Emisshield®
Energy Enhancing Solutions
www.wessexinc.com

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COMBUSTION AND HEAT TRANSFER TECHNOLOGIES FOR BIOMASS COMBUSTION

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Biomass Projects at E.ON

Company	Application	Application Date	Plant Size
E.ON – Mora, Sweden	Biomass Furnace/ Walking Grate Furnace	January 2008	10 MW
E.ON – Orsa, Sweden	Biomass Furnace/ Walking Grate Furnace	September 2008	4 MW
E.ON – Vannas, Sweden	Biomass Furnace/ Walking Grate Furnace	September 2008	5 MW
E.ON – Solleftea, Sweden	Bubbling Bed Boiler	September 2008	20 MW
E.ON – Dorotea, Sweden	Biomass Furnace/ Walking Grate Furnace	January 2009	6 MW

Emisshield® Enhancement of Typical Furnace Wall

Figure 1

Figure 2

Figure 1 shows the IFB-lined lower sidewall in the upper terrace before being replaced with the Emisshield®- coated ceramic fiber. In figure 2, the color of the modules is darker and more even, showing that the Emisshield® coated modules radiate more heat than the uncoated IFBs and that the radiation is more uniform. After eight months of service, the modules showed no sign of shrinkage and were not ablated.

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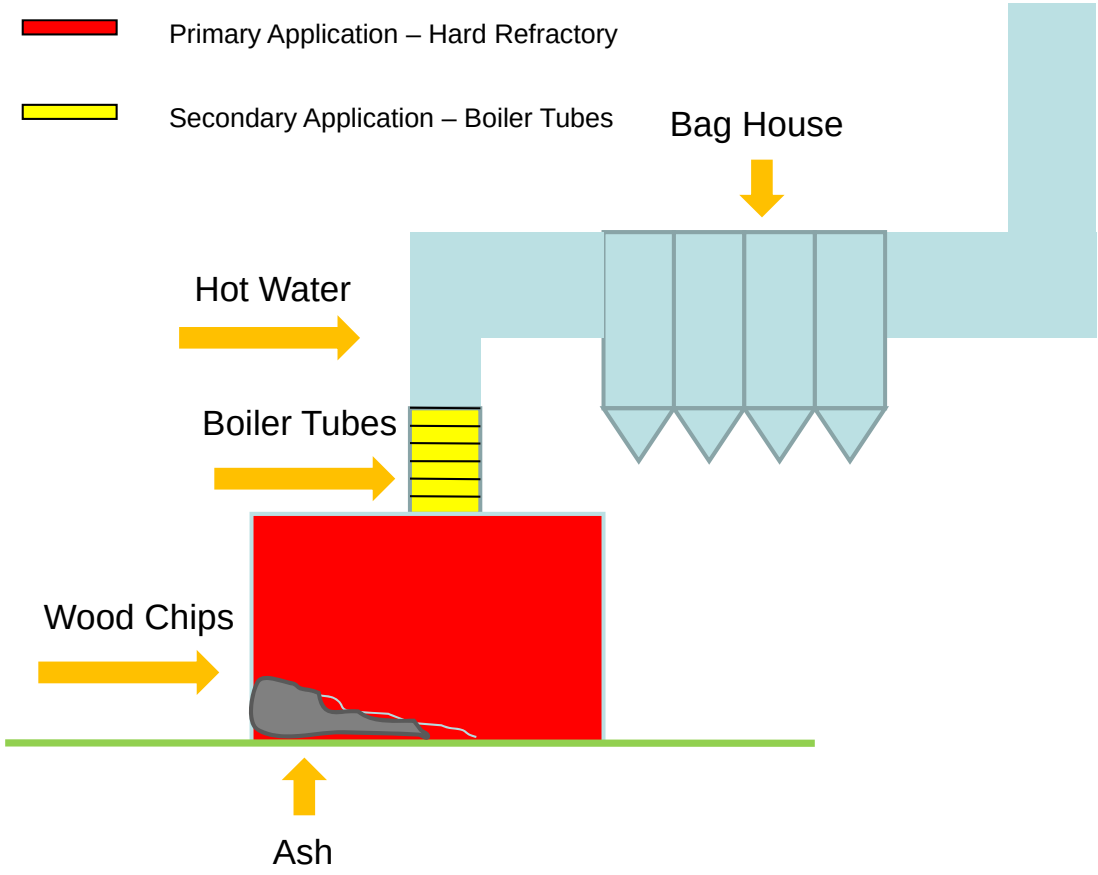
Biomass Combustion Chamber



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E.ON Biomass Combustion Plant (Mora, Sweden)

- Size – 10MW
- Combustion System – ETT – Walking Grate
- Boiler System – Osby
- Process Tubes – Hot Water/Gas flow through inside of tubes/420 Tubes, 64-52mm inside diameter
- Condenser
- Baghouse/ Air Monitoring
- Fuel Preprocessing: Wood Chips and Bark
- Continuous Air Emission Monitoring for NOx and CO

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E.ON Biomass Combustion Plant (Mora, Sweden)

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Emisshield® Performance Enhancement Results
E.ON Biomass Combustor

Parameters	Results (3 month data) Average Values
Production of Hot Water	Increased 7-10%
Fuel Load	Reduced 7-10%
Fuel Economy Savings/Change in Fuel Type and Moisture	Reduced 10-12%
Biomass Facility Operational Responsiveness	Improved
NO_x	Reduced 25-30%
CO	Reduced 40-50%
CO_2 (calculated)	Reduced 5-10%
Combustion Air	Reduced from 5.0% to 0.5%
Flyash	Reduced Generation - 20% (under assessment)
Soot	Eliminated
Slagging Furnace Wall	Eliminated

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Conclusion

Emisshield Systems in Biomass Combustors can:

- Improve Combustion Efficency
- Reduce Air Emissons (No_x, CO, CO_2 and Particulate)
- Improve Operational Flexibility/Reduce Facility Downtime
- Increase Heat/Steam Production for Same Fuel Input

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