

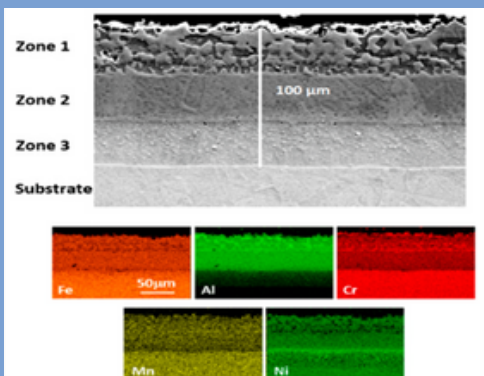


Coating that effectively retards corrosion at high temperature

Applications

Installations with high temperature gas flows with risk of corrosion:

- Steam turbines
- Concentrating solar power
- SOFC fuel cells
- Chemical processes
- Heat exchangers



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Spanish Version



HIGH TEMPERATURE OXIDATION PROTECTIVE COATING

The Metallic Materials Area of the Spanish National Institute of Aerospace Technology (INTA) develops the application of slurry-type paints to protect metallic materials exposed to high temperatures in steam atmospheres and other corrosive gases.

Description

Different industrial sectors depend on processes that require the flow of water vapor or other types of gases at high temperatures in their facilities. For these processes to be carried out efficiently, the components that are in contact with these gas flows (tubes, blades, heat exchangers,...) must maintain not only their structural integrity, but also their physical-chemical properties, mainly the thermal ones, on the surface. The appearance of high-temperature oxidation and corrosion processes to which these components are subjected compromise their behavior, which leads to failures in service and loss of performance of the installations.

The oxide layers that are generated on the surface of these materials, due to the work environment, can detach, causing loss of the cross-section, erosion and even blockage of flows in different areas of the facilities. In addition, if the oxide layer is very thick, they can generate a thermal insulation effect, causing loss of heat transfer efficiency and/or overheating in different areas of the installation.

INTA's Metallic Materials Area has developed a diffusion coating, based on an aluminum slurry that effectively delays the oxidation of these components, preventing the growth of a metal oxide layer and its subsequent detachment. This helps to avoid installation damage and provides more uniform heat transfer conditions, enabling installations to achieve higher efficiencies.

Competitive advantages

The use of this coating entails the following benefits:

- Increases the performance of the processes while they remain in operation.
- Reduces maintenance needs, and therefore, increasing operation and production time.

Situation

Fully validated technology, currently in use in production systems, through transfer agreements, delimited to specific applications and circumstances of use.

The aim is to validate its use in other applications, in which to reach further agreements for its transfer.

