

Reuse of recovered metal-oxides powders from industrial processes for the production of vitreous coatings (Recycling and Substitution)

- **Powders recovery from thermal-spray processes**

The main idea is to use powder materials resulting as waste material from industrial processes as additives in vitreous enamel coating in order to enhance its mechanical properties and reduce the environmental impact. In particular, using recovered powders a self-repair enamel coating has been developed. It is characterized by high mechanical performances, high adhesion to low carbon steels and by crack stopping and closure mechanisms.

- **Outcomes:**

1. Waste metal-oxides powders are completely recycled and they can be economically exploited
2. In several case studies it was demonstrated the cost effectiveness and an improved reliability and performances:
 - longer life of the enameled elements when they are subjected to repeated and high pressure sootblowing procedure,
 - higher resistance to shocks and vibrations

- **Market & Business opportunities:**

This technology allows for a complete recycling of waste powder produced during thermal-spray processes. The material has been tested as protective coating for enameled elements used in rotary heat exchanger in power plants, but could be also used in chemical reactors, hydrogen storage.

- **Partners already identified:**

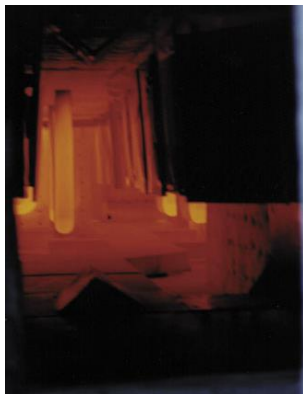
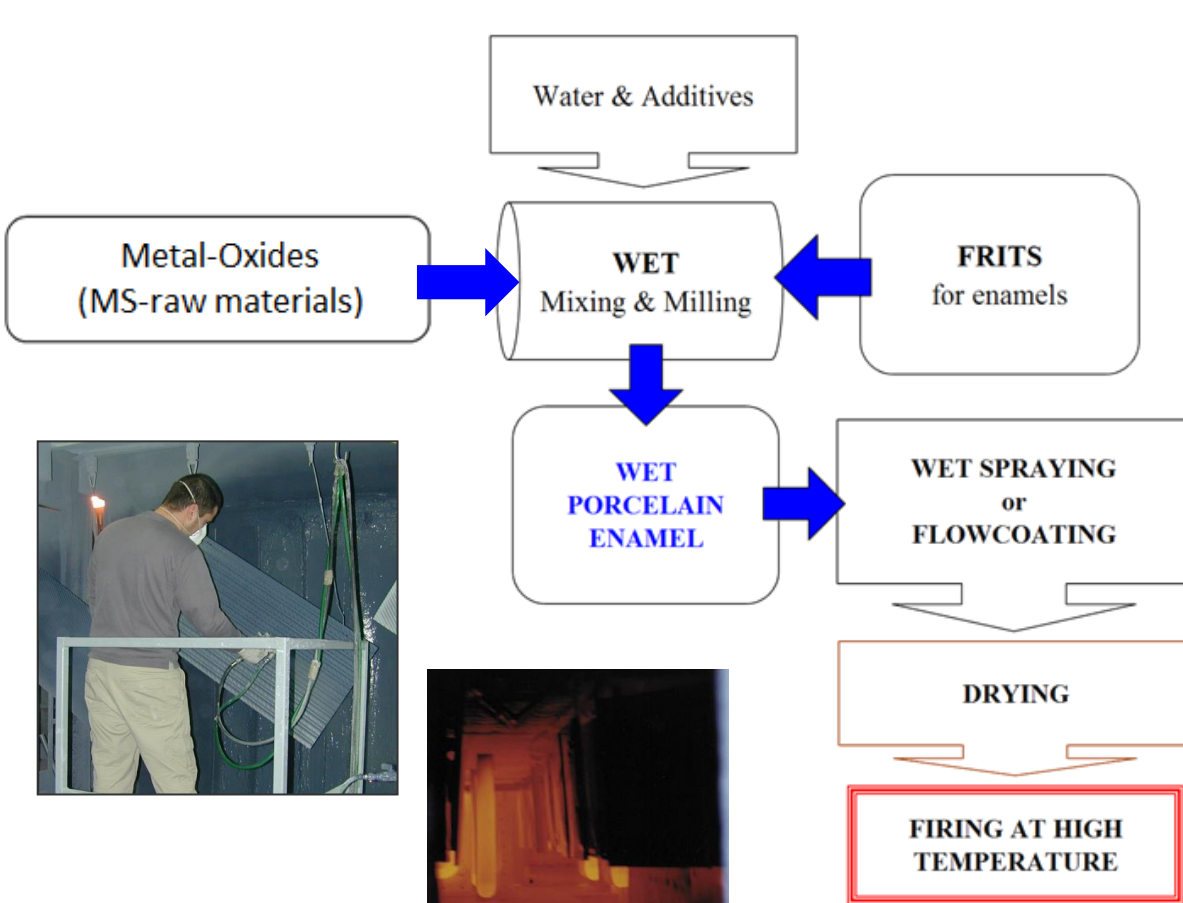
Smaltiflex (Italian SME)

- **Wanted additional partners:**

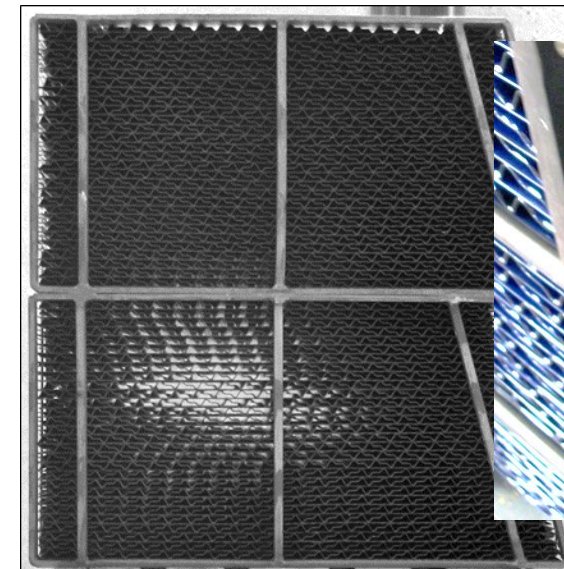
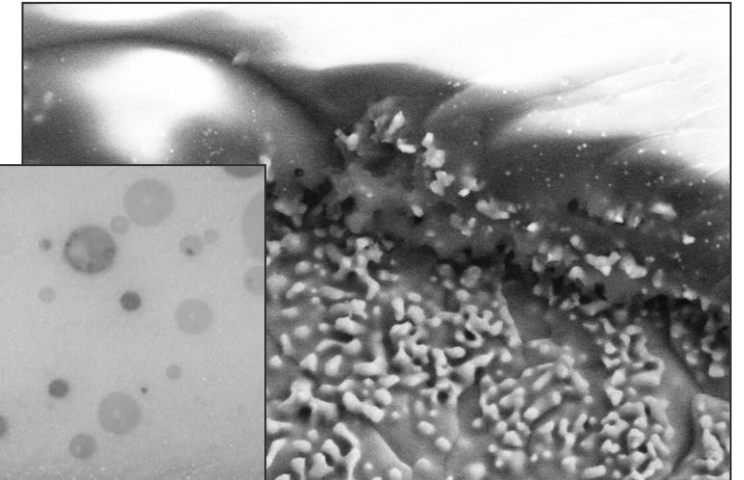
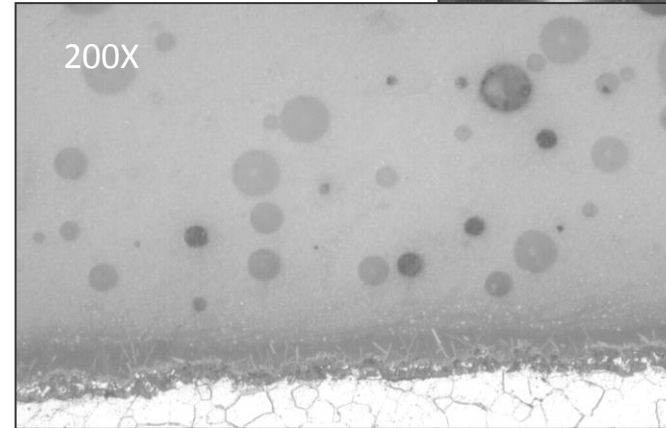
Industrial partner which produce and/or has to manage waste metal oxides powders

Industrial partners involved in the production of components which works at high temperatures

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Coating surface and section



Example of heat exchanging baskets