#### 应用范围 APPLICATION 膜浓缩液的深度氧化处理(焦化、煤化工、污水厂等行业) 生化出水深度处理 Deep oxidation treatment of membrane concentrate (cokina, Advanced treatment of chemical processing of coal, sewage plant, and other industries) biochemical effluent 化工生产高盐高浓度废水(医药、农药、染料 等精细化工行业) High-salt and high-concentration wastewater from chemical production (pharmaceutical, pesticide, dye, and other fine chemical industries) 0 垃圾填埋场-渗滤液、脱硫废水、油田废水等 辅助皇氣催化做协同氧化 Landfills-leachate, desulfurization waste-Auxiliary ozone catalysis

for co-oxidation

### 运行数据<sup>7</sup>Operation Data

water, oilfield wastewater, etc.

序号	进水COD (mg/L)	出水COD (mg/L)	去除率	进水氦氮 (mg/L)	出水氦氮 (mg/L)	去除睾
01	164.00	36.00	78.05%	30.40	1.94	93.62%
02	154.00	32.00	79.22%	49.30	0.20	99.59%
03	158.00	30.00	81.01%	56.60	0.13	99.77%
04	152.00	45.00	70.39%	63.00	1.07	98.30%
05	172.00	26.00	84.88%	66.00	1.16	98.24%
06	138.00	24.00	82.61%	65.00	1.47	97.74%
07	164.00	28.00	82.93%	126.00	2.85	97.74%
08	154.00	36.00	76.62%	134.00	0.95	99.29%
09	148.00	32.00	78.38%	38.00	0.86	97.74%
10	164.00	24.00	85.37%	43.00	0.20	99.53%
平均值	156.80	31.30	80.04%	67.13	1.08	98.39%

# 天俱时集团

#### TIANS GROUP

天俱时始创于1998年,是一家赋能新技术产业化的工程设计 集团,依托先进的设计理念和前瞻性的国际视野,为全球客户 提供工艺技术服务、工程咨询与设计、工程总承包、智能装 备、自动化与信息化于一体的综合解决方案,帮助客户实现 From Lab to Fab的产业化转化。业务涵盖精细化工、电子化 学品、合成生物、生物医药、化学制药、食品健康、冶金矿山 等高科技行业领域。

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双氧技术·净化未来 DUAL OXIDATION MAKING THE FUTURE CLEANER

### TIAN'S THE

## **Electrocatalytic Oxidation Wastewater Treatment** Equipment

## 电催化氧化污水处理设备



## 设备介绍

EQUIPMENT INTRODUCTION

电催化氧化污水处理设备融合了多通道连续流应用技术和高 效电催化氧化技术,为水处理行业提供了一种高效、环保的 水质改善解决方案。该设备通过精细化设计,结合新材料、 新工艺和新技术、实现了低能耗下的高通量处理和污染物粒 子之间的高速传质,在短时间内彻底降解高浓度、高盐和有 毒有机污染物。

The Electrocatalytic Oxidation Wastewater Treatment Equipment integrates multi-channel continuous-flow application technology with efficient electrocatalytic oxidation technology, providing an efficient, eco-friendly water quality improvement solution for the water purification industry. Based on fine design, new materials, new processes and new technologies, the equipment realizes high-throughput processing and high-speed mass transfer between pollutant particles under low energy consumption, completely degrading high-concentration, high-salt and toxic organic pollutants in a short time.



# 技术原理

#### TECHNICAL PRINCIPLE

电催化氧化工艺基于高级氧化处理技术原理、通过在电催化 氧化过程中生成自由基和强氧化粒子(如OH、O2、H2O2、 O3、CIO-等),与废水中的有机污染物快速发生链式反 应,实现氧化降解。该工艺能够提高B/C比,将难以生化降 解的大分子有机物彻底分解为CO\_和H\_O等简单的无机分 子,从而降解COD。

The electrocatalytic oxidation process, based on advanced oxidation treatment technology, generates free radicals and strong oxidic particles (such as OH , O<sub>2</sub> , H<sub>2</sub>O<sub>2</sub> , O<sub>3</sub> , ClO-, etc.) in the electrocatalytic oxidation process for rapid chain reaction with organic pollutants in wastewater to achieve oxidative degradation. This process can improve the BOD/COD ratio and completely decompose macromolecular organic matter that is difficult to biochemically degrade into simple inorganic molecules such as  $\mathrm{CO}_{2}$  and  $\mathrm{H_{2}O}_{\mathrm{r}}$  thereby degrading COD.





#### TECHNICAL PRINCIPLE

创新的纳米涂层配方与钛基层结合,可 在电场作用下实现电子的快速转移、快速 催化产生强氧化物质,与污染物质发生氧 化反应、不仅提高了电解效率、降低了能 耗,还极大提高了阳极的使用寿命。

The innovative nano-coating formula combined with the titanium-based layer can realize rapid transfer of electrons under the action of electric field, and quickly catalyze the production of strong oxidizing substances for oxidization with pollutants. It not only improves the electrolysis efficiency, reduces energy consumption, but also greatly improves the service life of the anode.

高性能钛基创新电极涂层 High-performance titanium-based innovative electrode coating



The low liquid holdup amount and short retention time effectively reduce the 理时间,10min内就达到90%以上的处 safety hazards in conventional electrolyzers, thereby achieving intrinsic safety.

The use of continuous-flow catalytic reactor greatly shortens the water treatment time, reaching a treatment rate of over 90% within 10 mins.

理效果.

decreased according to the water intake situation, and the module can be replaced to adjust the water treatment time. Modular and miniaturized treatment system can also be achieved. It can be integrated with the module to make possible miniature

精细化设计实现连续流动和强氧化性自 由基的充分利用, 电催化极板分段式独 立分布,极大的提高了COD去除率和传质 效率。 The fine design makes full use of continu-

ous flow and strong oxidizing free radicals. The segmented independent distribution of electrocatalytic plates significantly improves the COD removal rate and mass transfer efficiency.

### 独特的连续流反应器

consumption caused by the long electrocatalytic oxidation time. At the same time. the unique sewage flow treatment process

#### can adjust the number of microreactors according to the changes in water volume. The operating cost is reduced by over 50%. 精确控制催化时间·降能耗·降成本

ecise control of catalytic time, engergy

and portable water treatment equipment.

reducina, and cost saving

污水停留时间精确控制,有效消除因电

催化氧化时间过长而产生的高耗能。同

时,独特的污水流动式处理工艺,可根

据水量变化、灵活调整微反应器的数

The sewage retention time is precisely

controlled to avoid the high energy

量,运行成本降低50%以上。