STAINLESS STEEL CASTINGS AT HIGH TEMPERATURE AND ABRASION IN A CEMENT CLINKER COOLER

- ***In March 2016 Kera-Coat placed 2 cooling plates cast in Mat CrNi 25/12 in a fluidized bed Clinker cooler in the upper and hottest area.***
- ***In this area The Clinker fells from the kiln as a LAVA river at 1400ºC = 2550ºF while cool air is blown underneath.***
- ***Plates are arranged in a way that a moving row pushes the Clinker ahead/downwards over a fixed row.***
- ***The plates were placed in a fixed row thus suffering the bigger abrasion rate.***
- ***We did Not know at that moment which was the average Steel temperature on the plate.***

The stopped cooler being repaired on March 2016, note the wearing.

Plates in the enameling process enamel K-100.

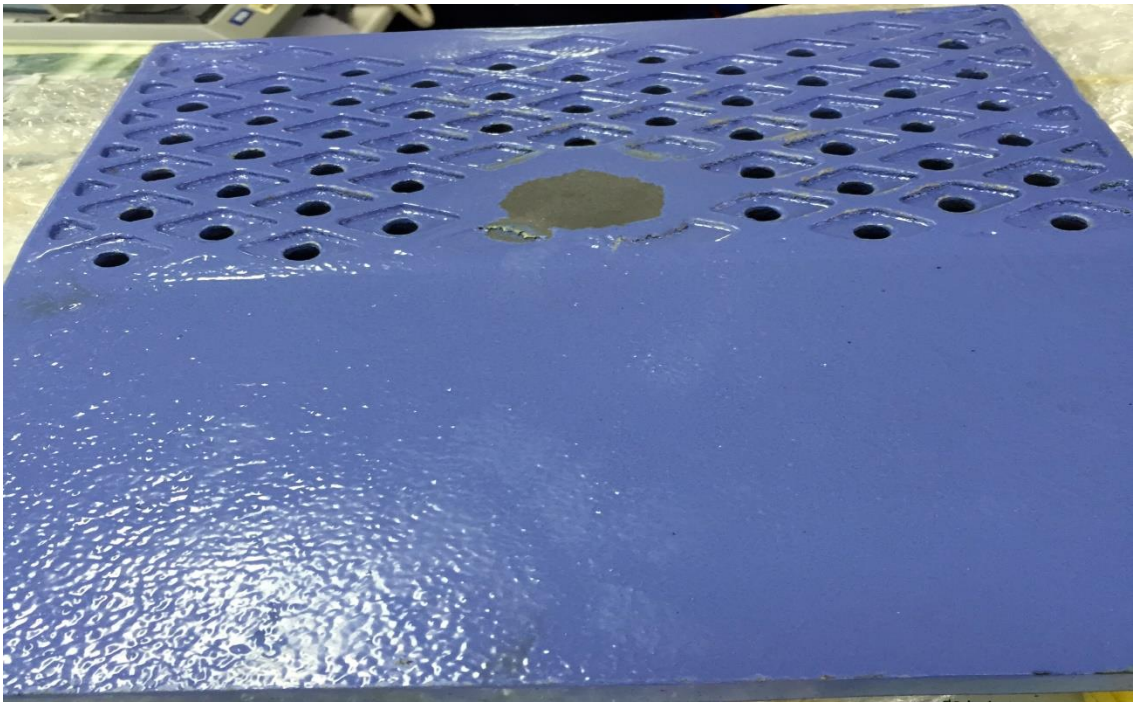

Plate With enamel FAQ-4.

Plates were sintered in a "handicraft" resistor furnace and the adherence was not good at the Central raiser point but we had no alternative due to short stoppage window.

Handycraft Sintering Pan.

- ***Last 15th March 2017 the plant stopped again for revision.***
- ***Plate in K-100 (designed for 550ºC - working temperature had lost most the ceramic and showed wearing.***
- ***Plate in FAQ-4 (designed for working at 600ºC) , just besides, had kept the ceramic in about a 60% of its surface***
- ***This indicates that the real working temperature is about 650ºC.***

Plate coated with K-100: just some traces in the most refrigerated areas, close to the wind holes.

FAQ-4: The central spot was without coating since the beginning.

Both plates after just one year of continuous operation.

- ***The areas with remaining coating had the original shining surface and kept the original thickness of around 150 microns… SO NO WEAR.***

- ***While in the areas where the ceramic has got too hot …and gone, the wear was around 2 mm or more.***

- ***The central area, which was uncoated from the beginning, showed a wear of about 4 mm or more just the average of the rest of the cooler.***

CONCLUSIONS

- ***IT Works but for this extreme applications we have to improve…***
- ***This year we just placed 3 new plates but this time with our last developed ceramics with a working range UP TO 840ºC = 1544ºF.***
- ***These plates have been sintered in an industrial enameling furnace and the adherence, roughness and hardness are on the targeted standard (see pictures below).***
- ***Another set of three plates in FAQ-4 have been placed downstream in the cooler where temperature is supposed to be 200ºC below.***

kera-coat
CERAMIC COATINGS

NEXT YEAR… WE´LL SEE!!