted to avoid metal pollution and precipitation;
- 水冷型，无氮气掺加技术； Water cooled, no nitrogen additive technology;
- 获得专利的臭氧专用结构设计，确保放电均匀一致性，保证系统性能更稳定；
Patented ozone special structure design, ensure uniform discharge consistency, ensure more stable system performance;



半导体级高浓度臭氧水机 ▶

超纯高浓度臭氧水系统

ULTRA PURE HIGH CONCENTRATION OZONATED WATER SYSTEM

半导体级高浓度臭氧水系统专为光伏、半导体等电子行业应用而开发设计，系统采用高浓度、超纯净臭氧生成技术、独特的混合与控制技术，选用高品质、超纯耐臭氧材料，实现为半导体和光伏等应用提供超洁净、高浓度臭氧水。

The semiconductor grade high concentration ozonated water system is specially developed and designed for the application of photovoltaic, semiconductor and other electronic industries. The system adopts high concentration and super pure ozone generation technology, unique mixing and control technology, and selects high-quality and super pure ozone resistant materials to provide ultra clean and high concentration ozonated water for semiconductor and photovoltaic applications.

臭氧水广泛应用于清洗与氧化制程中，如去除颗粒、金属离子、自然氧化层以及有机物，臭氧水作为可替代 SC1 和 SC2 的新的清洗方式，大幅度降低行业污染物排放、降低清洗成本，提高清洗效果。

Ozonated water is widely used in cleaning and oxidation process, such as removing particles, metal ions, natural oxide layer and organic matter. As a new cleaning method to replace SC1 and SC2, ozonated water can greatly reduce the emission of pollutants in the industry, reduce the cleaning cost and improve the cleaning effect.



▲ 光伏级高浓度臭氧水机

- 臭氧水输出稳定, 臭氧水流量 2-50L/min 可控、可调;
 Stable ozonated water output, the ozonated water flow 2-50L/min which is controllable and adjustable;
- 应用超纯高效混合与控制技术, 臭氧水溶浓度实现 5-100ppm;
 Use ultrapure high efficiency mixing and control technology and the ozonated water concentration can reach to 5-150ppm;
- 臭氧浓度输出速度快, 气体输出压力高, 3.0bar;
 High ozone concentration output speed and gas output pressure 3.0bar;
- 采用超纯发生技术与超纯材料及工艺制造, 避免金属污染及析出;
 Use ultrapure generation technology and ultrapure material and process manufacturing to avoid metal contamination and precipitation;
- 设备具有互锁、联动保护功能, 发生异常及时进行有效警示与保护;
 The device has the functions of interlocking and linkage protection, and provides effective warning and protection in time when exceptions occur;
- 设备可与外部进行通讯, 实现数据传送以及进行远程控制;
 The device can communicate with the outside to realize data transmission and remote control;



移动式高浓度臭氧水系统

MOBILE-TYPE HIGH CONCENTRATION OZONATED WATER SYSTEM

移动式高浓度臭氧水系统专为工业清洗、农牧业清洗，空间杀菌，环境卫生防疫，土壤改良灌溉，果蔬种植防虫害等研发的专用臭氧装备，根据应用场景不同分为“车载移动式”以及“便携移动式”，装置随时根据需要生产出高浓度的臭氧水，可满足多个地点多种不同现场应用的需求。

Mobile-Type high concentration ozonated water system is the special ozone equipment designed for industrial cleaning, farming animal husbandry cleaning, space of sterilization, sanitation, health and epidemic prevention, soil improvement, irrigation, fruit and vegetable planting and pest prevention and so on. According to different application fields, device can be divided into "Vehicle Mobile" and "Portable Mobile". The device can produce high concentration ozonated water at any time according to the requirements, which can meet the needs of a variety of different field applications in multiple locations.

该系列产品集臭氧发生、臭氧混合、臭氧分解、高压动力输送等一体化的集成装置，适合各类及野外等特殊场合作业。移动式臭氧水系统可输出一定压力高浓度臭氧水用于清洗、杀菌等应用，根据需要可提供灌溉、喷洒、冲刷等各类使用方式，完美替代传统化学类药剂及清洗水，具有杀菌、清洗能力强、速度快，绿色环保无污染，对环境及人员零危害的保障。

The series of products are the integrated devices, which integrating ozone generation, ozone mixing, ozone decomposition, high pressure power transmission and so on, suitable for all kinds of field and other special occasions. Mobile ozone water system can output a certain pressure of high concentration ozonated water for cleaning, sterilization and other applications. According to needs can provide irrigation, spraying, scouring and other kinds of use, the perfect replacement of traditional chemical agents and cleaning water, high concentration ozonated water with sterilization and cleaning ability and fast, green environmental protection and without pollution, zero harm to the environment and personnel.

应用领域：

市政环境卫生的消毒、除臭
疫情、地震、水灾等自然防疫处理
公共场所的空间消毒杀菌
光伏太阳能清洗维护
工业管道器具清洗杀菌
养殖、屠宰场所的清洗杀菌
农业种植防虫

APPLICATION FIELD:

Municipal environmental sanitation disinfection, deodorization;
Natural epidemic prevention measures such as epidemics, earthquakes and floods...;
Public space disinfection and sterilization;
Photovoltaic solar cleaning and maintenance;
Cleaning and sterilization of industrial plumbing appliances;
Cleaning and sterilization of breeding and slaughtering sites;
Agricultural planting and pest prevention;



配套设备与配件

SUPPORT EQUIPMENT AND ACCESSORIES

臭氧发生与破坏相关的原料与部件(如发生室、尾气破坏器、催化剂.....)

Raw materials and components related to ozone generation and destruction (such as generation tank, ozone destructor, catalyst...)

检测仪表：臭氧相关检测类仪表(空间、液体、气体相关.....)

Testing instrument: ozone related testing instrument (space, liquid, gas related...)

优势 & 特点

ADVANTAGES & FEATURES

掌握核心技术: MASTERING CORE TECHNOLOGY

公司掌握半导体级臭氧装备的一系列关键核心技术, 拥有多项臭氧核心产品知识产权。

The company has mastered a series of key core technologies of semiconductor grade ozone equipment and has a number of intellectual property rights of ozone core products.

引领行业发展: LEAD THE DEVELOPMENT OF THE INDUSTRY

创立中国臭氧技术标准, 不断提升国产化设备水平, 推动行业持续进步。

Establish Chinese ozone technical standards, continuously improve the level of domestic equipment, and promote the continuous progress of the industry.

专业化: SPECIFICATION

20 余年臭氧专业应用经验, 行业专家集聚, 为客户提供技术零门槛服务。

More than 20 years of professional ozone application experience and industry experts gathered to provide customers with zero-threshold technology services.

品质至尚: HIGH QUALITY

精细工艺, 专业服务, 为客户提供创造价值的产品。

Exquisite craft and professional service provide customers with value-creating products.

