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Solid particle erosion can be a big problem for coal-powered, steam-driven generators

Protecting steam turbine blades from wear and tear

BACKGROUND AND CHALLENGES

Power companies that drive generators with steam turbines face the constant problem of solid particle erosion (SPE) of turbine buckets, blades and other parts situated in the steam path. As boiler tubes corrode or erode, tiny oxide scale particles enter the gas stream and then strike the turbine airfoils at high velocity, causing degradation of the airfoil contours. This not only lowers turbine and plant efficiency, but it ultimately leads to costly blade repair or replacement.

PRAXAIR SOLUTION

To help maintain airfoil integrity and withstand these eroding forces, Praxair coats the airfoil surfaces with chromium carbide. Using either Praxair's proprietary detonation gun (D-Gun) or high-velocity oxy fuel (HVOF) application methods, chromium carbide coating is applied at supersonic speeds. The resulting coating yields increased wear resistance along with a surface profile that holds constant airfoil efficiency.

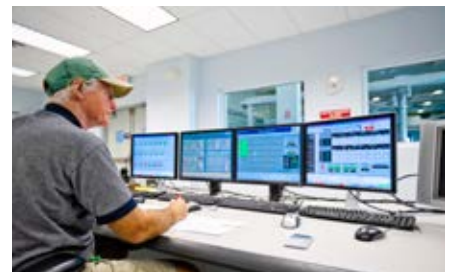
In the mid-1990s, Westinghouse specified Praxair coatings on its turbine blades due to a three-fold improvement in erosion resistance over plasma chromium carbide coatings.

Find out how Praxair can help your company improve efficiency and save money at praxairsurfacetechologies.com, or call us at **1-317-240-2500**.



Economic effects

- Longer-lasting airfoil integrity helped maintain optimal output longer
- Reduced maintenance costs associated with continual blade replacement



Operational effects

- Coated blades resisted erosion longer
- Coated blade surface improved turbine efficiency over uncoated blades

