



GEOENERGY

A DIVISION OF
A.H. LUNDBERG ASSOCIATES, INC.



Wet ESPs for Boiler MACT Compliance

Presented to

McIlvaine Hot Topics Hour

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by

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Wet Electrostatic Precipitators

- Excellent particulate removal
- Proven on boilers
- Low pressure drop
- No impediment to gas flow
- Multi-fuel compatible; CISWI implications



Typical Applications

- Sulfuric acid mist collection in non-ferrous smelting
- Wood dryers in panelboard and pellet manufacturing
- Incinerators of hazardous waste and sewerage sludge
- Industrial boilers down stream of scrubbers

Inherent Advantages of Wet Precipitation

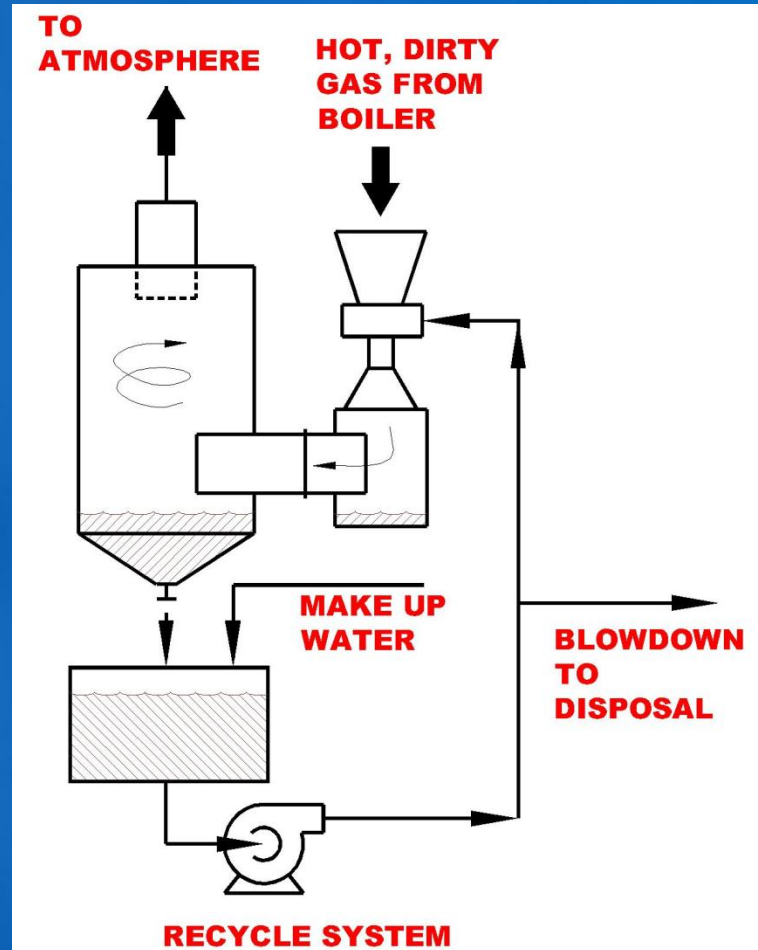
- Condensables are already formed
- Particulate resistivity is irrelevant
- No particulate re-entrainment
- Sneak-by can be eliminated
- Smaller gas volume

Why Wet Precipitation on P&P Boilers?

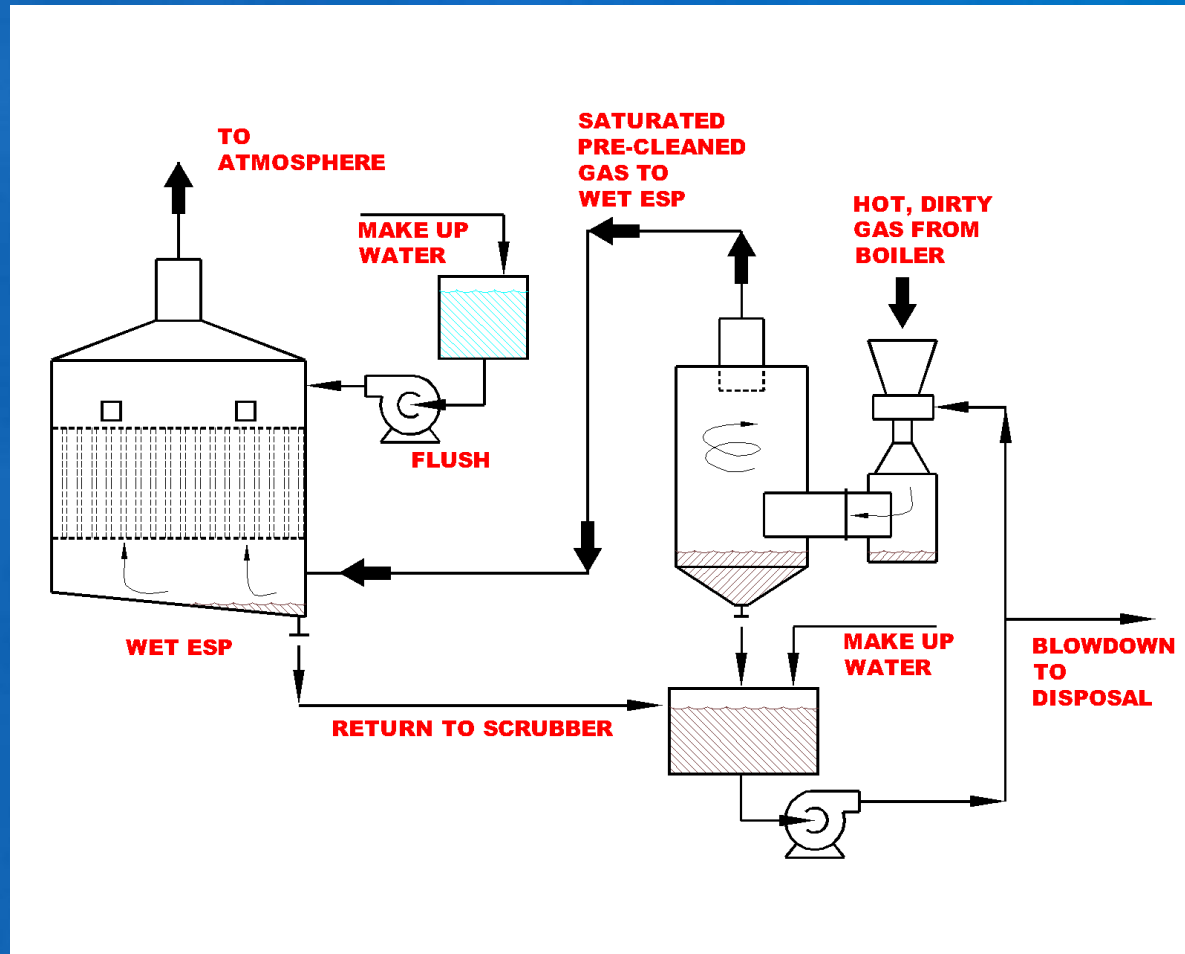
- Hard part already done
- Excellent particulate removal
- Proven on boilers
- Low pressure drop
- No impediment to gas flow
- Multi-fuel compatible



Existing Scrubber on Boiler



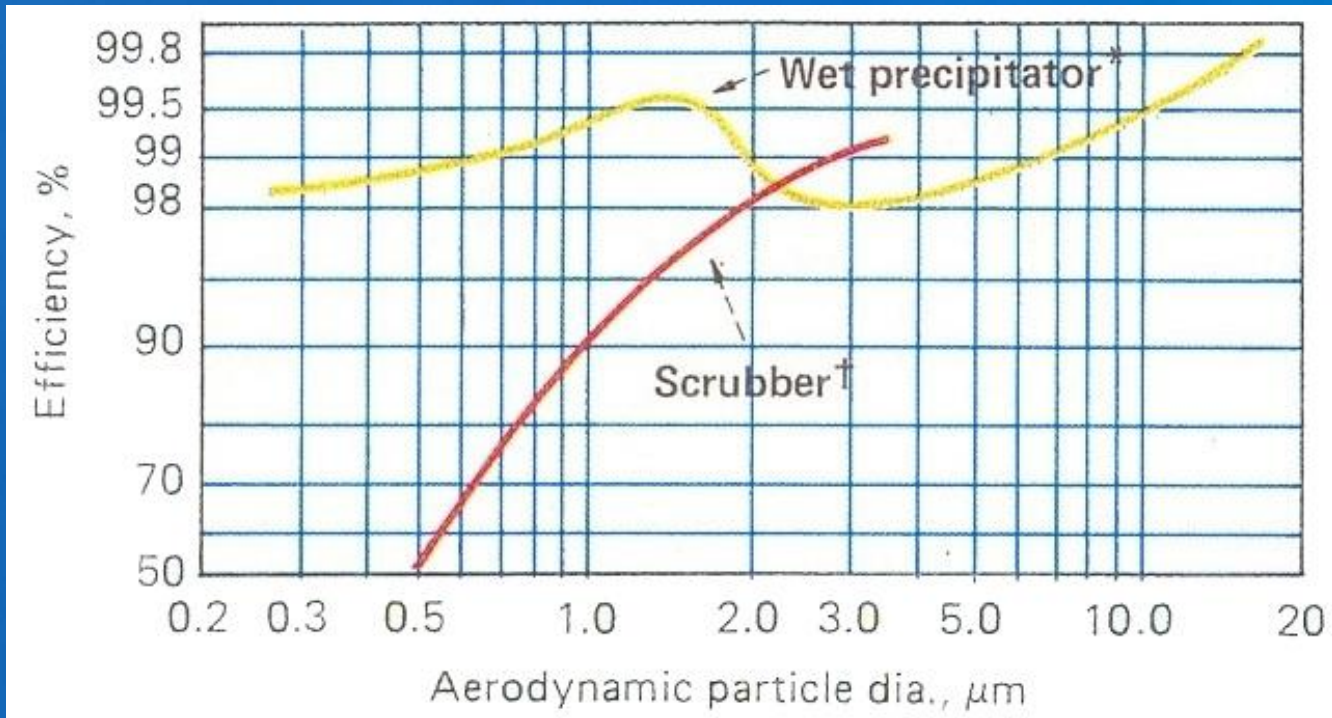
Wet ESP Added



The background of the slide is a solid blue color. On the left side, there is a white curved shape that acts as a design element. Behind this white shape, a faint technical drawing of a wet electrostatic precipitator (ESP) is visible. The drawing shows various components like pipes, tanks, and electrical connections. The main title 'Wet ESP Performance' is centered in white text.

Wet ESP Performance

Effect of Particle Size



Size has a strong influence on the performance of a wet precipitator in collecting fine particles

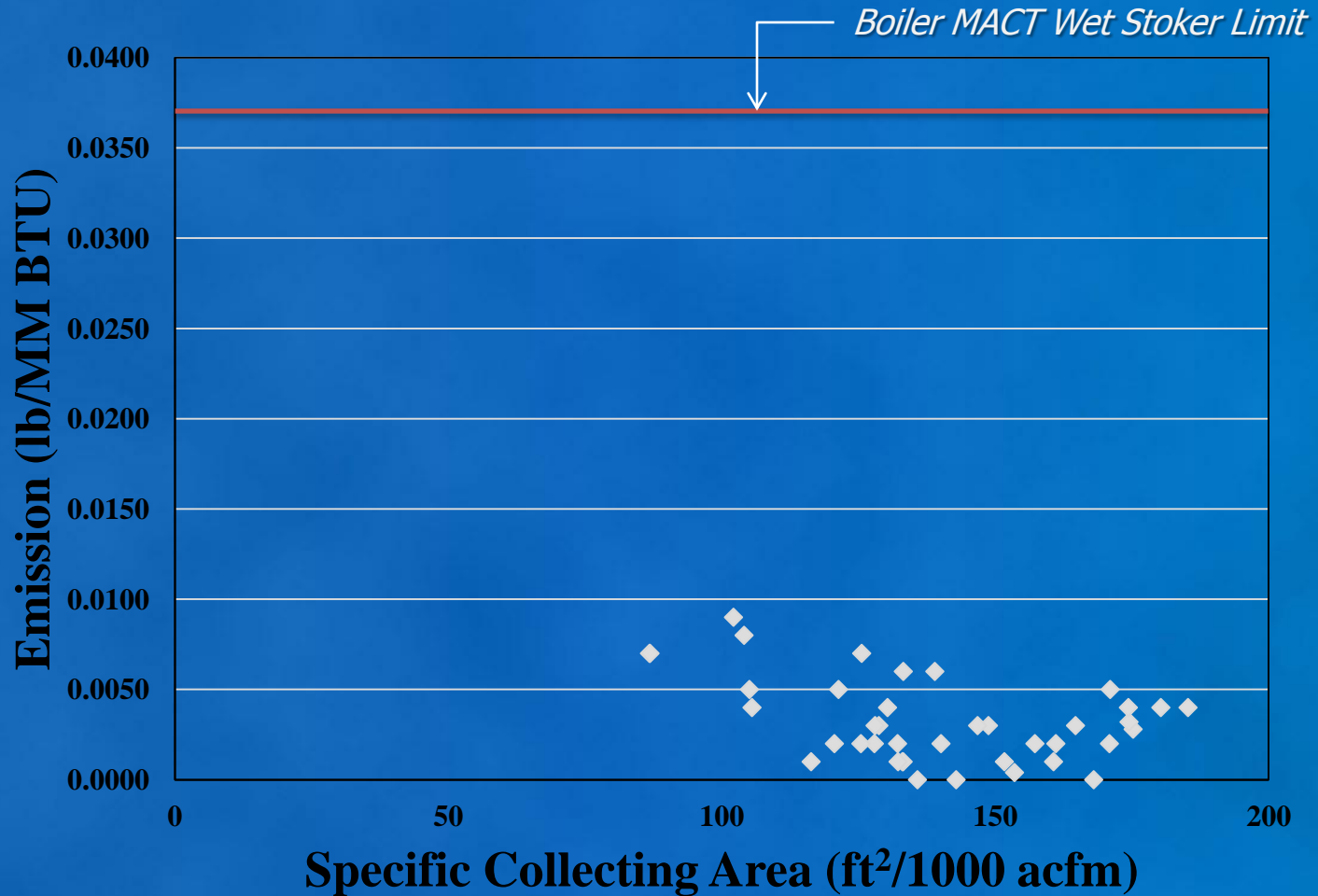
Wet electrostatic precipitators capture fine particles more efficiently than the highest-energy wet scrubbers

Wet ESP Performance Test Results (Northwest P&P Mill)

- Biomass stoker boiler also burning mill sludge and OCC
- Tests conducted from 2009 through 2011
- 46 total tests; 23 on each wet ESP unit
- Average emission - 0.0032 lb/MM BTU

Performance Tests 2009 -2011

(Biomass Boiler @ Northwest P&P Mill)



Seeing is Believing!



Power Off



Power On

The background of the slide is a solid blue color. On the left side, there is a vertical white curved line. To the left of this line, there is a faint, light blue technical drawing or blueprint, showing various mechanical parts and lines. The text "Thank You!" is centered in the blue area.

Thank You!