

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

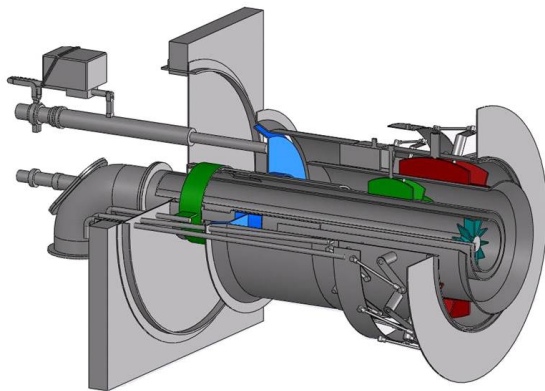
### **STORM TECHNOLOGIES CAN WORK WITH YOU ON PERFORMANCE TESTING, TUNING, PERFORMANCE INSPECTIONS, ETC... WITHIN THESE GUIDELINES**

I think that it's understood what is involved in the MAT's requirements and Storm Technologies will try and touch on a few key points for review and discussion. The following is a short summary of the "Work Practice Standards" that we have always treated as the "Fundamentals":

- 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<sub>x</sub> 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.

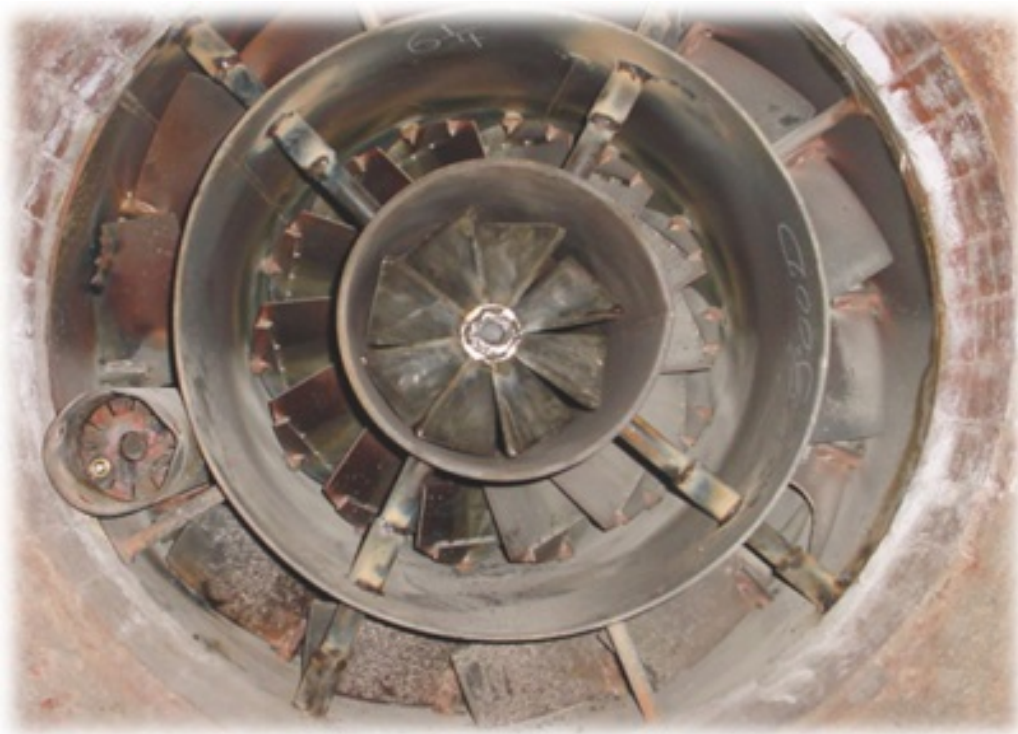


- Ensure air dampers and registers are working and stoked properly
- Ensure centering of burner nozzle
- Check condition & roundness of Nozzle & Flame holder
- Check diffuser/spinner spreader depth & condition
- Set shroud/plunger to initial setting openings
- Proper orientation of splatter plate
- Check condition & rotation of spin vanes
- Check refractory throat condition and profile
- Ensure all tolerances meet OEM specifications

**Storm Technologies typical burner inspections record the condition of nozzle, dampers, spin vanes, direction and other critical dimensions/tolerances that impact combustion optimization**



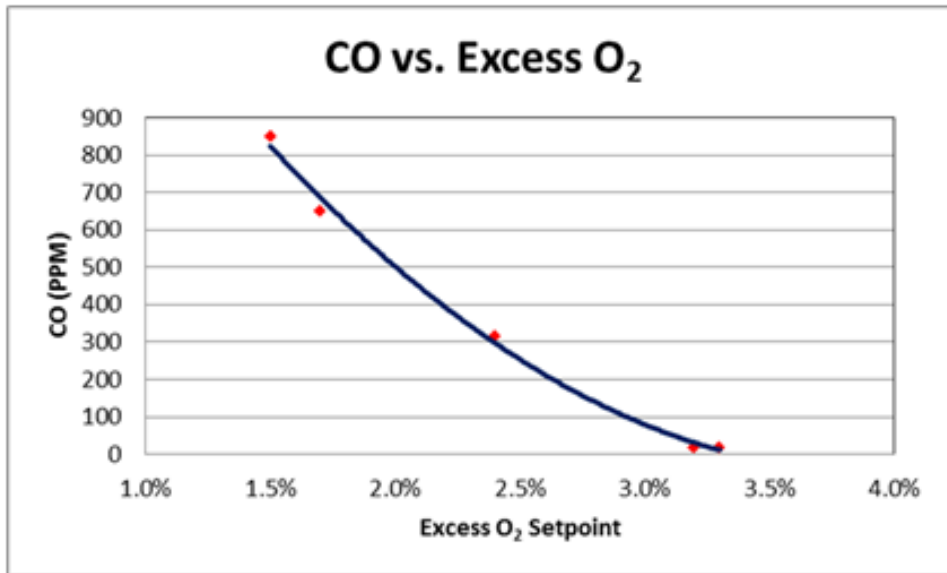
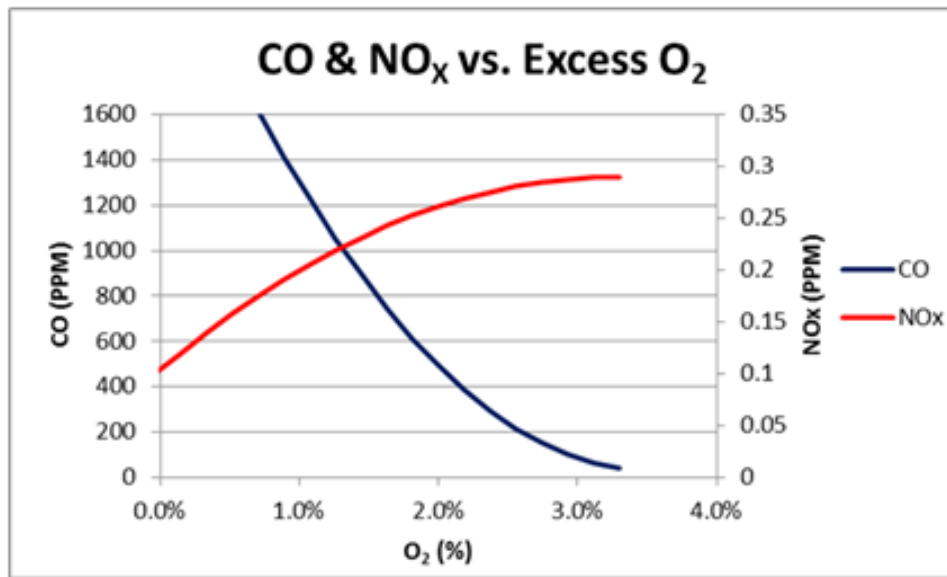
**Photos of Typical "As Found" Burner Condition**



**Photos of "As Left" Burner Condition after Technical Direction of Repairs**

### Requirements for Boilers with Oxygen Trim Systems

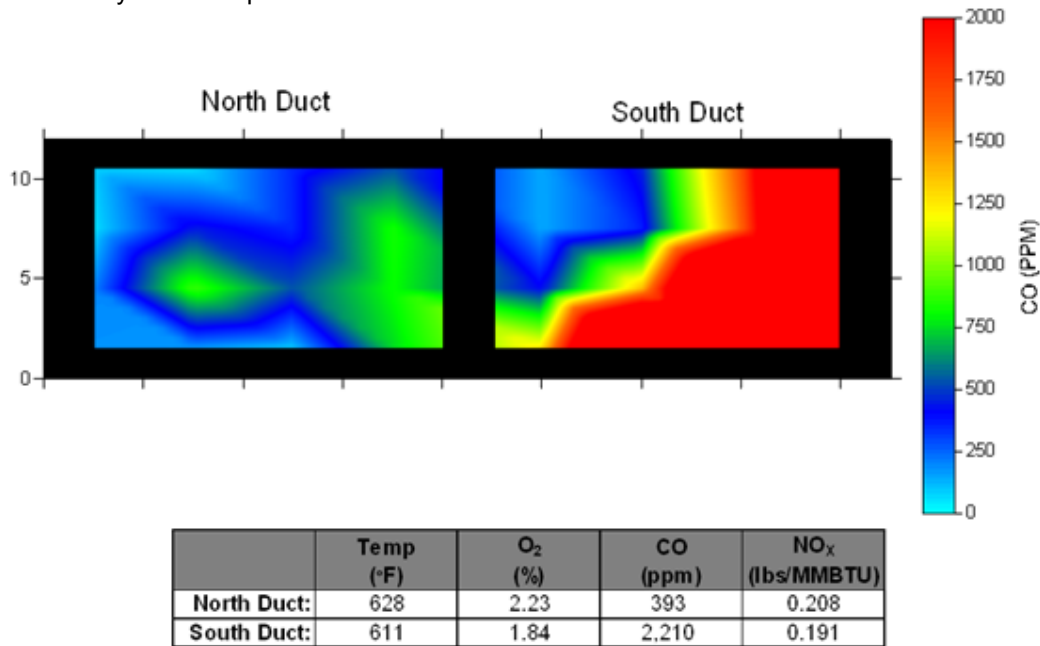
- The EPA is establishing separate requirements for boilers with oxygen trim systems that maintain an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up. Existing boilers with oxygen trim systems are required to complete an initial tune-up by 2014 or 2015 depending on boiler classification, and a subsequent tune-up every 5 years. New and re-constructed boilers with oxygen trim systems are not required to complete an initial tune-up, but are required to complete a tune-up every 5 years after the initial startup. The following shows some actual CO, NO<sub>x</sub> and Oxygen curves based on testing/tuning completed.



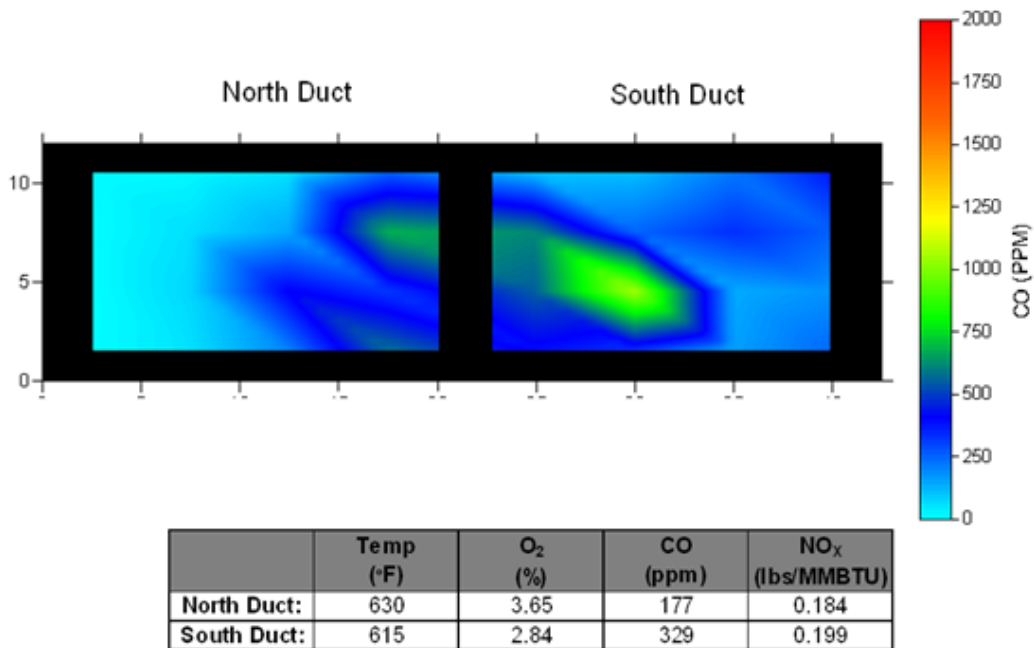
**CO, NO<sub>x</sub> and Oxygen Curves Developed from Testing/Tuning**

**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<sub>x</sub> 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.



**CO Levels Before Testing/Tuning**



**CO Levels After Testing/Tuning**