

EMERGING COATING MATERIALS FOR H₂ POWERED TURBINES

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Hydrogen-fueled gas turbines have the capability to offer greater energy efficiency with no or reduced CO₂ emissions. Compared to natural gas combustion, H₂ combustion has a higher adiabatic flame temperature, laminar flame speed, and steam concentration. This combination of effects creates several major challenges for coating materials that are currently in use in the turbine hot sections. This poster will address several materials programs underway at Praxair Surface Technologies to address the higher temperature requirements that will be placed on turbine coatings moving forward including the thermal conductivity, erosion resistance, CMAS resistance, and oxidation resistance of TBC systems.