

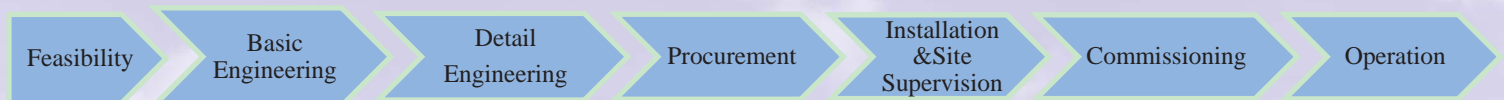
Incineration for Waste Solids, Liquids and Gas



Verantis Environmental Solutions is an experienced and professional 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 TCS-Silane, Poly plant, Chemical Process, Solar, Steel, Incineration/Oxidizers, Foundry & Metal Refining, Pharmaceutical, Pulp & Paper, Microelectronics and Waste Water Treatment Plants. Proven treatment options include technologies comprising wet scrubbing/mass transfer (chemical and biological); “dry” scrubbing; electrostatic separation technologies; aerosol separations; and Thermal Oxidation.

From a systems standpoint, Verantis has the internal capabilities to provide all of the necessary engineering activities for a project ranging from waste characterization studies and environmental permitting to the actual equipment design. We have the resources and experience for the integration of all aspects of the entire incineration plant into a complete system package that is custom engineered for your application. In addition, Verantis has worldwide manufacturing capabilities allowing for high quality fabrication of all system components while maintaining the ability to provide the most economical alternatives from both a capital cost and shipping/logistical standpoint.

SERVICE OVERVIEW



Cealcote Asia Organization

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

Partial reference list of thermal oxidation waste treatment systems.

Dow Corning (China)	Siloxane plant emissions treatment - 35 MMbtu/hr rotary kiln with heat recovery boiler and IWS TM ionized wet scrubber
China Shell (Nanhai)	Chemical waste - 35 MMbtu/hr rotary kiln w/ wasteheat boiler and “dry” APC system
BeeA’h (Saudi)	Chemical waste - 24 MT/day installed in 1996 and 56 MT/day in 2008
Blue Star Silicones (China)	Chlorinated silane wastes- 60 GJ/hr vertical “down-fire” incineration
Qatar Solar Technologies (Qatar)	Chlorinated silane wastes. Three (3) vertical “down-fire” incineration with anhydrous HCl recovery
Cetrel (Brasil)	Chemical waste – 20 MMbtu/hr rotary kiln
Nanya Plastics (Taiwan)	Chemical waste – 20 MMbtu/hr rotary kiln and 18 MM btu/hr fume incinerator
Pure Chem (Singapore)	Chemical waste 30 MMbtu/hr rotary kiln
Sherring Plough (Singapore)	30 MMbtu/hr liquids and gas incinerator
Bristol Myers Squibb (Puerto Rico)	3 nos. fume and liquids incinerator ... 100 mm BTU/hr
Mitsui/Cement Thai (Thailand)	Chemical waste – 15 MMbtu/hr rotary kiln
Dow Corning (China)	Siloxane plant emissions treatment - 35 MMbtu/hr rotary kiln with heat recovery boiler and IWS TM ionized wet scrubber

The Rotary Kiln is designed to “burn” gas, liquids and solids



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



“Hydraulic Ram” may be supplied for direct input of waste solids. Depending on density, slurries and sludges may be introduced into the Ram or atomized through a burner. Rotating drum can be adjusted to provide sufficient residence time to “burn” the wastes

35 MM btu/hr Rotary Kiln at Shell Oil 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 Dow Corning 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



3*100 MBTU/hr fume
and liquid waste
incinerators with waste
heat recovery and gas
cleaning

Bristol-Myers Squibb
pharmaceutical plant.



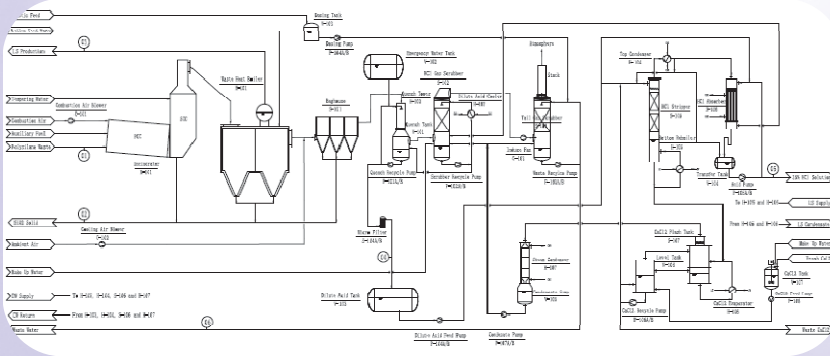
60 GJ/hr vertical
Incinerator with Gas
Cleaning for
treatment of gaseous
and liquid
Chlorinated Silane
Wastes for Bluestar
Silicone in China



Thermal
Oxidizer
treating VOC
comprising
organics and
chlorinated
wastes at FCI
(Singapore).



Incinerator Exhaust Gas Treatment options

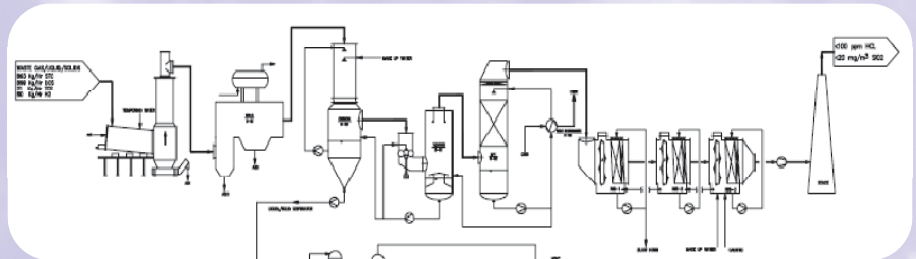


Dry:

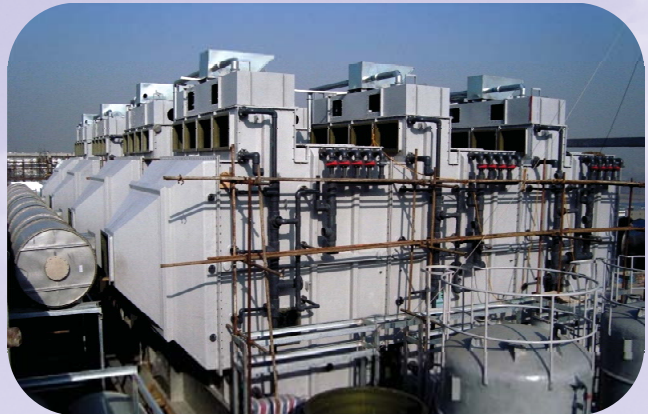
Incinerator and waste heat boiler followed by “Dry” gas cleaning system including HCl recovery and concentration to commercial grade 35% HCl

Wet:

Incinerator followed by “wet” scrubbing system including IWS™ Ionizing Wet Scrubber



“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 scrubber for the simultaneous removal of fine sub-micron sized particulate and gas phase pollutants.

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