



VERANTIS

Environmental Solutions Group



Byproduct
Recovery



Wastewater
Treatment



Incineration



Scrubber



Engineering



Field



Tellerettes®
Packings



Mist
Eliminator

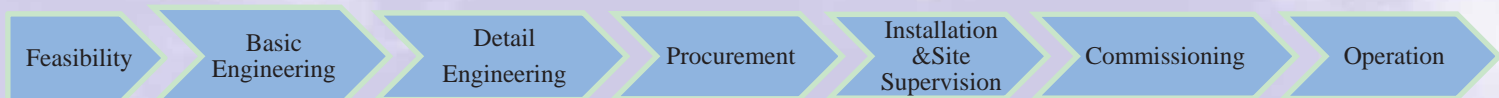


Fans

Successor in interest to **Ceilcote Air Pollution Control**

Verantis Environmental Solutions (successor to the interests of Ceilcote Air Pollution Control) is an experienced and professional global supplier of complete solutions for treating industrial wastes, effluents and emissions. We provide a complete line of technologies for the treatment of gaseous, liquid and solid wastes on the basis of consulting and equipment supply ... all the way up to complete turn-key installation and after sales services including operation and maintenance. For over 40 years, Verantis Corporation has successfully provided engineering services and equipment for a wide variety of applications. Our global capabilities, with operations based in the USA, China, Singapore and India, enable us to customize and localize designs and fabrications for just about all world geographies and to deliver successful systems throughout the world. We are very familiar with many facets of industry including Polysilicon and Siloxanes for microelectronics and photovoltaic solar cells, Chemical Process Industries, Foundry & Metal Refining, Pharmaceutical, Pulp & Paper, Microelectronics and Waste Water Treatment Plants. Proven treatment options include technologies comprising Wet Scrubbing/Mass Transfer and Separations (chemical and biological); “dry” scrubbing; electrostatic separation technologies; aerosol separations; Thermal Oxidation; and a wide variety of industrial wastewater treatment solutions.

SERVICE OVERVIEW



Ceilcote Asia Organization

- Complete design services
- Equipment fabrication
- Installation, commissioning and start-up
- After Sales service
- Maintenance

Thermal Treatment Solutions



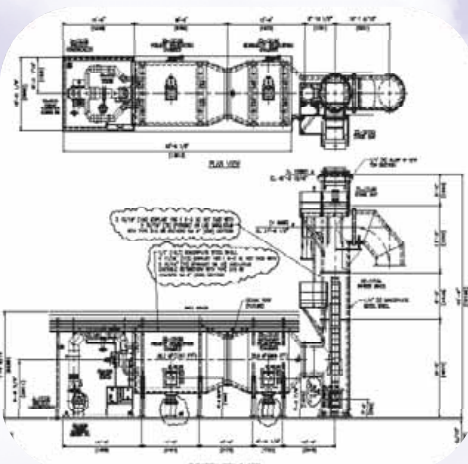
The Rotary Kiln comprises a rotating drum for combustion of waste solids, slurries and sludges and a secondary combustion chamber for complete destruction of the wastes.

35 MM btu/hr Rotary Kiln at Oil company in China. System includes a Waste Heat Boiler to recover waste heat as low pressure steam. Exhaust gas cleaning system comprises a “dry” scrubbing system with Lime (CaO) injection for acidic gas neutralization.



Rotary Kiln and Waste heat boiler at Siloxane/Silicone plant in China. Treatment of chlorinated silane waste solids and sludges. Exhaust gas cleaning system comprises quench, HCl scrubber and IWSTM ionizing wet scrubber.

Liquid/Gas Incinerator designed to “burn” Waste gas, fumes and liquids



Liquids and gaseous waste incinerator at Pharmaceutical production facility in Singapore treating chlorinated organic wastes. (30 MM BTU/hr heat release)





Three 100 MBTU/hr fume and liquid waste incinerators with waste heat recovery and gas cleaning for pharmaceutical plant in Puerto Rico.

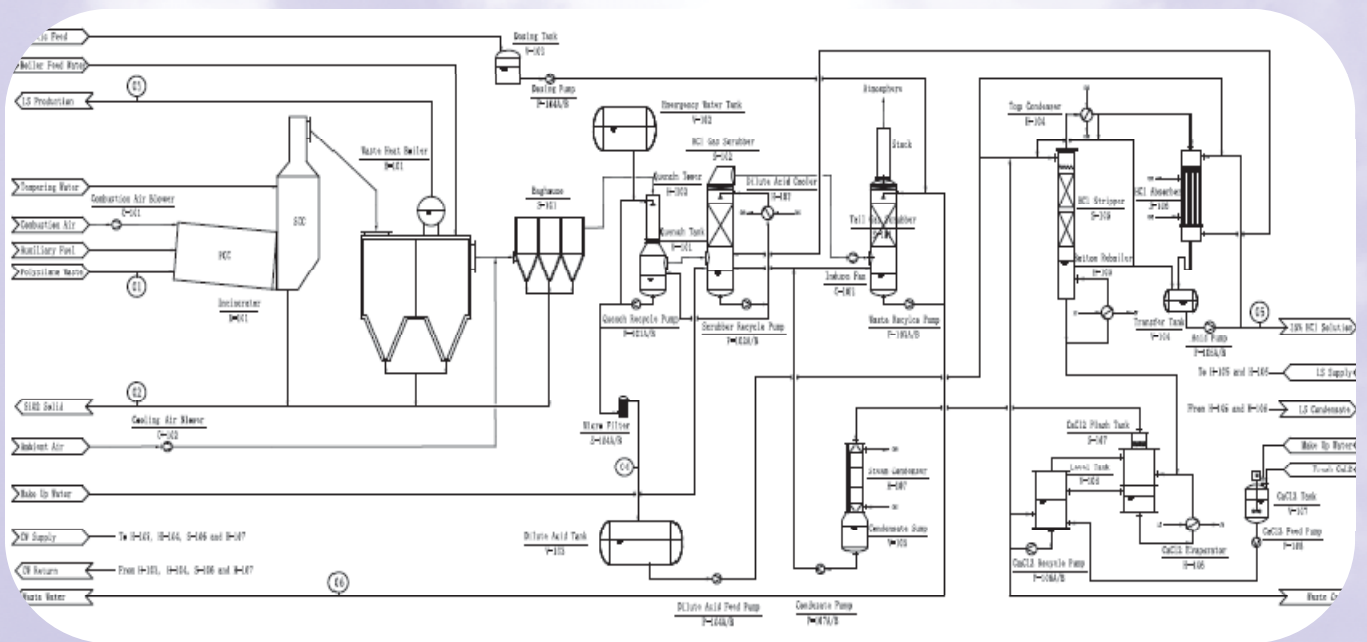


60 GJ/hr vertical Incinerator with Gas Cleaning for treatment of gaseous and liquid Chlorinated Silane Wastes for Silicone/ Siloxane plant in China.

Thermal Oxidizer treating VOC comprising organics and chlorinated wastes at flexible printed circuit manufacturer in Singapore. System includes HCl treatment.



Incinerator Gas Treatment options with by-product recovery



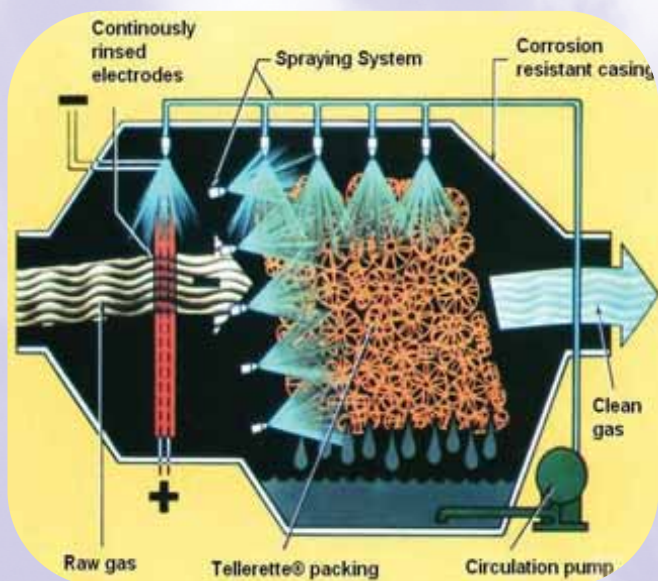
Incinerator and waste heat boiler followed by “Dry” gas cleaning system including HCl recovery and concentration to commercial grade 35% HCl

“Dry Scrubbers” for Particulate Separation and Acid Gas Treatment

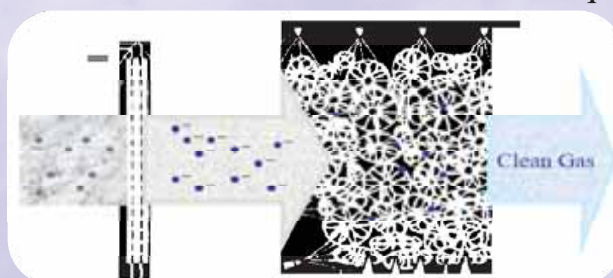


“Dry” Scrubber using bagfilter and hydrated lime $\text{Ca}(\text{OH})_2$ injection to remove fine particulate and neutralize acid gases. No wastewater treatment requirement.

IWS™ Ionizing Wet Scrubbers for Simultaneous Particulate Separation and Gas Scrubbing



Fine particulates and aerosols in the exhaust gas are rapidly ionized in an ionization section and electrostatically collected onto mass transfer packings which are continuously washed. Chemical dosing into the packing section sumps enables chemical treatment (neutralization, chemical oxidation/reduction, etc.) of gaseous pollutants that are transferred into the liquid phase.



Rapid Ionization Zone Wetted Collection Zone



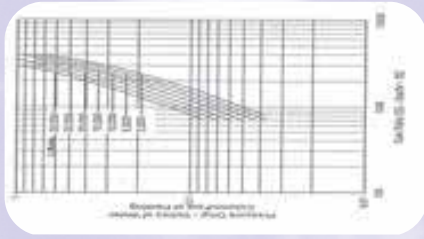
2 Stage IWS™ installed in LCD display plant in Korea to remove SiO₂, HCl and HF for CVD exhaust gas

3 Stage IWS™ for electrostatic separation of sub-micron particulates and salts from the exhaust of a chemical waste incinerator in Malaysia.

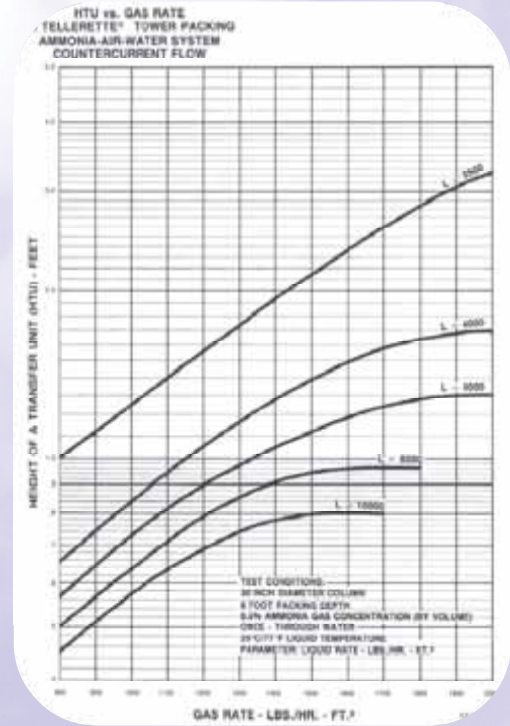


IWS™ ionizing wet scrubber for the simultaneous removal of fine sub-micron sized particulate and gas phase pollutants. Successfully employed in polysilicon/siloxane plants, metallurgical plants, LCD and microelectronics for CVD, fiber optics and fumed silica plants chemical and hazardous incinerator exhaust gas treatment, wood processing.

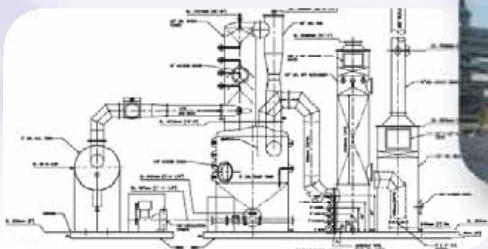
Wet Scrubbers for Gaseous Pollutants



Verantis Tellerette™ mass transfer packings adopt a proprietary toroidal helix design that makes them more efficient than conventional packings in a wide range of mass transfer and particulate collection applications. Combined with Verantis's vast database of empirical mass transfer data, Verantis can provide proven and optimized scrubber designs for a great number of scrubber applications including acidic and alkaline gas scrubbing, NO_x and SO_x scrubbing, chlorinated silane hydrolysis, and many more applications.



Ethylene oxide exhausts treatment system converting the troublesome explosive and flammable EO into glycol.



Chlorosilane Process Vent Exhaust Gas Scrubbers employ multiply mass transfer devices installed in series arrangement to hydrolyze chlorinated silane waste gases and neutralize the resultant HCl.



3-Stage NO_x scrubbing system for treating low temperature NO_x exhaust using Verantis chemical oxidation / chemical reduction technology with optional odour control tower.

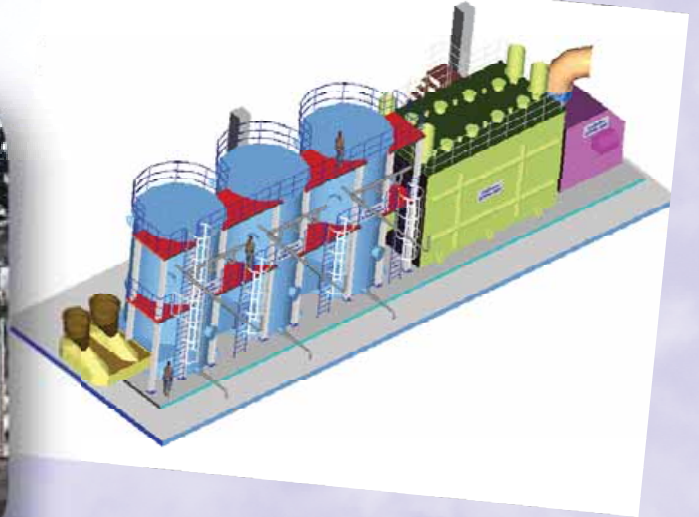


Horizontal and Vertical packed bed scrubbers using Tellerette™ mass transfer packings. Hundreds of references for Verantis “acid gas” and “alkaline gas” scrubbers installed in microelectric plants for cleanroom exhaust cleaning.

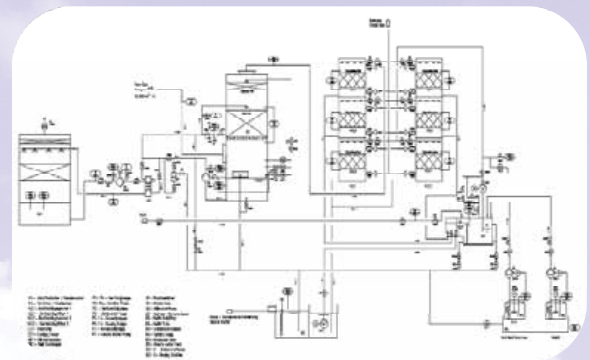
Cyanide scrubber system complete with instrumentation and controls in a metals recovery plant in China. Scrubbers adopt Tellerette™ mass transfer packings for high efficiency and low pressure drop.



Odor Control for Wastewater Treatment Plant



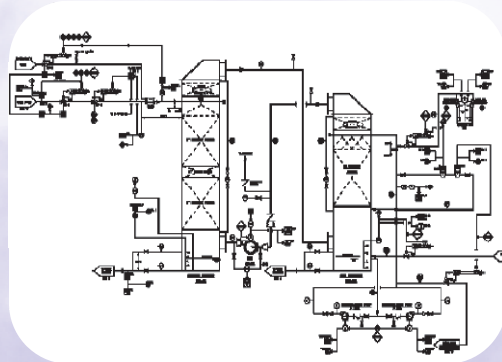
Multistage Chemical scrubbers for treatment ammonia, amines, hydrogen sulfide and other odorous reduced sulphur compounds in the WWTP. Carbon filters (optional) may be supplied in applications for exhaust gas polishing.



Verantis Bio-Trickling technology to biologically decompose Organics and Inorganics (Ammonia, Nicotine, VOCs, Alcohols, etc); Acids (formic, butyric, acetic): Formaldehydes, Phenols: Hydrogen Sulfide.

Wastewater Treatment

systems offered for the treatment of industrial wastewater comprise a combination of physio-chemical treatment, biological treatment, filtration, chemical oxidation, stripping and various separation technologies.



“Closed Loop” ammonia stripper / scrubber for removal of ammonia from 120 ton/hr aqueous ammonia wastewater stream in a major Chinese petrol plant. Ammonia is stripped into an air stream that is subsequently scrubbed with dilute H_2SO_4 to form a soluble ammonium sulphate waste that is discharged to plant WWTP.

Filtration of SiO_2 from weak HCl steam in a fiber optics plant in India



Wastewater treatment plant
for optical fiber plant in Hong Kong
Wastewater treatment plant



for heavy metals in Indonesia



Instruments and Controls



Class 1 division
1 control panel



Complete supply of
control panels
with options
for PLC and DCS
control



In-line titrator for
controlling for chemical
oxidant

Chemical Dosing Systems



Complete supply of
automatic chemical
dosing systems and
reagent storage and
transfer systems.



FRP Fans



Verantis CLUB Fans are fabricated from high quality vinyl ester resins that reinforced with glass fibers to provide reliable corrosion resistant service. Performance Data is obtained from tests conducted in accordance with standards published by AMCA and Verantis fans are licensed to bear the AMCA Seal. Flow rates up to 200,000 CMH and static pressure to 5000 Pa are pre-engineered and readily available..



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