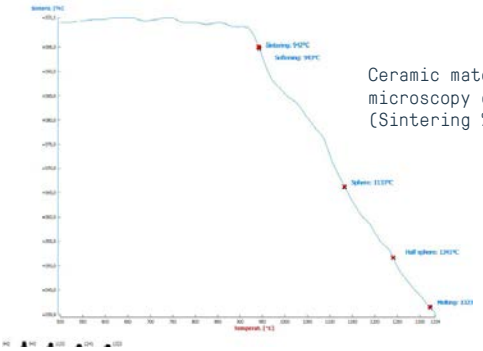
Ceramic coating solutions: industrial tubes & components under High Temperature Corrosion (HTC) conditions

Concept

Advanced protective solutions for metal components and structures subjected to industrial extreme conditions.

Validated ceramic coatings provide protection and extend-life properties in industrial processes working under critical conditions (P, T above 500 °C and chemical), avoiding salt/ash/waste deposits.

Ceramic coating with thermal corrosion-erosion resistance applied on a grate CLINKER cooler plate for cement industry.



Ceramic material heating microscopy characterization (Sintering % vs T).

Properties and opportunities

- **Thermal resistance up to 800°C in the metal substrate.**
- **Glassy Surfaces with very low roughness = little or no adherence of fouling.**
- **Thermochemical resistance to gases and/or salts deposits.**
- **Erosion resistance to abrasive particles.**
- **Specific ceramic formulations for welded areas.**
- **As ashes do not stick to the components:**
  - Cleaning “shakes” can be reduced if not avoided.
  - Thermal efficiency will remain more constant as insulation will not grow.
  - It might become possible to move on to higher performance industrial conditions.

6 m long metallic tubes with external ceramic coating placed in a Coke calciner's Heat Recuperator with Vanadate Ashes.

THIS INNOVATIVE GLOBAL SOLUTION FOR HARSH INDUSTRIAL ENVIROMENTS HAS BEEN DEVELOPED SIDE BY SIDE WITH KERACOAT COMPANY.

www.kera-coat.com

CIDETEC spinoff focused on tailor made ceramic formulations and, for tubes components, further industrially implemented by TUBACOAT.

www.tubacoat.com
(a subsidiary company of the Tubacex Group).

Potential Applications

POWER GENERATION BOILERS
(Coal, Biomass, Urban garbage, etc): water walls, steam re-heaters, super heaters and heat recovery bundles

MOLTEN SALTS
Collectors included in CSP

ASH CORROSION AND FOULING IN THE OIL AND GAS INDUSTRY
Visbreaker, Coke Unit, Coke Calciner, Heat Recovery Units, etc.

OVERHEAD SULPHUR CONDENSERS

METAL DUSTING AVOIDANCE
(Syngas, Methane reformers, carbon capture systems, ammonia production plants, etc.)

FUELS PRODUCTION AND CHEMICAL SYNTHESIS INDUSTRY

CEMENT INDUSTRY
Components under erosion/corrosion/temperature conditions: Raw material cement preheater plates, Planetary clinker cooler plates, Grate clinker cooler plates, etc.

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