三 圣
SUNSHINE

在盐酸合成、脱析、净化精制领域与您携手
共同营造当今环保理念

Working together with you and creating new conception of environment protection in the field of hydrochloric acid synthesis, desorption, purity and concentration.

南通三圣石墨设备科技股份有限公司

NANTONG SUNSHINE GRAPHITE EQUIPMENT TECHNOLOGY CO.,LTD.


三圣与您携手　营造当今环保理念——创造循环经济
Working together with you　Creating new conception of environment protection——Creating circular economy

三圣 SUNSHINE

检测和实验
Inspection and experiment

检测和实验中心配备有专业技术人员和检测设备，负责为客户使用介质推荐可靠的防腐蚀材料、材料质量检测、半成品检测、成品综合指标检测，同时参与公司的新材料、新工艺的研发工作。

1、当接到客户的订单时，我们会根据客户工艺条件进行多种石墨材料在该条件下的耐腐蚀实验，选择合适的材料推荐给客户。

2、根据客户的工艺条件通过模拟实验确定传热系数“k”值，确定合理经济的换热面积和产品和结构形式。

3、设备选型确定后，我们对选用的石墨材料进行抗拉、抗弯、抗压等综合机械性能和物理性能测试，确保证所使用的材料质量。

4、凡是粘接部件，必须进行试件抗拉强度检测后，才可进行同等条件下的施工。

5、所有石墨成品必须通过综合指标检测方可进入组装工序。

6、为保证产品的质量，必须按相关标准和图纸设计要求进行综合指标测试，经质量评定合格后方可发货。

7、对废酸回收系统进行中试运行。

我公司实验室建有多条综合工艺流程装置，可以根据客户提供的介质，进行各种状态下的模拟运行测试，从中找到较佳的工艺流程。

Inspection and experiment center of the company is equipped with specified testing devices and professional technicians. It could offer reliable testing results to customers about material, material quality, semi-manufactured products and finished products according to different media, and is involved in development of new material and new process.

1.After receipt of purchasing order, do anti-corrosion test on graphite material under the process conditions offered by the customer and recommend suitable material to the customer.

2.Determine heat-transfer coefficient K value according to customer offered process conditions by analog test, than find reasonable and economic heat-transfer area and structure.

3.After the determination of equipment type, do mechanical and physical performance test, eg. tensile test, bending test and compression test, etc., on selected graphite material to ensure reliable quality.

4.For kitting parts, manufacture under the same conditions as for sample tensile test.

5.Assemble all the graphite parts after passed comprehensive performance tests.

6.To guarantee quality of the product, do comprehensive performance tests according to related codes and requirements on drawings, and deliver only when quality is acceptable.

7.Pilot-run the waste acid recovery system.

左图：化学分析室
右图：理化测试室
Left: chemical analysis room
Right: mechanical and physical testing room

旗下全资、控股、参股企业：
Fully invested, proprietary, joint venture enterprises

南通市环境工程设计院
Nantong Environment Engineering Designing Institute

德国WILK石墨公司
WILK-GRAPHITE GmbH, Germany

中国石墨设备网
China Graphite Equipment Net

三圣 SUNSHINE

南通三圣石墨设备科技股份有限公司
Nantong Sunshine Graphite Equipment Technology Co., Ltd.

艾伯纳三圣(南通)环保有限公司
Ebner-Sunshine (Nantong) Environment Protection Co., Ltd.

南通三圣化工科技有限公司
Nantong Sunshine Chemical Process Technology Co., Ltd.

南通扬子碳素股份有限公司
Nantong Yangzi Carbon Joint Venture Co.,Ltd




三 圣
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我们的合成设备领域
Synthesis Equipments

二合一石墨HCL合成炉
2 in 1 HCl Synthesis Units

本设备集HCL气体合成冷却于一体，简化生产流程，生产能力调节余地大，对原料气适应范围广，可用原氯也可用尾氯，产品纯度高，劳动条件好，生产控制和管理方便，设备使用寿命长。

The equipment combined gas synthesis system with cooling system, simplified the process. The capacity is adjustable. We can use both purified chlorine and tail chlorine as raw materials. The purity of final products is high. The equipment has long application life and which is convenient for control and management.

为充分利用HCL合成热，减少资源消耗，减轻环境污染，本公司在行业标准型水夹套二合一石墨HCL合成炉的基础上，研究开发了多种组合式石墨HCL合成炉。

In order to take full advantage of HCl synthesis heat, reduce the resource consumption and mitigate environmental pollution, Nantong Sunshine Graphite researched and developed multi-combination synthesis units based on the standard 2 in 1 type with water jacket.

单位 Unit	设备种类 Type of Units	技术特性 Technical Characteristic
A	行业标准型水夹套式二合一石墨HCL合成炉 Standard 2 in 1 HCl synthesis units with water jacket	设计压力 Design pressure：炉内 Inside the furnace: 0.06MPa 水夹套 Water jacket：常压 constant pressure 设计温度 Design temperature：石墨壁温 Wall temperature：170℃ 水夹套 Water jacket：≤100℃　出口气温Outlet gas temperature≤350℃
B	副产95℃热水石墨HCL合成炉 HCl synthesis units with by-product of 95℃ hot water	出口气温 Outlet gas temperature≤300℃
C	副产0.3MPa饱和水蒸汽石墨HCL合成炉 HCl synthesis units with by-product of 0.3MPa sutured steam	副产0.3MPa 饱和水蒸汽 By-product of 0.3MPa sutured steam
D	副产0.35-1.4Mpa饱和水蒸汽石墨HCL合成炉 HCl synthesis units with by-product of 0.35-1.4MPa sutured steam	副产0.35-1.4Mpa 饱和水蒸汽 By-product of 0.35-1.4MPa sutured steam
E	a-d类自带HCL冷却系统获取≤40℃HCL气体型石墨HCL合成炉 HCl synthesis units with HCl cooling system (Included in No. a-d)which can obtain HCl gas≤40℃	出口气温 Outlet gas temperature≤40℃

设备规格：

炉筒内径：Di250～2000

产能：HCL气体2～240吨/天

折31%盐酸6～720吨/天

Equipment specification:

Inner diameter of furnace: Di250-2000

Capacity: HCL gas 2-240tons/day

Equal to 31% Hydrochloric acid 6-720 tons/day

三合一高纯盐酸石墨合成炉
3 in 1 high purity hydrochloric acid graphite furnace

该设备集HCL合成、冷却、吸收制取盐酸三功能于一体，结构紧凑，一台设备代替三台设备，占地面积小，管路简化，控制集中，生产效率高、操作简单，广泛应用于高纯盐酸生产，原料可用原氯或尾氯。设备吸收率高，操作方便，易于维护检修。

The equipment has compaction structure, three functions including HCL synthesis, cooling system, acid manufacturing are combined together. The equipment has high productivity and widely used in the high purity hydrochloric acid production. Both purified chlorine and tail chlorine can be used as raw materials. The equipment is convenient for operation and maintenance.

技术特性：

设计压力：

工艺侧系统：≤-0.05～0.3MPa

服务侧系统：≤0.3MPa

设计温度：

石　墨　体：≤150℃

盐 酸 出口：≤50℃

冷却水出口：≤100℃

Technical property:

Design pressure:

Process side: ≤-0.05~0.3Mpa

Water side: ≤0.3Mpa

Design temperature:

Graphite: ≤150℃

Outlet temperature (hydrochloric acid) ≤50℃

Outlet temperature (cooling water) ≤100℃

设备规格：

炉筒内径：Di250～1600

产能：31%盐酸6～360吨/天

Equipment specification:

Inner diameter furnace: Di250-1600

Capacity: 31% hydrochloric acid 6-360 tons/day

四合一高纯盐酸石墨合成炉
4 in 1 high purity hydrochloric acid graphite furnace

将合成盐酸生产过程中的燃烧合成、气体冷却、气体吸收及尾气净化在一台设备中完成。设备数量少，管道布置简单，占地面积小，更便于操作与控制。

The equipment combined synthesis process, cooling system, gas absorption and cleaning of tail gas together. Reduced the number of equipments of traditional process, and is convenient for operation and control.

技术特性：

设计压力：

工艺侧系统：≤−0.05～0.3MPa

服务侧系统：≤0.3MPa

设计温度：

石　墨　体：≤150℃

盐 酸 出口：≤50℃

冷却水出口：≤100℃

尾气含HCl：10PPm

Technical property:

Design pressure:

Process side: ≤−0.05~0.3Mpa

Water side: ≤0.3Mpa

Design temperature:

Graphite: ≤150℃

Outlet temperature (hydrochloric acid) ≤50℃

Outlet temperature (cooling water) ≤100℃

HCL gas Content in tail gas: 10PPm

设备规格：

炉筒内径：Di250～1600

产能：31%盐酸6～400吨/天

Equipment specification:

Inner diameter furnace: Di250−1600

Capacity: 31% hydrochloric acid 6−400 tons/day

我们的成套工艺系统及装置
Complete set of process and equipments

*31%盐酸脱析后，用纯水再吸收成试剂级盐酸。

*31%盐酸脱析成99%HCl气体和20%稀盐酸吸收系统。

*31%（或20%）盐酸全脱析成电子级、高纯HCl气体和≤0.5%废水。

*From 31% hydrochloric acid to reagent grade hydrochloric acid

*From 31% hydrochloric acid to99% HCL gas and 20% hydrochloric acid

*From 31% (20%) hydrochloric acid to electric grade HCL gas, high purity HCL gas and waste water (concentration less than 0.5%)

盐酸净化精制领域
Hydrochloric acid purifying treating process and unit

* 钢铁（钢丝绳）行业　薄板酸洗的废酸再生和回收$FeCl_2$。
* 电镀行业　表面处理的废酸回收再生。
* 多晶硅行业　硅精制过程中废酸的回收再生。
* 精细化工副产盐酸的精制

a、氯乙酸
b、氯化苯
c、硫基复合肥
……

* Iron and steel industry (steel cable) Recovery of waste acid and $FeCl_2$ in acid washing industry
* Electric plating industry Recovery of waste acid in surface treatment process
* Multicrystal silicon industry (steel cable) Recovery of waste acid in the refinery of silicon
* Refinery of by-product hydrochloric acid in fine chemical industry

a. Chloroethanoic acid
b. Chlorinated benzene
c. Sulfur based complex fertilizer
……

盐酸全解析制取99.99%高纯HCL气体工艺及装置

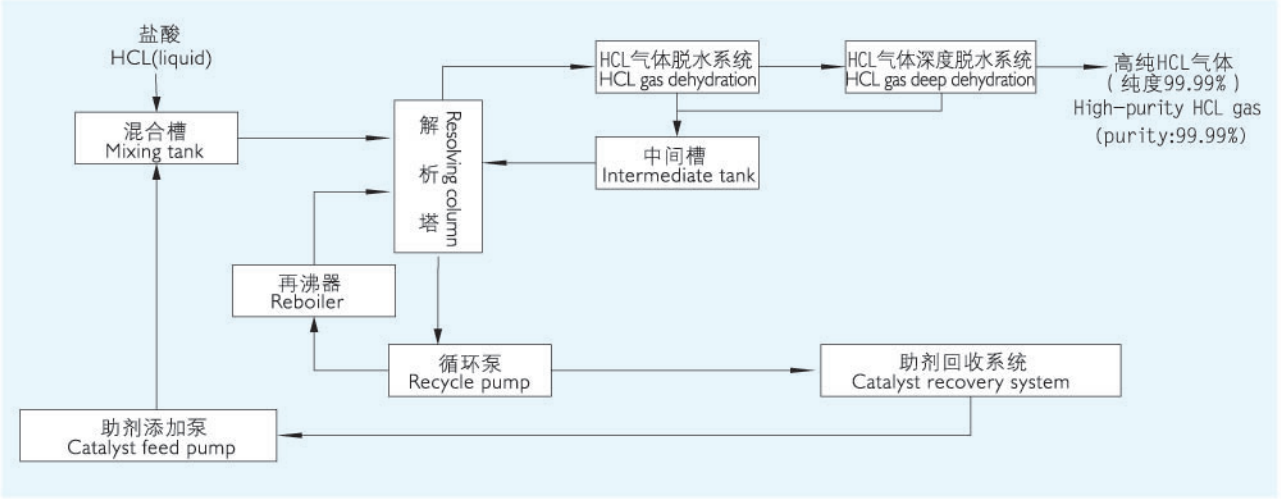
Process and unit of 99.99% high-purity HCl gas producing with hydrochloric acid

为了得到高纯度的HCL气体，一般采用解析盐酸的方法。受盐酸恒沸点的制约，采用普通解析方法，通常情况下，盐酸解析后会留下20%左右的残酸，拥有HCL合成装置的企业可用这些稀酸作为吸收液制取高浓度盐酸，但大部份企业无法利用这些稀酸，不少企业只能加碱中和后排放，这不仅增加了能源消耗，而且对环保造成了很大的压力，增加了治污成本。

为此，我公司以丰富的普通解析经验为基础，与欧洲著名工程公司合作，开发出了盐酸全解析制取高纯HCL气体的先进工艺。选择适当的催化剂，避开盐酸的恒沸点，加快盐酸脱析，采用我公司工艺可将任意浓度的盐酸解析制取纯度达99.99%的高纯HCL气体，解析后残酸浓度<1%，接近0，催化剂可通过回收循环使用。

Hydrochloric acid resolving method to produce high-purity HCl gas is widely adopted. Subject to boiling point of hydro chlorate, normally 22% hydrochloric acid will be left after resolving. Enterprise which owned the HCL synthesis devices could use these diluted acid as absorbing liquid to get high-purity hydrochloric acid, but most of the enterprise can't use these dilute acid.Some enterprises would use the method of neutralization and discharging to dispose the weak acid which would cause not only power consumption and high treatment costs.

Based on abundant resolving experience and the cooperation with famous engineering company in Europe, our Sunshine developed the advanced process of high-purity HCl gas produced by hydrochloric acid. Select proper catalyst to avoid the boiling point of hydro chlorate, accelerate the hydro chlorate, adopt our process can obtain the 99.99% high-purity HCl gas by any hydrochloric acid. The purity of residue is less than 1% and close to 0. Catalyst could be recovered and reused.



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Left: chemical analysis room
Right: mechanical and physical testing room

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