



# Meeting MACT Compliance: Are you ready?

## What is MACT?

Section 112 of the 1990 Clean Air Act (CAA) Amendments establishes new emission regulations and limits for Hazardous Air Pollutants (HAPs) from particular industrial sources. The Act requires the US Environmental Protection Agency to regulate emissions of these HAPs by developing and promoting technology-based standards based on the best-performing similar facilities in operation. The National Emission Standards for Hazardous Air Pollutants (NESHAPs) established by the EPA are commonly called "Maximum Achievable Control Technology" (MACT) standards. MACT standards are designed to reduce HAP emissions to a maximum achievable degree, taking into consideration the cost of reductions and other factors. The new policies impose new emission limits on industrial boilers for particulates, mercury, dioxins, hydrogen chloride and carbon monoxide.

## Why should you be concerned?

These new emission limits are aggressive and will be difficult to achieve even on high performing units. The ratification of MACT is expected within the end of the year. If so, the compliance date would be 2013. Is your plant ready? Now is the time to start planning to meet these goals.

## What areas of MACT can Storm address?

Storm Technologies can help you make the most of your current system to limit CO production at the source. However, not all systems are forgiving and CO control can be difficult especially with the low emission limits MACT will impose (as low as 7ppm for solid fuel firing).

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While existing back-end technologies exist to help control many of these limits, there is not a significant "reactive solution" to control CO. Back-end technologies react to the problem, not prevent it. The best way to control CO is not at the back-end, but in the boiler where combustion begins (where high CO formation can be prevented). Storm Technologies specializes in reducing emission production related to the combustion process (CO, NO<sub>x</sub> and through better heat rate, CO<sub>2</sub>). In addition, improved combustion and carbon in ash can improve particulate matter as well.

## How are you currently performing?

Before any changes or actions can be taken, a good understanding of what your current level of performance should be investigated. Can you meet some of these limits by simply decreasing your heat rate? What role does air leakage play in your emissions levels? How does coal fineness impact opacity and particulate matter? While each of the control emissions will need to be addressed, combustion optimization is a pre-requisite before any back end tuning or emission control technologies is implemented.

## What is the Storm approach? Get the inputs right!

For almost 20 years, Storm Technologies has focused on our “13 Essentials of Optimum Combustion for Low NO<sub>x</sub> Burners in PC Boilers.” The 13 Essentials focus on getting the inputs right. We recommend balancing the fuel flows, measuring and controlling airflows and obtaining an oxidizing furnace atmosphere. Please visit our website ([www.stormeng.com](http://www.stormeng.com)) to view the full list.

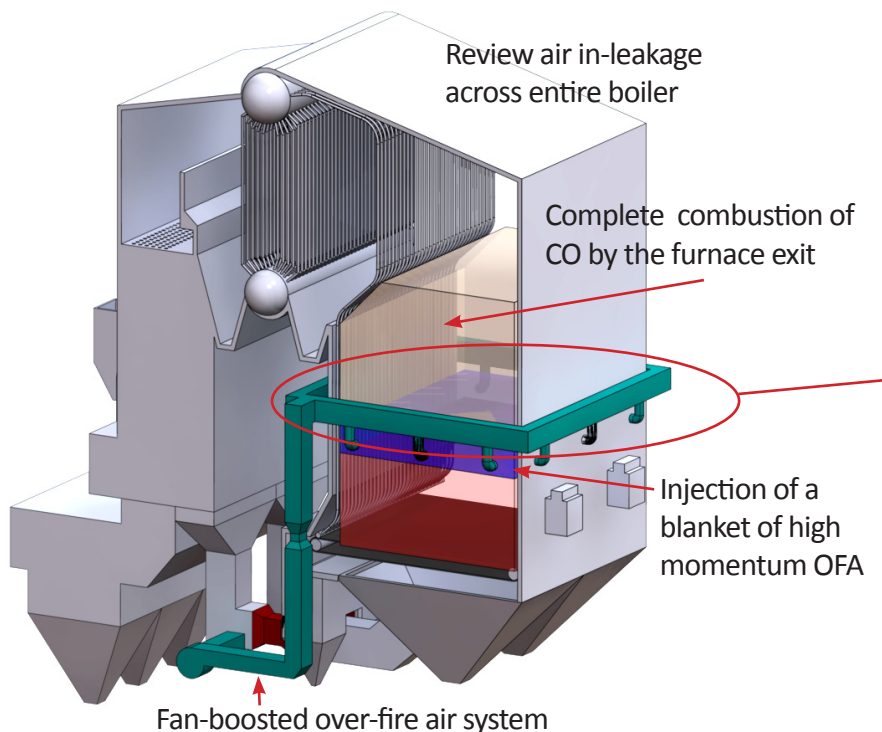
Storm has always recommended the concept of performance driven maintenance where maintenance is based upon the performance of the equipment instead of timelines or hours of operations. In addition, performance driven maintenance focuses on calibrations of primary and secondary air flow, fineness, proper air-to-fuel ratios, and settings within the mill. There have been many instances where our teams perform before-and-after testing while the mill was overhauled during the outage. The results did not show any improvement. While the mill needed to be overhauled, the focus was not on performance. Therefore, using the performance driven maintenance model, not only are the worn components replaced, but performance is incorporated into measuring efficiency.

## How can Storm help? Our solutions:

To achieve “best furnace performance,” Storm provides the following:

- Comprehensive diagnostic testing: Before making any changes or recommendations, data must be collected to identify and quantify the opportunities for improvement
- Storm Engineered Solutions: Storm’s in-house fabrication facilities manufactures and designs performance driven components to improve your performance. Whether the components are in the pulverizers, air-flow measurement devices or other key components, our engineering staff has developed a strong reputation by solving challenging problems with cost-effective engineered solutions.

Storm Technologies can provide a comprehensive solution to your air and fuel system whether it is improved airflow monitoring venturis or mill components to improve fuel fineness.



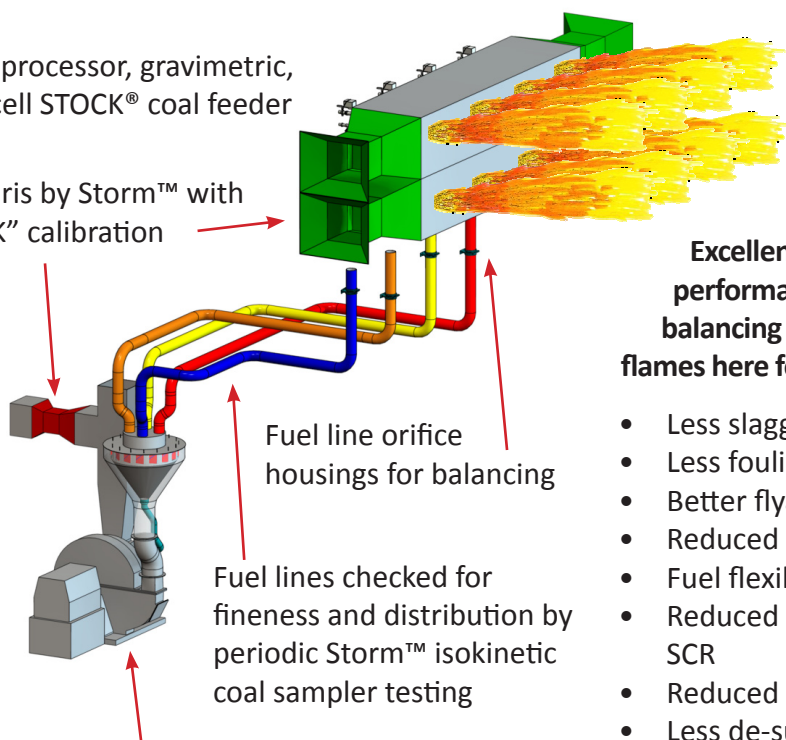
Stoker boiler with Storm Fan-Boosted Over-Fire Air System

## FAN-BOOSTED OVER-FIRE AIR

As a part of your overall plan, consider the Storm Fan-Boosted Over-Fire Air System. Most people associate over-fire air with NO<sub>x</sub> reduction. However, this system does equally well burning the remaining CO before it enters the superheater. In fact, the concept for the fan-boosted system was introduced long before NO<sub>x</sub> restrictions ever came into the picture as a way to improve CO and LOI. These systems come with the added benefit of decreased slagging/fouling, lower LOI, less sootblower media consumption, lower furnace exit gas temperatures, increased superheater tube life, decreased de-superheating spray flow and decreased fan power consumption. In addition, the payback period for these systems is measured in months, not years.

Microprocessor, gravimetric,  
load cell STOCK® coal feeder

Venturis by Storm™ with  
hot “K” calibration



Fuel line orifice  
housings for balancing

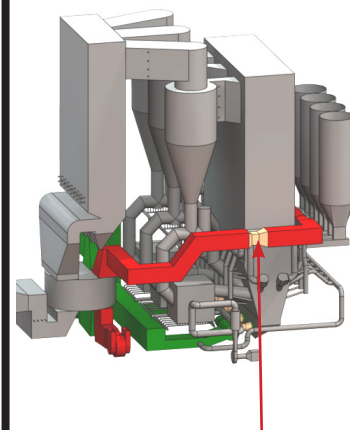
Fuel lines checked for  
fineness and distribution by  
periodic Storm™ isokinetic  
coal sampler testing

Pulverizers mechanically tuned  
to Storm™ specifications

Excellence in pulverizer  
performance and fuel line  
balancing results in uniform  
flames here for the advantages of:

- Less slagging
- Less fouling
- Better flyash LOI
- Reduced dry gas loss
- Fuel flexibility
- Reduced “popcorn” ash to SCR
- Reduced FEGT
- Less de-superheating water flows
- Reduced sootblowing

CFB/pulverized coal  
boilers with Storm  
recommendations to  
measure and control  
airflow more precisely



Storm retrofitted airflow  
measurement devices

## How can you prepare?

Let us help you prepare for MACT by working together to optimize the inputs. The bottom line is that Storm Technologies is prepared to help you meet these stringent emission goals. Make sure that you are too.



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At UDC, we stand firmly behind our products and services. Our priority is quality job performance and customer satisfaction. All repair recommendations through our inspection program are unbiased; based on sound engineering judgment, experience, and data for justification purposes with an understanding of the current plant economic environment.



NEUNDORFER  
PARTICULATE KNOWLEDGE

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Neundorfer is first and foremost a consulting organization serving power utilities and process-based heavy industry. Our goal is the same as yours: improve air pollution control and reduce energy consumption using electrostatic precipitators and fabric filters (baghouses). We listen to our customers, work to understand root causes of problems and engineer solutions that are cost and performance effective.

## Who else can help?



David N. French  
Metallurgists

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David N. French Metallurgists specialize in boiler tube failure analysis, weld failure analysis and life assessments. Our engineering staff is able to determine the failure mechanisms and perform evaluations assuring industry specification conformance.



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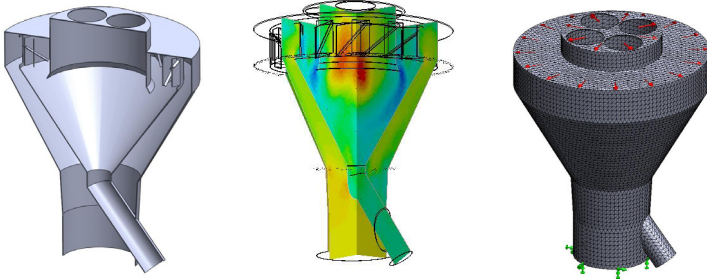
High Temperature Technologies is proud to be the sole proprietor of ISOMEMBRANE® which has been used for decades to seal boiler dead air spaces and leaky duct work expansion joints. An alternative to welding and refractory, ISOMEMBRANE® has proven time and again to be successful in addressing those areas with both high temperatures and multi plane movement. Our team is quick to respond with all materials in house, enabling on the spot customized solutions.

# FABRICATED SOLUTIONS

a division of Storm Technologies, Inc.

## ENGINEERING TOOLS

- 3D Modeling
- Computer Aided Drafting (CAD)
- Finite Element Analysis (FEA)
- Computational Fluid Dynamics (CFD)



## FABRICATION CAPABILITIES

- CNC Plasma Cutting up to 1" thick metal of any shape
- 200 Ton Brake Press to form up to 1/2" thick carbon steel
- Webb Plate Roll with capacities up to 3/4"-1" thick carbon steel
- Structural Tubing Bender up to 2" X 2" of carbon steel
- CNC Machining Capabilities
- ASME Code Stamp "S" and "U" Certificate Holder
- National Board "R" Stamp Certificate
- Metal punch and shear for up to 1 1/2" dia. holes and 6" angle iron in carbon steel
- Fabricated Solutions can weld and form most materials including carbide overlay and stainless steel

## FABRICATED COMPONENTS

- Airflow Management Systems
- Fuel Line Orifice Housings
- Chordal Thermocouples
- Oil Atomizer Tips
- Overfire Air Systems
- Duct Work
- Replacement Riffles
- Spinner/Spreaders
- Pulverizer Optimization Components
- Classifier Blades
- Outlet Cylinders
- Reject Doors
- Rotating Throat and Deflectors
- Inverted Cones
- Serpentine Straps
- Metal Expansion Joints
- Ceramic Tile and Duct Linings



## MAJOR MACHINERY

- 60 and 120 ton Iron Workers
- Webb Plate Roll for cylinders and cones (can roll 3/4" plate up to 8'-0" wide)
- 200 ton hydraulic brake press for forming expansion joints, serpentine straps, cones, etc.
- Automatic pipe cutter (can cut and bevel up to 26" diameter pipe)
- Band saws for up to 16" diameter pipe and structural steel
- 100 and 200 amp CNC plasma machines (capable of production cuts up to 1" thick plate)
- Structural steel roll forming machine (can roll up to 2" x 2" thick plate, angles and flat bar)
- Multiple Kearney and Trecker 15 horsepower horizontal milling machine
- Multiple lathes and milling machines
- Carlton 17" diameter radial arm drill for drilling large headers and plate
- Brown & Sharpe precision grinder
- CNC turning machines