STORM

IS YOUR PLANT READY FOR MATS/MACT in 2014-2015?

Storm Technologies can work with you on Performance Testing, Tuning, Performance Inspections, etc. within these guidelines

Storm Technologies, Inc. is a ***SERVICE / QUALITY / RESULTS*** oriented company that can work with all plants to provide boiler inspections services (i.e. burners, pulverizers, fans, boiler, etc.) and pre/post outage testing and tuning for optimizing unit performance (i.e. improved efficiency, pulverizer performance, reducing CO, NOx, carbon in ash, etc.) Storm Technologies, Inc. has addressed the inputs and fundamentals for over 20 years now and they continue to be important and are now required to be completed by Boiler MATS/MACT in the near future. Let us help you and your plant address the inputs by focusing on the "13 Essentials for Optimum Combustion". These essentials are readily available to you by visiting our website. Please call if you would like to review MATS/MACT and how you can ensure you will be in compliance by focusing on the fundamentals of combustion.

Background of Mercury Air Toxics Standards (MATS)

- Sets limits on mercury and other toxic emissions.
- Reduces the allowable emissions of Hazardous Air Pollutants (HAP), including mercury from the electric power industry. The limits are based on the available emissions control technologies and reflect the emissions levels achieved by the best performing plants currently in operation.
- The EPA will set emission standards for existing based on plants in the top 12 percent of emissions controls.
- The new MATS rules regulate the emissions of HAP by coal and oil fired power plants that produce more than 25 MW.
- Existing plants must comply with MATS by April 16, 2015 with a possible 1 year extension granted for large retrofit projects.

How to determine if my facility is an area source?

Area sources are commercial (laundries, apartments, hotels), institutional (schools, churches, medical centers, municipal buildings) or industrial (manufacturing, refining, processing, mining) facilities that emit or have the potential to emit less than 10 tons per year of a single hazardous air pollutant, or less than 25 tons per year of combined hazardous air pollutants.

Large Electric Utility Seminar

Hilton Head, SC
February 18-19, 2014

Who Should Attend

- Plant Managers
- Operation Managers
- Operators
- Maintenance Managers
- Performance Engineers
- Environmental Engineers
- I&C (Electrical/Controls

General Topics

- Basic Steam Generation
- Boiler Fundamentals & Design
- Boiler Performance and Operations
- Impact on Emissions and Control
- Tuning for NOx / CO & Combustion
- Fuel Qualities and Slag Properties
- Pulverizer Performance
- Heat Rate Awareness
- Comprehensive Testing Methods
- Fundamentals of Combustion
- Water & Steam Properties

REGISTER NOW!!

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Pollutant Addressed	Existing Control Technologies to Address Toxic Pollutants
Mercury	Selective Catalytic Reduction (SCR)with Flue-gas Desulfurization (FGD), Activated Carbon Injection (ACI), ACI with Fabric Filter (FF) or Electrostatic Precipitators (ESP)
Non-mercury metals	FF, ESP
Dioxins & furans	Work Practice Standard (inspection, adjustment, and/or maintenance and repairs to ensure optimal combustion)
Acid gases	FGD, Dry Sorbent Injection (DSI), DSI with FF or ESP
Sulfur dioxide	FGD, DSI

**Source--National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial- Commercial-Institutional Steam Generating Units*

Work Practice Standard

For the performance tune-up work practice requirements, each facility must demonstrate continuous compliance by conducting the work practice at least once every 36 calendar months (48 calendar months if a neural network is employed). The work practice involves:

- Maintaining/Inspecting Burners and associated combustion controls
- Tuning the specific burner type as applicable to optimize combustion
- Obtaining and Recording CO and NO_x values before and after burner adjustments
- Keeping Records of measurements and adjustments
- Submitting a Report for each Tune-up conducted

A combustion tune-up will involve optimizing combustion of the unit consistent with manufacturer's instruction as applicable, or in accordance with best combustion engineering practice for that burner type.

Under the final rule, the tune-up must be conducted at each planned major outage and in no event less frequently than every 36 calendar months, with an exception that if the unit employs a Neural-network system for combustion optimization during hours of normal unit operation, the required frequency is a minimum of once every 4 years (48 calendar months).

Initial compliance with the work practice standard of maintaining burners must occur within 180 days of the compliance date of the rule. The initial compliance demonstration for the work practice standard of conducting a tune-up may occur prior to the compliance date of the rule, but must occur no later than 42 months (36 months plus 180 days) from the compliance date of the rule or, in the case of units employing neural network combustion controls, 54 months (48 months plus 180 days). Adequate records must be maintained in order to show that the tune-ups met the requirements of this standard.

WORK PRACTICE STANDARDS

New or Existing Coal Fired <10 mmBTU/hr.	Biennial tune-up (63.11223)
New or Exiting Biomass or Oil	Biennial tune-up (63.11223)
Existing Coal, Biomass, or Oil (10 mmBTU/hr. or greater)	One time energy assessment (on or after 01/01/2008)
New in Existing Coal Fired (10 mBTU/hr. or greater)	Minimize startup and shutdown periods following the manufacturer's recommended procedures

**Source--National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial- Commercial-Institutional Steam Generating Units*

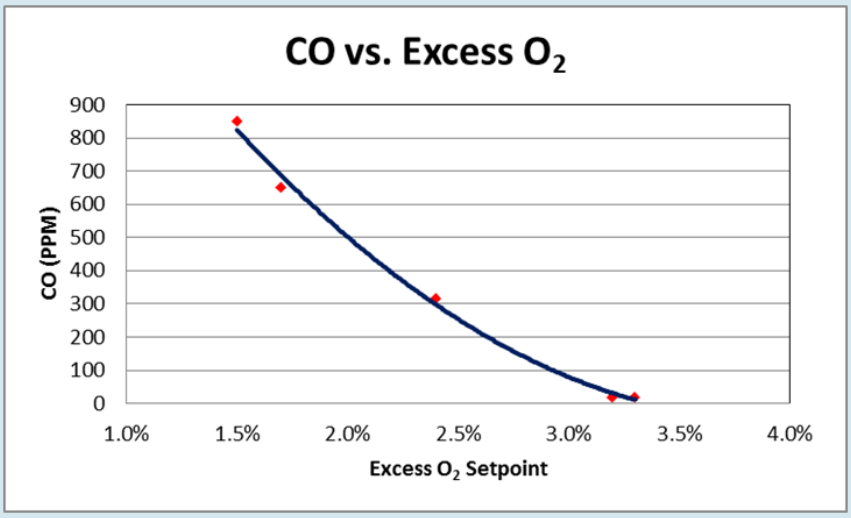
Tune-Up Standards

The EPA is amending the work practice and management practice tune-up standards to clarify that CO measurements, required before and after tune-ups, may be taken using portable CO analyzers. The requirements to inspect burners and the system controlling the air-to-fuel ratio may be completed during the next scheduled shutdown. Units that produce electricity for sale may also delay these inspections until the first outage, not to exceed 36 months from the previous inspection. Optimization of CO emissions must also regulate NO_X within the given emissions limits. For units that are not operating when a tune-up is required, the tune-up must be conducted within 30 days of startup.

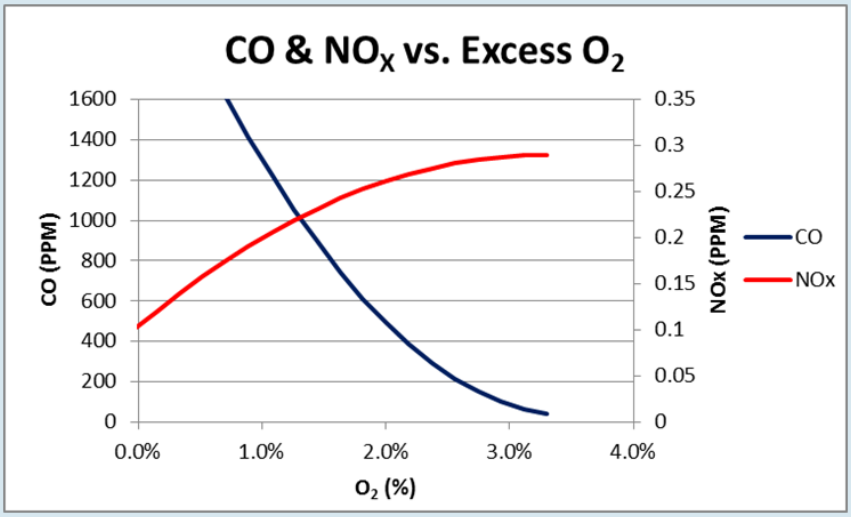
Requirements for Boilers with Oxygen Trim Systems

The EPA is establishing separate requirements for boilers with oxygen trim systems that maintain an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up. Existing area source boilers with oxygen trim systems are required to complete an initial tune-up by March 21, 2014. Existing fossil fuel fired plants that are designated at EGU's have a compliance date of April 16, 2015, and a subsequent tune-up has to be completed at least every 5 years or as required for your particular plant. New and reconstructed boilers with oxygen trim systems are not required to complete an initial tune-up, but are required to complete a tune-up at least every 5 years or as required after the initial startup.

CO Characterization Curve from Mid-Load Gas Tuning

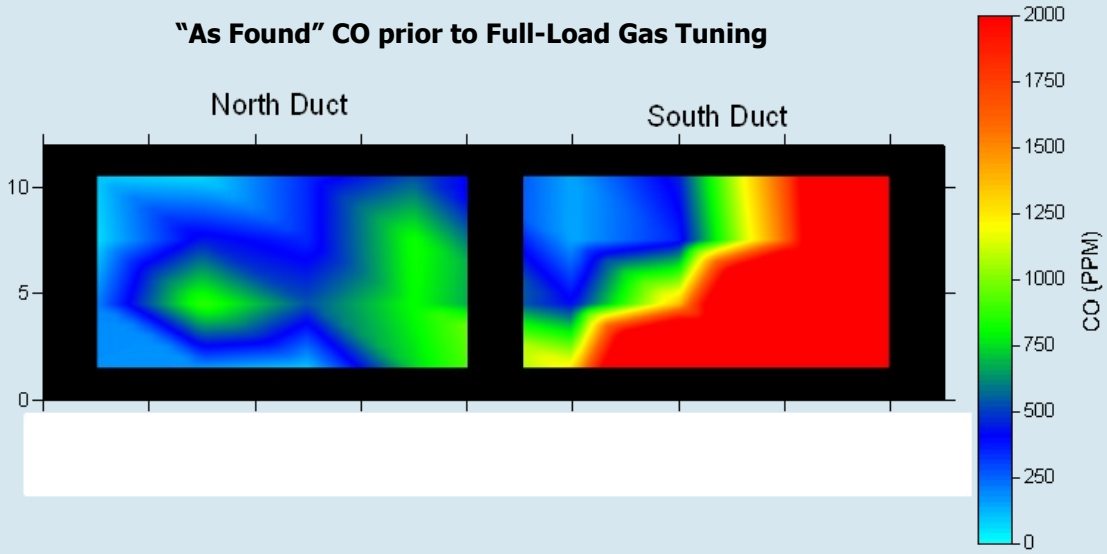


CO & NO_X Characterization Curve from Full-Load Gas Tuning



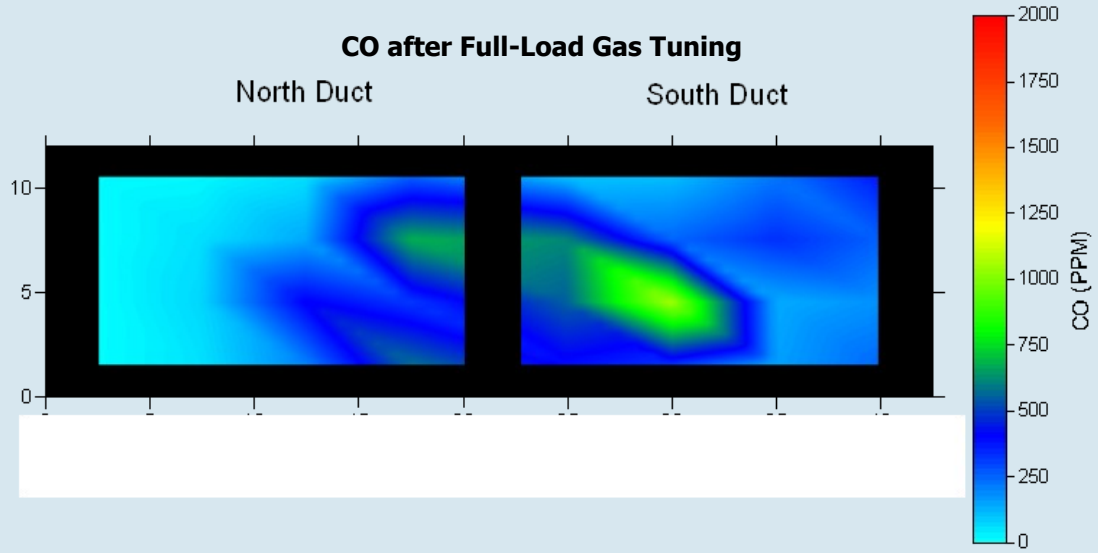
Storm Technologies, Inc. has been in the performance testing/tuning industry for over 20 years and the following information is some fairly recent testing where we were tuning a gas fired unit and successful with trimming the excess oxygen levels and tuning the unit to reduce CO levels. This is just one example of testing to work with boiler MATS requirements to perform oxygen trimming while keeping performance in mind and tuning for the best combustion (reduced CO levels). Storm has performed this testing on just about every type of unit and fuel (coal, gas, oil, wood, etc.) and we are interested in supporting your station. In addition, we have conducted performance inspections that deal with burner performance, airflow management and control, pulverizer performance, etc. Many of you have heard Storm discuss our "Thirteen Essentials for Optimum Combustion" for decades, which continue to play an important role in performance testing/tuning and inspections for MATS/MACT.

"As Found" CO prior to Full-Load Gas Tuning



	Temp (°F)	O_2 (%)	CO (ppm)	NO_X (lbs/MMBTU)
North Duct:	628	2.23	393	0.208
South Duct:	611	1.84	2,210	0.191

CO after Full-Load Gas Tuning



	Temp (°F)	O_2 (%)	CO (ppm)	NO_X (lbs/MMBTU)
North Duct:	630	3.65	177	0.184
South Duct:	615	2.84	329	0.199

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Storm Technologies, Inc. has been established for over 20 years with many decades of experienced personnel. Storm Technologies, Inc. prides ourselves on **SERVICE/ QUALITY/RESULTS** that we feel no other company can compare.

There has not been many schedules and/or engineered solutions that we have not been able to provide to meet the plants needs. Below include a few photos of our services and products:

Field Services Testing:

Air In-Leakage, SCR Testing, Performance Testing/ Tuning, Pulverizer Performance and overall Combustion Improvement Programs.

Engineered Solutions:

Weather an isolation/orifice box, complete classifier, airflow management devices, over fire air system, duct work, chordal thermocouples, or other products Storm Technologies, Inc. manufactures, we can meet your plants scheduled needs.