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## **Protective Coating Systems to Extend the Operational Range of Materials used in Refuse Derived Fuel Power Generation Facilities.**

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### **ABSTRACT**

The use of refuse derived fuel in power generation systems performs a key role in waste management and energy generation in many countries.

Combustion processes involving this diverse type of fuel produces a range of byproducts that can have potentially detrimental effects the surrounding environment and on the facilities themselves via corrosion of construction materials.

Properly designed processes and equipment are required to ensure reliable long term service and to minimise the possibility of potentially harmful materials being released to the wider environment.

One key issue is the generation of acidic compounds in the combustion stream that are corrosive to living tissue and to many industrial materials. Acidic compounds are typically removed from the flue gas via a scrubbing process involving water and other chemicals. This process itself involves the handling of corrosive liquors which present challenges for construction materials.

Conventional construction materials such as steel and concrete are particularly susceptible to attack from acidic liquids and vapours. In order to be used in acidic conditions, they must be protected by the use of properly designed coating systems.

Coating systems are available that can extend the range of operation of steel and concrete into acid pH conditions, immersed and non-immersed, and at elevated temperatures.

Experience gained in coal fired power stations can assist in coating system design and selection for general structural steel, flue gas de-acidification units and associated waste water handling systems.