



## Ceramic protection for heat exchangers technology



### Concept

Innovative solutions based on high performance ceramic coatings. Anticorrosive and antifouling properties provide long term and reliable protection to industrial metal components (tubes and fluid passage areas) working on severe environments.

Silica-based ceramic coating could be applied inside and outside of long and narrow metallic tubes (carbon steel, stainless steel, high alloys, etc.) getting reliable and combinative properties:

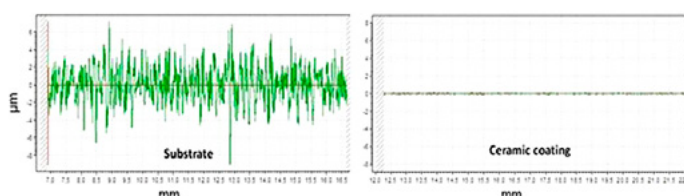


5kW fume condenser prototype at a Urban Waste Power Plant.

- **Glassy Surfaces with very low roughness = little or no adherence of fouling.**
- **Water Pressure Cleaning Resistance up to 2,300 bar. (36,260,00 psi)**
- **Chemical Resistance:**
  - Hot Cold Acids – Except HF
    - :: Sulfur and Sulfate
    - :: Nitric
    - :: Chloride
  - Hot & Cold Alkalis – Except concentrate NaOH & KOH.
  - Water Hot & Steam.
  - High concentration Salt Water.

### COMPARATIVE PROFILOMETRY:

#### ROUGHNESS



non-coated carbon steel and silica-based ceramic coating.



Internal finishing comparative after six months working fume condenser (non-coated and silica-based ceramic coating).

This innovative technology has been developed side by side with KERACOAT company [www.kera-coat.com](http://www.kera-coat.com), CIDETEC spinoff focused on tailor made ceramic formulations and further implemented in long and narrow metallic tubes by TUBACOAT [www.tubacoat.com](http://www.tubacoat.com) (a subsidiary company of the Tubacex Group).

This technological approach gives an efficient and environmental friendly solution, protecting components from critical degradation and keeping the energetic efficiency by avoiding fouling and corrosion phenomena.

### Potential Applications

**COMBUSTION FUMES CONDENSATION**  
HEAT RECOVERY AND GAS CLEANING

NITRIC ACID CONDENSERS

REFINERY AND PETROCHEM **HEAT EXCHANGERS**

OVERHEAD SULPHUR CONDENSERS

HEAT RECOVERY SYSTEMS IN GENERAL



OIL & GAS



CHEMICAL AND  
PETRO-CHEMICAL  
INDUSTRY



POWERGEN



INDUSTRIAL  
PROCESSES



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