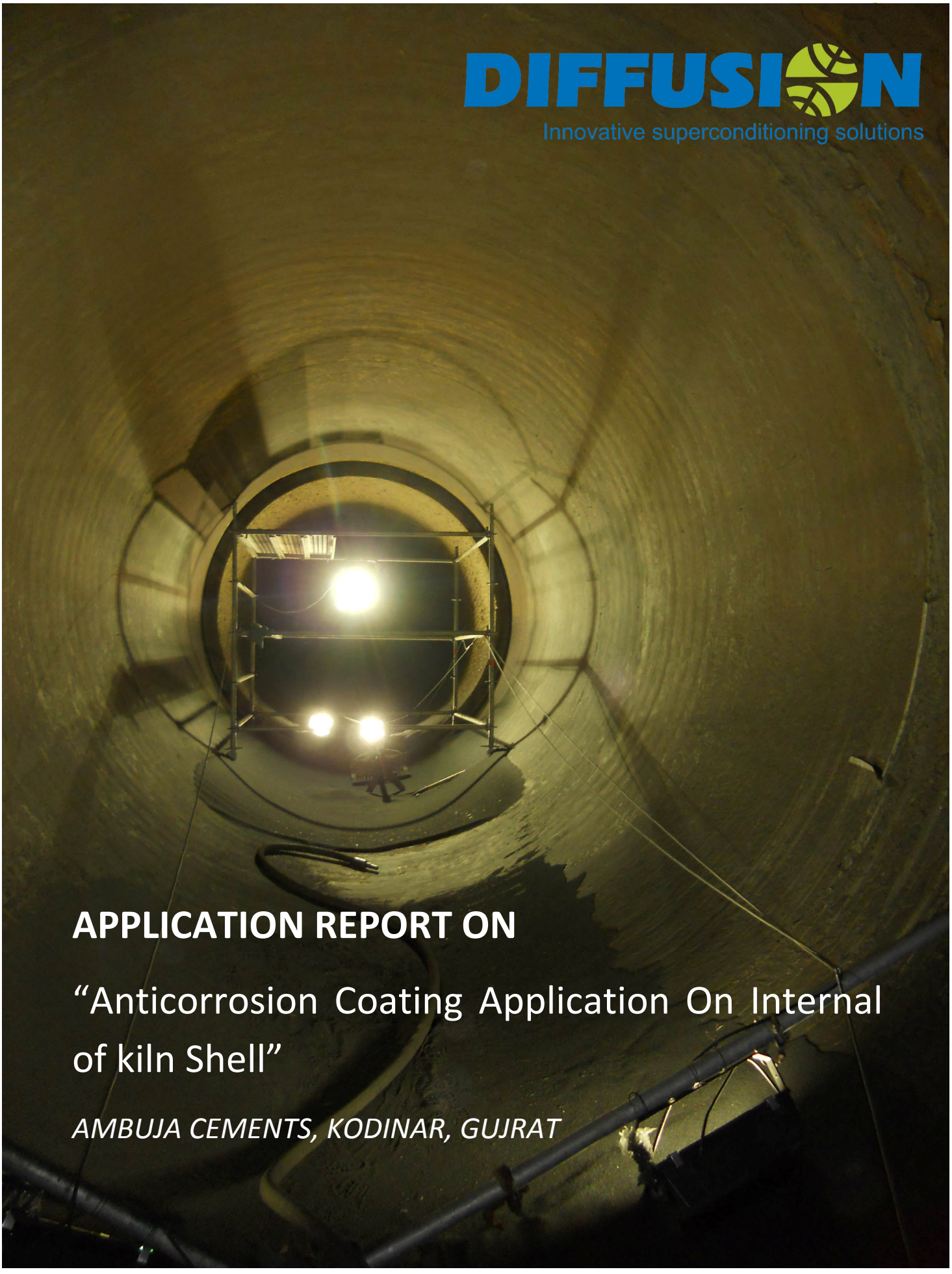


# APPLICATION REPORT ON

## "Anticorrosion Coating Application On Internal of kiln Shell"

*AMBUJA CEMENTS, KODINAR, GUJRAT*

**PROJECT REPORT ON:** "Anticorrosion coating application on internal of kiln shell"

**INTRODUCTION:** A Rotary Cement kiln has a very diverse environment of inside, and is basically a complex chemical reactor with several temperature zone and compositions. Additionally, the raw materials composition, the type of fuel used and operating conditions influence the corrosion occurring in a cement KILN. Of all the variables of interest, the chemical composition of raw material (specially its chloride and sulfur contents) being used and the type of alternative fuels used in the KILN are probably the two most important in contributing factor for internal corrosion. Chlorides and sulfur originate mainly from the fuel, but in some plants can also be present either in the limestone or in the combustion air. The vapors of sulfur oxides and chlorides can leak through crack in the refectory, reach the inside of shell and produce acid condensates which can be determinant factor for internal Kiln Shell corrosion.

**OBJECTIVE:** Surface preparation and application of Kiln guard 630-deG 3LT make coating in minimum Time allotted in shut down period.

Time Frame: From 18/11/11 to 23/11/11 & Handed over to Ambuja cement

On 23/11/11.

Dimension of Job: Position of Coating from 29m to 38 m from KILN INLET

Length : 9m

Total Surface Area of Kiln: 100 sqm Approx.

**OBSERVATIONS:**

After removal of Brick lining inside the Kiln from Section No B to Section E

Total Length of 9m.

Following were the Initial observation

1. Hard and Brittle Scale deposit were observed across the Kiln shell.

2. Scaling observed was in concentric ring and each ring having width of aprrox of 4 to 5 inch in wave form.

3. More scaling was observed from 31m Length 38m to Length (from KILN INLET) Scale thickness was appox 3 to 4 mm and difficult to remove. The Scale was difficult to remove by Chipping and also by Hammering. Once scale was removed, reddish yellow & Black color deposit was visible.


4. Scaling from Length 29 m to 30 m was on average 1 to2 mm and had lose bonding and was removed easily by chipping .
5. Scaling was minimum on shell from 29m to 30 & maximum from 31m 38 m from KILN INLET.
6. Scaling from 38m to about 41 m (From KILN INLET) was maximum and very hard. From about 41m onwards again the scaling was negligible towards KILN outlet (Towards coal burner pipe end).
7. Burning zone of Kiln showed more Pits after surface preparation as in the burning zone all corrosive elements like sulphur and chlorine decompose.

**PROCEDURE:** Following Steps were taken for effective application of Product

1. Surface Preparation
   a. As the Surface had hard scale deposit on surface, initial blasting with Abrasive grit did not show any significant removal.


   b. Based on above fact it was decided to carry out Chipping with Chisel and hammer across the allotted Kiln area for coating. Removal of scale in the area of Length between lengths 31m to 38m was difficult.
   c. Abrasive Grit Blasting of the surface was started on from 29m to 38m was continuous For 48 Hrs.
   d. After Complete Hard Blasting entire scale were removed.
   e. Left over scale were again removed by Chipping and again blasted.
   f. Final Sweep blasting was carried out on to remove Flash rust on the surface.

g. Final Blasted surface reveled the base surface as

1. Large no of corrosion pits were observed on the surface. Some pits were area large as 4-5 cm and depth as high as 4 mm



2. Surface cleanness was more than SA 2/12 and surface profile achieved by rough and more than required as because of the corrosion effect on surface. Thus making practically impossible to measure the surface profile with profile meter.

3. The Surface Profile can be compared with the surface profile as per visual standard


G1 Initial Condition


G3 SP 14, cleaned to Industrial Blast


G2 Initial Condition


G3 SP 6, cleaned to Commercial Blast


G3 Initial Condition


G3 SP 10, cleaned to Near-White


G3 SP 7, cleaned to Brush-off Blast


G3 SP 5, cleaned to White Metal

Fig. 2: VIS 1, Condition G for previously painted steel

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**COATING APPLICATION**: Application of coating done as under

Material Used: Kiln Guard 600 scw : Kiln Guard is Versatile material for protection of High temperature corrosion Inside cement Kiln Shell.

1. Kiln Guard 600 scw material was mixed to get uniform color and dispersion without any lumps.
2. Material were mixed in given ratio of one container of base to one container activator.
3. Mixed material were spayed using pressure pot gun to have uniform coverage on surface.
4. Distilled water was Used 1 liter Max to adjust Viscosity .
5. Coating material was applied in Two coat of average WFT (wet Film Thickness) measuring 300 Micron using Pressure POT Spray equipment . As surface was uneven the Material thickness showed irregular reading.
6. The Dry film Thickness measure after fist coat application was appox on average 175 to 200 Micron
7. As material consumption was on Higher Side due to uneven Base surface It was decide to spray material evenly on allotted kiln shell area.


8. Applied Coating was allowed to Dry for 6 Hrs under halogen Heat prior to Inspection.

**INSPECTION**

1. The Final DFT Measurement showed Coating thickness of 350 micron. The DFT measurement was made on 4 POINTS on Diameter at interval of 1 m throughout the length.

DFT On Point 1

DFT On point 2

DFT On Point 3

DFT On Point 4

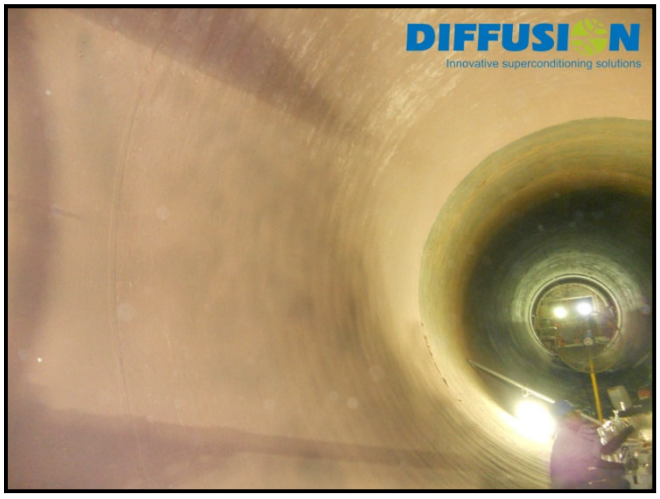
2. Job was allowed to Final Cure for 18 Hrs Min before Handed over to Ambuja cement

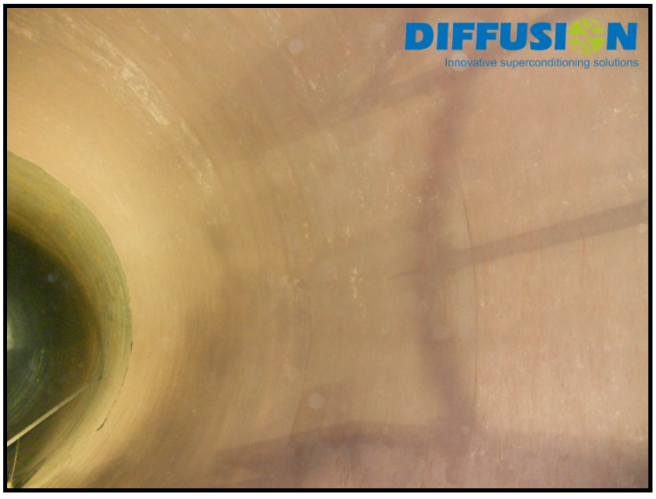
3. Guidelines were given to Ambuja Cement , for Protecting the Coated area , during Work under Kiln like Brick Lining . Ambuja cement was advised to

put Two Layers of Thick Rubber Mats like Conveyer Belts without any rubber adhesive on the walk way area.

4. Ambuja Cement Shall inform Diffusion For Inspection of Kiln in Next Shutdown .

**Final job photos**




## AKNOWLEDGEMENT:

**SPECIAL THANKS to AMBUJA TEAM:** Mr.RAMARAO**,** Mr. M T BARAD, Mr. MIHIR DESAI, Mr VIJAY GOHIL,Mr. M.T GAJJAR. Mr.KATARE.

**Diffusion TEAM "DIFFCOR":M**r DHANANJAY DHAGE , Mr ABHIJEET BAHADURE ,SANDEEP RAJYAGURU,DEVASHREE DAVE,HARISH WASEKAR, VISHNU KHAIRE, VISHAL GEDAM,ROSHAN PATIL, RAVI PATRE, PRAKASH BUDDHE.