



## Eco Power Solutions simplifies complex emission controls challenge for coal fired facility

Power Generator to reduce air quality emissions by greater than 95 percent and stays competitive with help from Eco Power

### Snapshot:

**Industry:**

Power Generation (Coal)

**Location:**

United States

**Challenge:**

Facing increased environmental regulations

**Solution:**

COMPLY 2000®

**COMPLY 2000 Performance:**

Greater than 95% reductions in NOx, SOx, Mercury & Particulate Matter (PM 10 & 2.5)

**THE BIG PICTURE**

Faced with a tough decision to either commit to expensive plant upgrades to improve environmental controls or moth ball an otherwise profitable base load power plant, one of the largest power generators in the Southeast United States turned to Eco Power Solutions to provide an innovative, yet cost effective solution to their challenges.

Like many utility providers, the client was faced with environmental compliance issues as a result of stricter air quality regulations and was contemplating the future operations of this facility.

The modifications proposed by Eco Power Solutions utilizing the flagship multi-pollutant control system, the COMPLY 2000®, provides a solution that would cost 25% less in capital cost and 30% less in operating cost than traditional emission control technologies, with emissions reduction levels far better than other alternatives available in the market today.

The solution proposed by Eco Power would allow the client to continue running this plant for several additional years with minimal disruption to plant operations or profitability.

## Case Study | Power Generation



### AN INNOVATIVE APPROACH TO EMISSION REDUCTIONS

Due to the volatility of energy prices and increasing regulations for air quality standards, power generators are faced with an uncertain future. Over the past 20 years, power generators have done much to improve environmental performance but still face complex challenges as they prepare to meet the pollution reduction targets introduced in the EPA's Clean Air Interstate Rule (CAIR) and EGU MACT rules.

From the perspective of the utility provider, the key to supplying electricity

at a competitive rate, while still meeting environmental targets, depends on balancing the efficiency and cost of the emission control technology.

Eco Power Solutions is the leading developer and provider of a patented turnkey multi-pollutant emission control and energy recovery technology, COMPLY 2000®.

The COMPLY 2000® provides a greater than 95 percent reduction in emissions - NO<sub>x</sub>, SO<sub>x</sub> (SO<sub>2</sub> & SO<sub>3</sub>), mercury (Hg), halogens and particulate (>PM2.5), along with an optional means to remove an average of 20 percent reduction in carbon dioxide (CO<sub>2</sub>).

Additionally, the COMPLY 2000®, if required, can generate supplemental energy by recovering waste heat that normally escapes into the atmosphere to help reduce a plant's operating costs significantly, thereby increasing energy reliability and providing a significant payback for clients.

The COMPLY 2000® provides clients with an emission control solution that addresses multiple target pollutants

at a significantly lower capital expense and operating expense than traditional technologies such as Selective Catalytic Reduction (SCR), Flue Gas Desulfurization (FGD) and Powdered Activated Carbon Treatment (PACT) with superior environmental performance standards.

Additionally, the small footprint of COMPLY 2000® makes it an ideal solution for both retrofit and new projects alike.

The COMPLY 2000® is designed to remove multi-products of combustion typically classified as NO<sub>x</sub>, SO<sub>2</sub>, CO<sub>2</sub>, unburned hydrocarbons (UHC), particulate matter and heavy metals.

Unlike current methods that address each of these emissions individually, the COMPLY 2000® eliminates virtually all of these emissions from flue gasses simultaneously, therefore, controlling costs and improving plant performance.

## Facility Profile:

### Commission Year:

Vintage 1950 B&W Boiler

### Generation Capacity:

850 MW (Total Facility)  
125 MW Unit 1

### Fuel Source:

Coal (Uinta)

### Emissions:

NOx – 340ppmv (dry)  
SOx – 355 ppmv (dry)  
Hg – 50 ppbv (dry)  
Particulate - 0.031 lbs/ MMBtu

## THE BENEFITS

- ✓ Multi-pollutant emission control technology.
- ✓ Greater than 95% reductions on NOx, SOx, Hg, PM 10 & 2.5 along with other heavy metals and halogens.
- ✓ 25% less in capital cost per kW to install.
- ✓ 30% less in operating cost per kWh to operate.
- ✓ Smaller footprint that can easily be retrofitted into an existing plant operations.
- ✓ Minimal consumptive water use.
- ✓ Minimal parasitic energy load to operate.
- ✓ Improved plant efficiency rating.

## THE RESULTS

- ✓ 99% removal levels for SOx (sulfur dioxide (SO<sub>2</sub>) and sulfur trioxide (SO<sub>3</sub>)).
- ✓ 95 % removal of NOx (nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>)).
- ✓ 95 % removal of mercury (Hg).
- ✓ 98 % removal of 2.5 and 10-micron particulate matter.
- ✓ 99 % removal of halogens including fluoride, chlorine and bromide and others.
- ✓ 99 % removal of heavy metals including arsenic, cadmium, chromium and others.
- ✓ Average of 20 % removal of carbon dioxide (CO<sub>2</sub>).

## Environmental Performance:

### NOx Reduction:

Before - 340 ppmv (dry)  
After – 6.8 ppmv (dry)

### SOx Reduction:

Before - 355 ppmv (dry)  
After – 17.1ppmv (dry)

### Hg Reduction:

Before – 50 ppbv (dry)  
After – 2 ppbv (dry)

### Particulate (PM 2.5) Removal:

Before – 0.031 lbs/ MMBtu  
After – 0.0006 lbs/ MMBtu

\* Environmental performance based off client feasibility study.

## Case Study | Power Generation

“Eco Power’s emission control technology is a natural progression in our environmental reduction strategies. We will exceed our targets with a very cost competitive solution.”

- Director, Environmental Policy



COMPLY 2000 – Multi-Pollutant  
Emission Control Technology

### Eco Power Solutions

Eco Power Solutions, ([www.ecopowersolutions.com](http://www.ecopowersolutions.com)), a recipient of the 2010 Most Promising Energy and Clean Technology Company award at the 8th Annual Rice Alliance Energy and Technology Venture Forum, is a leading developer and provider of a patented turnkey energy recovery and multi-pollutant emission control technology, COMPLY 2000®, to utility and industrial clients. Eco Power Solutions technology provides a greater than 95 percent reduction in emissions, i.e., sulfur dioxide (SO<sub>x</sub>), nitrogen oxide (NO<sub>x</sub>), Mercury ( Hg), and Particulate (>PM<sub>2.5</sub>), along with an average of 20 percent reduction in Carbon Dioxide (CO<sub>2</sub>). Additionally, the company’s technology is capable of generating supplementary energy by recovering waste heat that normally escapes into the atmosphere, thus providing a significant reduction in operating costs and increase energy reliability.



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