

*In this issue we investigate*  
**Biomass Fuels**

## The Challenges

Forest, agricultural and urban wood waste products are a 'carbon neutral' fuel for power generation and cogeneration. This fuel often contains significant amounts of chlorine and sulfur, as well as alkali in the form of potassium and sodium compounds. Alkali lowers ash fusion temperatures leading to slagging and deposit formation on heat transfer surfaces. Under deposit corrosion under the influence of potassium, sodium, chlorine and sulfur have, in some cases, resulted in corrosion so severe that the plant owners were forced to replace sections of the boiler after only 5 years in service. In addition to the corrosion element, slag deposits have the effect of reducing heat transfer resulting in reduced overall generation efficiency. Increased pressure differentials across bundles further reduce efficiency and can lead to erosion related problems downstream as a result of the accelerated flue gas flow.

## The Solution

GreenShield Ceramic Coatings have been applied to various areas in several biomass boilers. The non-porous, non-reactive barriers presented by the GreenShield prevent corrosive species from contacting the underlying boiler tube material, and in this way, corrosion is prevented. The smooth, non-reactive surface presented by the coating inhibits the buildup of significant slag deposits. Any accumulations of slag are more easily removed.

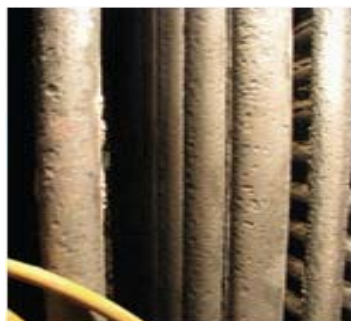
## The Result...

- Increased heat transfer and efficiency
- Corrosive material losses arrested - Increased component life expectancy
- Reduced pressure differentials result in reduced operational power consumption
- Shorter outage time spent cleaning deposits
- Reduced inspection and repair costs

*Slag Accumulation*



*Under Deposit Pitting Corrosion*



*GreenShield After Service*

