



环境保护工程专家

*process*

流程技术 · 气体处理



From its foundation in 1957, the innovation has been a priority objective in **TECNIUM**. Also we have always been pioneers in the development of techniques and applications in the field of Gas Treatment, from 60's to the present time. Some examples:

**TECNIUM** 公司自1957年成立以来，一直以创新为宗旨。因此，从60年代至今，我们在气体处理技术的应用和创新方面一直是行业先锋。

- 1966 Gas Washing Plants
- 1967 Polyester Fans
- 1969 Multiventuri Scrubbers
- 1973 Mist Eliminators
- 1979 PVDF and PET equipment build-up
- 1991 Odour Removal with Ozone
- 1993 Polyester Covers
- 1995 Biological Gas Treatment
- 1997 Dry system chemical absorption
- 1998 VOC elimination
- 2000 Regenerative Thermal Oxidation
- 2003 Installations for classified zones Atex 94/9/EC

- 1966 气体洗涤工厂
- 1967 聚酯风机
- 1969 复合文丘里洗涤塔
- 1973 除雾器
- 1979 PVDF和PET设备建造
- 1991 臭氧法除味
- 1993 聚酯盖子
- 1995 生物法气体处理
- 1997 干法化学吸收
- 1998 VOC去除
- 2000 再生热氧化
- 2003 符合Atex 94/9/EC标准的安装应用

Manufacturing and Quality Assurance  
德国莱茵质量体系认证





## 环境保护先锋

# Always in the vanguard

Founded on 1957 in Barcelona, with nearly 50 years of experience, **TECNIUM** has always been a pioneering company and leader in solving problems of the industry related to corrosion and atmospheric pollution. **TECNIUM** guarantees the protection of the environment controlling the atmospheric pollution originated by industrial processes ◆

**TECNIUM** 公司于1957年成立于西班牙巴塞罗那，在处理工业相关的腐蚀问题和大气污染方面有着50多年的丰富经验。**TECNIUM** 用先进的工艺来控制工业流程产生的大气污染。



Thanks to the specialized R+D department, composed of a team of top-level engineers and technicians and thanks to the continuous collaboration with several Universities, **TECNIUM** offers to the industrial world applications and solutions of advanced design and high performance ◆

由于**TECNIUM** 公司拥有专业的研发部门及高水平的工程师和技术人员，并且和多所大学长期合作，因此作为行业先锋，我们一直能够提供最先进的解决方案。



VOC absorption on a pharmaceutical plant in France  
法国某制药厂的VOC吸收装置



Dedusting unit by multi-venturi on a pigment manufacturing plant  
某染料厂的复合文丘里除尘系统

**R+D.**

## Consulting and testing 咨询和实验

**TECNIUM Process** also offers to its clients a consulting and testing service, providing studies and simulations, reports for subsidies and even some pilot modular plants to perform tests in real conditions ◆

**TECNIUM** 流程部门可以为客户提供技术咨询或测试服务，也可以根据用户要求，提供模拟实际工况的测试并提供报告。

## Manufacturing 生产

**TECNIUM** has the most suitable facilities and equipment for manufacturing its specialized products, complying with the requirements of ISO standards, within a quality assurance system guaranteed process ◆

**TECNIUM** 拥有完善的专业的生产设备，整个流程符合ISO质量控制体系标准



## R+D工程项目咨询服务

# Engineering. Consulting

## Materials 材料

*The use of corrosion resistant materials (Polypropylene, PVDF, E-CTFE, Glass Reinforced Polyester, PVC, etc.) together with traditional steels, alloys and coatings, makes our solutions reliable and competitive ◆*

除了普通的钢、合金之外，我们还使用极具耐腐蚀性的材料（PP、PVDF、E-CTFE、GRP、PVC等），因此我们的解决方案更加可靠。



**TECNIUM Process** offers a wide range of equipment and technologies in the scope of the recovery or gas washing, and its plentiful experience and service in the selection of solution which adapts better to clients necessities ◆

**TECNIUM** 流程部门可以根据客户的需求提供多种解决方案以供选择，在回收、气体处理等方面我们有极其丰富的经验。



Dedusting unit (venturi-cyclon) on a liquid manure treatment plant  
某液体化肥厂的除尘单元（文丘里+旋风分离器）



Scrubber internal elements  
洗涤塔填料

## Using the most

The technical solutions for the gas treatment of **TECNIUM Process** are based on the optimal combination of equipment and technologies such as:

- Horizontal or vertical scrubbers wet absorption.
- Venturi or multiventuri wet absorption.
- O<sub>3</sub> oxidation.
- Adsorption, in activated carbon...
- Biofiltration.
- Thermal Oxidation.
- Dry way absorption.
- Stripping.
- Dry or wet dedusting (cyclones, venturi...) ◆

The **TECNIUM Process** division provides you with services of instrumentation and automatism. It offers a wide range of accessories, dedicated to facilitate and optimize the gas treatment: fans, hoods and covers, dampers, stacks, packings, demisters, air collecting ducts, etc. ◆

**TECNIUM** 流程部门提供的服务包括设备和自动控制系统，还包括很多附件：风机、接头、盖子、缓冲器、填料、收尘器等。



VOC thermal oxidation at a German fine chemical plant  
德国某精细化工厂的热氧化去除VOC装置

# 应用最高效的处理技术 efficient technologies

**TECNIUM** 的解决方案是我们流程技术部门优化组合出的最好的解决方案：

- 湿法吸收——卧式或立式的洗涤塔
- 湿法吸收——文丘里或复合文丘里
- 臭氧法
- 活性炭吸附法
- 生物过滤法
- 热氧化法
- 干法吸收
- 气提
- 干法或湿法除尘



H<sub>2</sub>S+VOC biofiltration at a Spanish food plant  
西班牙某食品厂生物法去除H<sub>2</sub>S+VOC

For each problem **TECNIUM Process** analyzes the most effective solutions, and simultaneously it studies the different alternatives with the purpose of:

- Trying to recover the polluting agent in valorizeable by-product form.
- Reducing the power or reagents consumption.
- Optimizing the relation investment/exploitation cost adapting it to the clients priorities ◆

针对每一个问题**TECNIUM** 流程部门都会分析效率最佳的解决方案，同时可根据如下侧重方向提出优化的解决方案：

- 回收污染物介质的有价值的副产物
- 减小能源和药剂消耗
- 根据用户的需求，最优化相关的投资和开发费用

Chemical odor control unit on a municipal WWTP  
某市政污水处理厂的化学气味控制装置

# Solutions to multiple





NOx chemical absorption at an Asian chemical industry  
 亚洲某化工厂的NOx化学吸收装置

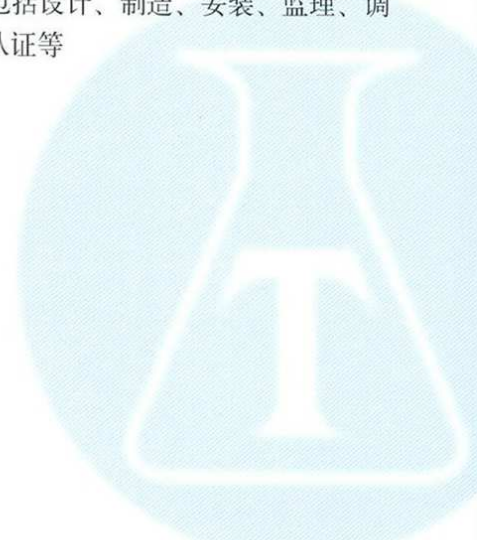
# 为各种环境污染问题提供解决方案 environmental problems

**TECNIM Process** is specialized in providing solutions on complete turn-key installations to confront several problems, taking charge of the design, manufacture, assembly, supervision and start-up of equipments a well as legalization projects in case they are necessary:

- **Neutralization of pollutants.**
- **Dedusting.**
- **Odor elimination.**
- **By-products recovery.**
- **Stripping.**
- **etc.** ◆

**TECNIM** 流程部门能够提供针对复杂工况的专业的交钥匙工程，包括设计、制造、安装、监理、调试以及相关项目认证等

- 污染物的中和
- 除尘
- 气味去除
- 副产物回收
- 气提



**Some representing sectors are:**

- **Pharmaceutics and Fine Chemistry:** relief gases washing on reactors manufacturing: HCl, SO<sub>2</sub>, Cl<sub>2</sub>, Cl<sub>2</sub>O, NH<sub>3</sub>...
- **Fertilizers:** HF removal in SSP, NH<sub>3</sub> and dust elimination on NPK and DAP granulation.
- **Mineral and Organic Chemistry:** gases on production of NaClO, FeCl<sub>3</sub>. Aluminium Sulphate, Phosphoric and Sulphuric acid, Zn and Cu production.
- **Surface Treatment (metal and glass):** hot dip galvanizing gases, degreasing and pickling, anodizing... glass etching gases, process water stripping.
- **Food (human, animal and aromas):** gas washing during grease treatment processes and incineration.
- **Water treatment (potable, urban and industrial wastewater):** H<sub>2</sub>S removal from biogas coming from digesters and landfills, Cl<sub>2</sub> and NH<sub>3</sub> emergency scrubbers, odor control on pretreatment, dehydration and thickeners (H<sub>2</sub>S, NH<sub>3</sub>, mercaptanes, VOC, amines,...), stripping of lixiviates (NH<sub>3</sub>, trichloroethylene,...), osmosis water decarbonation (CO<sub>2</sub>)...
- **Waste treatment (organic and inorganic):** gas treatment on compost tunnels, maturation buildings, inertization plants.
- **Paintings and varnish:** VOC elimination or recovery.
- **Electronic compounds:** gases on electronic circuits and semiconductors manufacturing.
- **Aeronautics:** gas washing coming from chemical etching (NO<sub>x</sub>, HF,...).
- **Pulp and paper:** gas treatment on bleaching units (Cl<sub>2</sub>, chlorine dioxide,...).
- **Power plants:** gas treatment on slurry drying on the cogeneration processes (thermal drying), liquid manure treatment plants (for fertilizer preparation)...
- **Sterilization units:** ethylene oxide absorption.
- **Chemical products storage:** air relief absorption of HCl, NH<sub>3</sub>,... ◆

Gas pre-treatment unit before biofiltration on a compost plant  
某堆肥厂的生物过滤气体预处理装置

# Applicati

## 部分应用领域

- 制药和精细化工：生产流程中反应器产生的废气： $HCl$ 、 $SO_2$ 、 $Cl_2$ 、 $Cl_2O$ 、 $NH_3$ .....
- 化肥行业：SSP工厂的HF去除、NPK和DAP工厂造粒机除尘和除 $NH_3$
- 矿山和有机化学：生产 $NaClO$ 、 $FeCl_3$ 、硫酸铝、磷酸、硫酸、锌、铜等产品产生的废气
- 表面处理（金属和玻璃）：热镀锌废气、脱脂、酸洗、阳极电镀废气、玻璃刻蚀废气，以及工艺废水气提等
- 食品或饲料行业：油脂处理工艺或焚烧工艺中的气体洗涤
- 水处理行业（饮用水、城市和市政污水）：沼气池、垃圾掩埋场产生的沼气中的 $H_2S$ 的去除； $Cl_2$ 和 $NH_3$ 应急处理洗涤塔；污水厂的预处理、脱水、浓缩工段的气味控制（ $H_2S$ 、 $NH_3$ 、硫醇、VOC、胺类等）；浸出液的气提；渗透水的脱碳等
- 废弃物处理（有机或无机）：混合肥料管路、熟化器产生的废气处理
- 喷漆和抛光：VOC的去除或者回收
- 电器元件：电路板和半导体生产产生的废气
- 航空：化学刻蚀产生的废气
- 纸浆和造纸：漂白单元的气体处理
- 发电厂：再生工艺的泥浆干燥产生的废气处理，液态化肥厂的气体处理
- 灭菌装置：环氧乙烷吸收
- 化学品储运区： $HCl$ 、 $NH_3$ 等气体的吸收

## 行业应用实例

# Applications in several sectors



*NH<sub>3</sub> stripping on an urban landfill*  
城市垃圾厂的除NH<sub>3</sub>气提装置



*NH<sub>3</sub>+H<sub>2</sub>S+R-SH absorption on an industrial WWTP*  
工业废水处理厂的NH<sub>3</sub>+H<sub>2</sub>S+R-SH吸收装置



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### **INTERNATIONAL PROJECTION** • 国际项目

*TECNIUM Process offers several references developed within the 5 continents in collaboration with engineering companies such as FOSTER WHEELER, TOYO, MONSANTO, UHDE, TECNICAS REUNIDAS, ONDEO DEGREMONT, LURGI... and clients such as ALUMINIUM PECHINEY, ATOCHEM, SOLVAY, BASF, AKZO NOBEL, REPSOL, etc.*

泰克尼姆通过和以下工程公司的合作, 可以提供在五大洲的应用实例: FOSTER WHEELER, TOYO, MONSANTO, UHDE, TECNICAS REUNIDAS, ONDEO DEGREMONT, LURGI...及部分客户: ALUMINIUM PECHINEY, ATOCHEM, SOLVAY, BASF, AKZO NOBEL, REPSOL,等...