

# PRECIOUS METAL REFINING



## HEAVY METAL REMOVAL & RECOVERY

A large refinery in Europe required a highly efficient exhaust pollution control technology for removal of the submicron metal particulate during the precious metal refining process. This solution had to meet intense local regulatory requirements.

The Miller Process is an industrial-scale procedure used to refine gold to a high degree of purity. These were the conditions that we analyzed to design a solution for the customer. In the Miller Process, chlorine gas is bubbled through molten gold. Impurities such as other metals, react with chlorine forming metal chloride salts which float to the surface. The exhaust gas from the process contains significant amounts of heavy metal salts such as selenium and cadmium chloride in the form of submicron particles, as well as chlorine gas and trace amounts of precious metal.

A number of technologies were considered but after specific pilot testing, the client chose the Verantis IWS® (Ionizing Wet Scrubber) System based on its demonstrated ability to consistently achieve outlet loadings below 1 mg/m<sup>3</sup> and maximize recovery of raw material. In addition, Verantis was able to design and build a solution that was able to fit in their limited footprint.

The unique IWS® design utilizes an electrostatic charging section followed by a wetted packed section to collect and remove submicron particulate through the principle of image-force attraction. Chemical addition to the packed section also enables simultaneous absorption of reactive gases such as chlorine.

## OVERVIEW

This turnkey project included supply of IWS® (Ionizing Wet Scrubber) system for pollutant removal and recovery abilities. Verantis also modified the existing packed tower and provided a new duct and an exhaust stack.



## EQUIPMENT

The unique design of the IWS™ combines the established principles of electrostatic particle charging with the effective gas removal of a crossflow scrubber in a compact, modular design, delivering high-efficiency collection and low pressure drop within a small footprint.



## AUXILIARY EQUIPMENT

Project included turnkey installation and supply of exhaust stack, piping, duct, pumps and controls.



# PRECIOUS METAL REFINING



## FEATURES

- A large refinery in Europe required a highly efficient exhaust pollution control technology for removal of the submicron metal particulate during the precious metal refining process
- Designed a solution for a process that contained significant amounts of heavy metal salts such as selenium and cadmium chloride in the form of submicron particles as well as chlorine gas and trace amounts of precious metals.
- Verantis design/build services included a complete IWS<sup>®</sup> system that achieves a removal efficiency of 99.3% and maximizes product recovery along with modification to existing components. The customer took advantage of the Test Pilot Program and saw the results before full implementation.
- Verantis was able to provide a custom engineered solution that had to meet intense local regulatory requirements as well as fitting in the customer's limited size restraints.

For more information and resources,  
please visit [www.verantis.com](http://www.verantis.com).  
Corporate Headquarters  
7251 Engle Road #300  
Cleveland, OH 44130  
800.924.0054

## TECHNICAL CAPABILITIES

All parts of the complete IWS<sup>®</sup> system were designed in-house. System components were sourced through a world-wide network of fabricators and suppliers.



## DESIGN CAPABILITIES

Systems can be designed to accommodate a variety of requirements including NFPA, API, ASME, and regulatory codes such as Chinese GB, European EN and US EPA standards.



## TURNKEY SOLUTIONS

Verantis is able to provide Turnkey Solutions globally for most of your incineration and pollution control needs. For more information on any of our production or solutions, please visit us at [www.verantis.com](http://www.verantis.com)

