



CORROSION IN REFINERY INDUSTRY FAILURE ATLAS

CASE HISTORY n° 8 Date April 2012

Process: Fluid Catalytic Cracking
Equipment: Regenerator

DATE OF INCIDENT AND/OR INFORMATION: December 2006

NATURE OF THE INCIDENT :

Fifty grooved cracks at the weld connection between the cone and shell of the regenerator.

CONSEQUENCES :

The leak consists of air from combustion of the regeneration process. It presents no security risk. Actions to be taken must avoid aggravation of the phenomenon in order to maintain the mechanical strength of the unit.

MATERIAL COMPOSITION and REFERENCES

Carbon steel

PICTURES AND SCHEMES :



ASPECT :

The problem occurred following a modification of the internal insulation system: the concrete has been replaced by ceramic fiber causing a decrease in wall temperature.

MEDIA AND OPERATING CONDITIONS:

The wall temperature is around 50 ° C, because there is no internal flow. An injection of fluidization air is performed and the accumulation of catalyst favors thermal insulation.

TIME TO DETERIORATION :

less than 6 years



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ANSWER

TYPE OF CORROSION : carbonate stress corrosion cracking
API 571 CLASSIFICATION: 5.1.2.5

CAUSES :

The suspected mechanism is cracking under stress (zones of welds, reinforcement) in the presence of carbonates. The water is due to internal condensation in cold area.

REMEDY :

The development of the phenomenon was stopped by positioning insulation to increase the external wall temperature. A mechanical reinforcement has been installed to ensure the resistance of the device before replacement of the shell.

PUBLICATION - TECHNICAL REPORT:

BIBLIOGRAPHIC REFERENCES :