

REPORT NO: DCQ/ NGP/2021-22/05

APPLICATION REPORT

INTERNAL COATING OF COAL MILL CHIMNEY



AT
**ACC LIMITED, UNIT: CHANDA CEMENT WORKS,
PO- CEMENTNAGAR, DIST- CHANDRAPUR
(MAHARASHTRA)**

INTRODUCTION:-

DIFFCOR division of DIFFUSION ENGINEERS LTD has successfully completed job work of INTERNAL CHIMNEY COATING. This job work was carried out for our customer ACC LIMITED, CHANDRAPUR. Our customer were facing problem of high corrosion of chimney. Coating was done with DIFFGLASS XTREME.

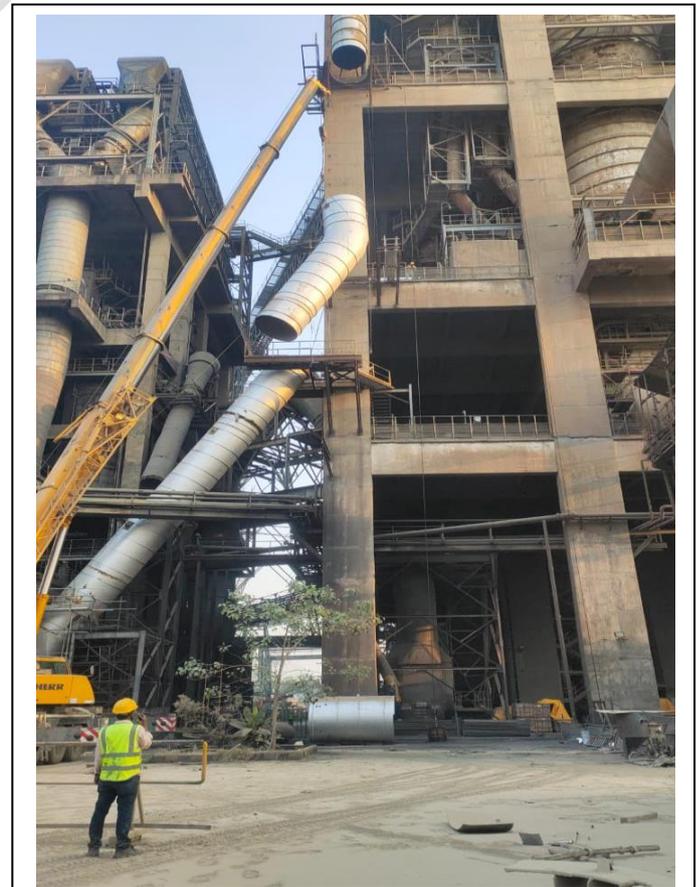
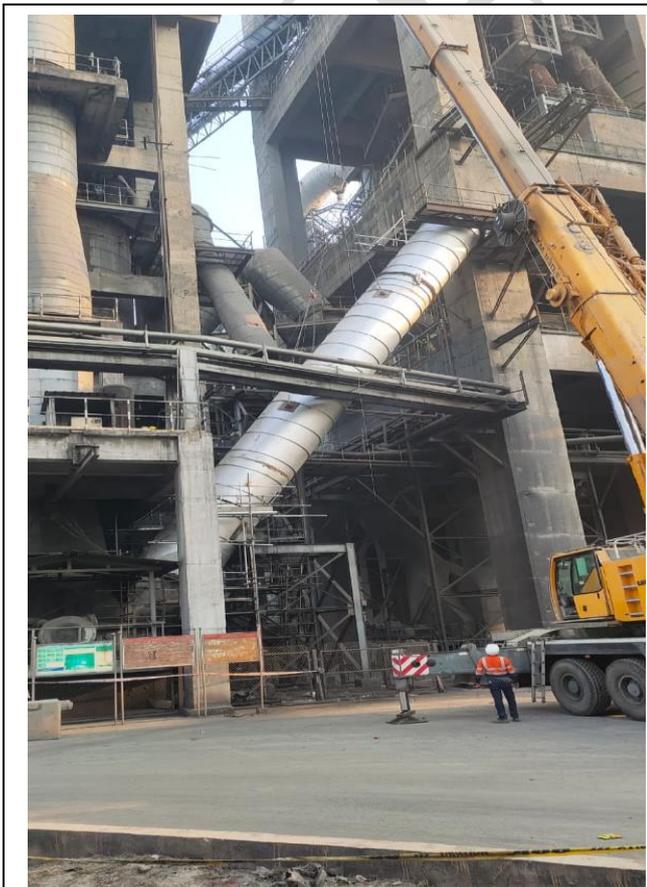
Most chimneys in cement plants are built using carbon steel or mild steel. In the past, internal corrosion was not a major issue but recently it has been getting much worse. The aggressive corrosion now observed seems to be related to three current trends: -

- More sulphur in the fuel,
- An increase in use of alternative fuels
- Better efficiency of the bag house filter

The combustion gases consist of acidic compounds like SO₂, SO₃, HCl and NO_x, they also contain a large amount of moisture. The metal temperatures are, in most cases, below the acidic dew point temperature of these gases, especially towards the top of the chimney. Additionally, many chimneys do not have external insulation and these guarantees that there will be significant amounts of acid condensation on the internal walls. Due to which after few years there is significant loss of wall thickness and the chimney becomes structurally unsafe. In some cases chimneys fell down.

DISMANTLING OF OLD CHIMNEY:-

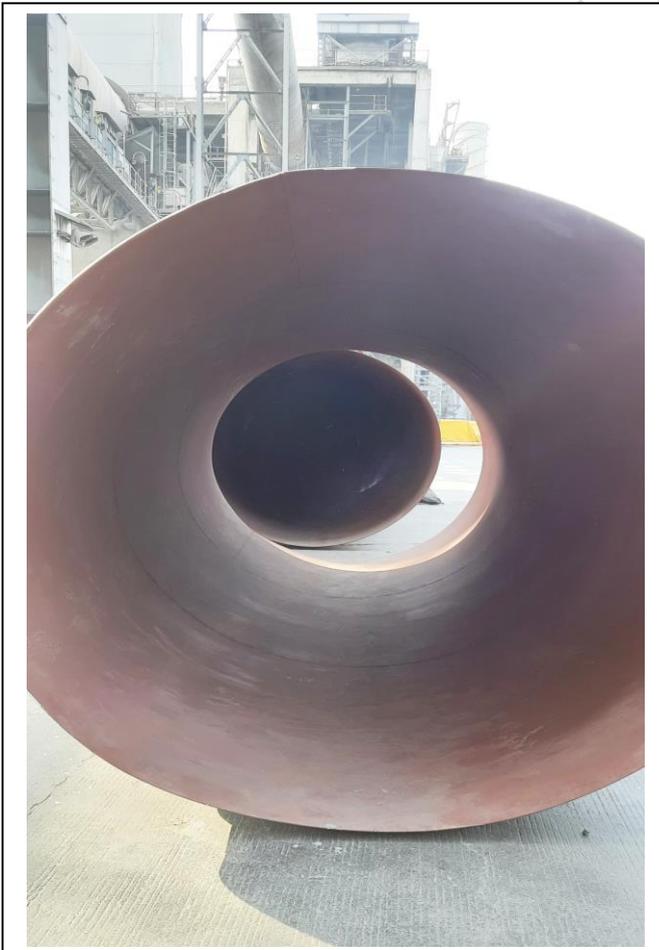
During inspection internal scaling and pitting was founded on chimney base metal. Dismantling the old chimney in plant shut down and fabricated new chimney with anticorrosive coating.



PROBLEMS:-

Customer was facing severe corrosion of chimney. It is well known that carbon steel or mild steel corrodes rapidly when exposed to the hot, acidic, condensing flue gases produced in a cement plant. When there is a higher concentration of acidic compounds in the combustion gases, corrosion is accelerated. Usually there is high sulphur content in the fuel. In many cases, there is often significant chloride content in the alternative fuels as well as CO₂ and NO_x emissions from the combustion process. The flue gas temperature in the chimney is lower than the acid dew point, and the flue gas condenses and condenses into acid liquid. The generated dilute acid liquid drops are mainly sulphuric acid and sulphurous acid, as well as micro amounts of hydrofluoric acid, hydrochloric acid and nitric acid. The pH value of the mixed acid is very less, which is very corrosive and permeable. The inner wall of the chimney is exposed to this kind of strong mixed acid environment for a long time, which increases the risk of chimney leakage and corrosion, and reduces the safety and reliability of the structure.

Corrosion causes plant shutdowns, a waste of valuable resources, loss or contamination of product, reduction in efficiency, costly maintenance & also causes investment in new chimney. Considering the overall investment for a new chimney, protection of existing chimney by coating is very cost effective to stop the corrosion and add more years to its useful life.



PRODUCT RECOMMENDED:-

DIFFGLASS XTREME:-

DIFFGLASS XTREME , a heavy-duty lining system for concrete and steel substrates that offers unique combination of vinyl ester novolac resin with Glass flake reinforcement and inert mineral fillers produce a dimensionally stable coating with extremely low permeability and ideally suited for immersion service ,splash/spillage exposure of concentrated acids and aggressive solvents.

APPLICATION PROCEDURE:-

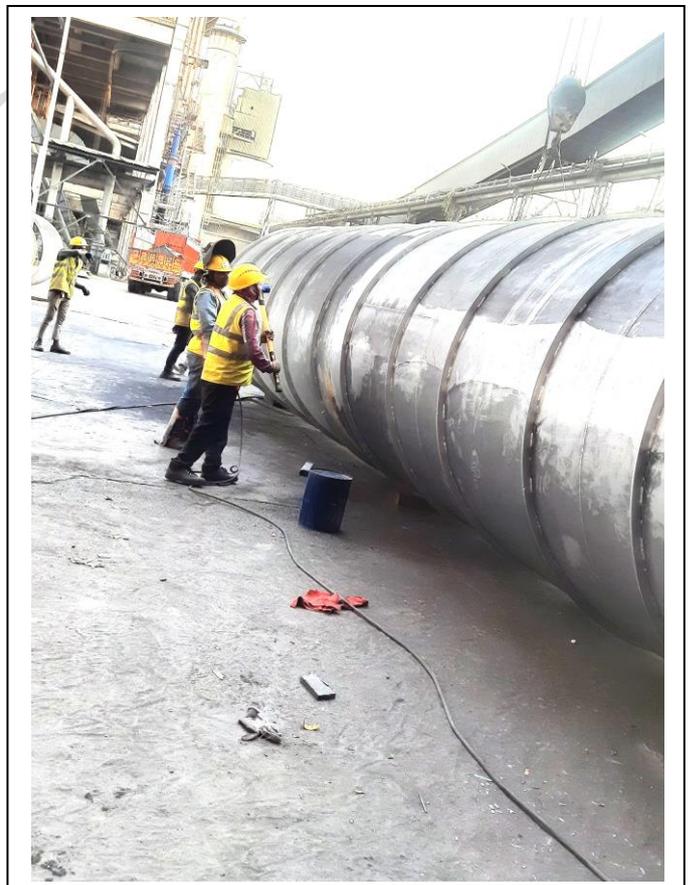
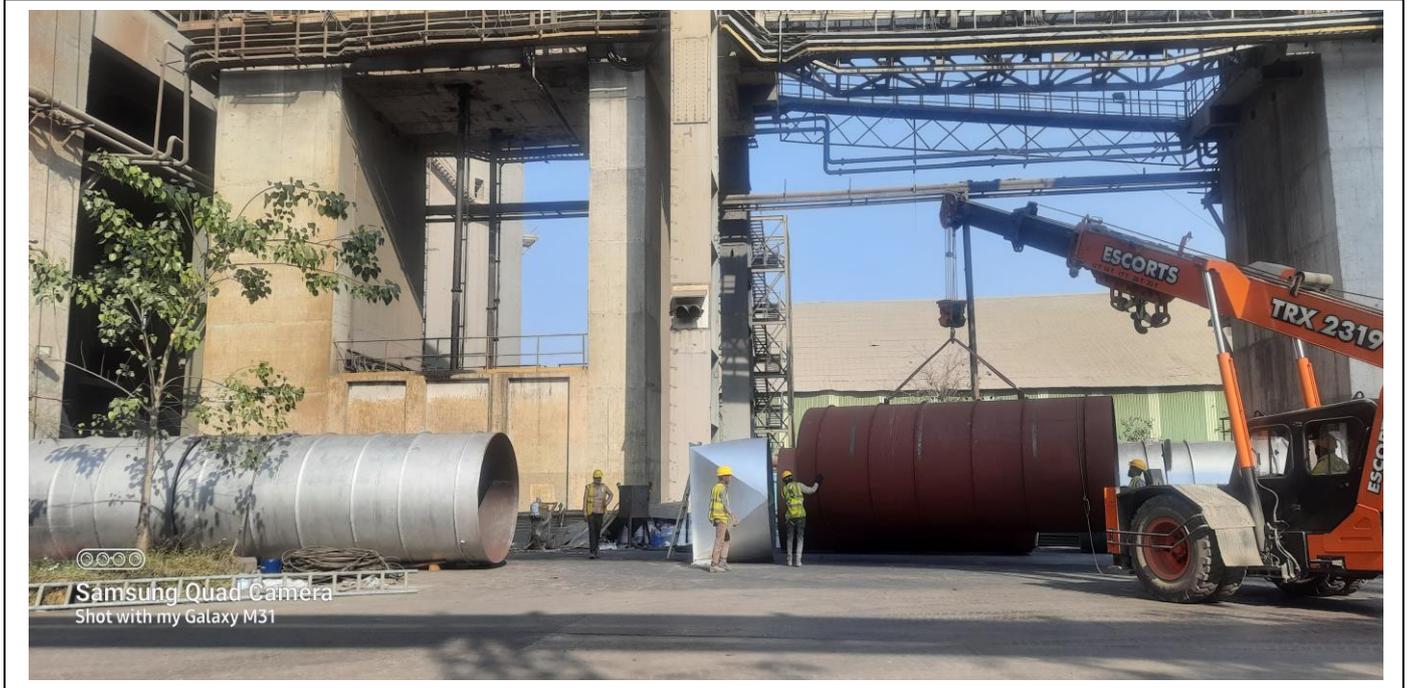
A.SURFACE PREPARATION:-

1. Before application of any kind of coating surface preparation is must to activate the base metal so that coating will have better bonding.
2. After manual cleaning, surface was cleaned by grit blasting to remove all loose particles.
3. As per ISO standard surface preparation of SA 2 1/2 by blasting with surface profile achieves of 70-90 microns.



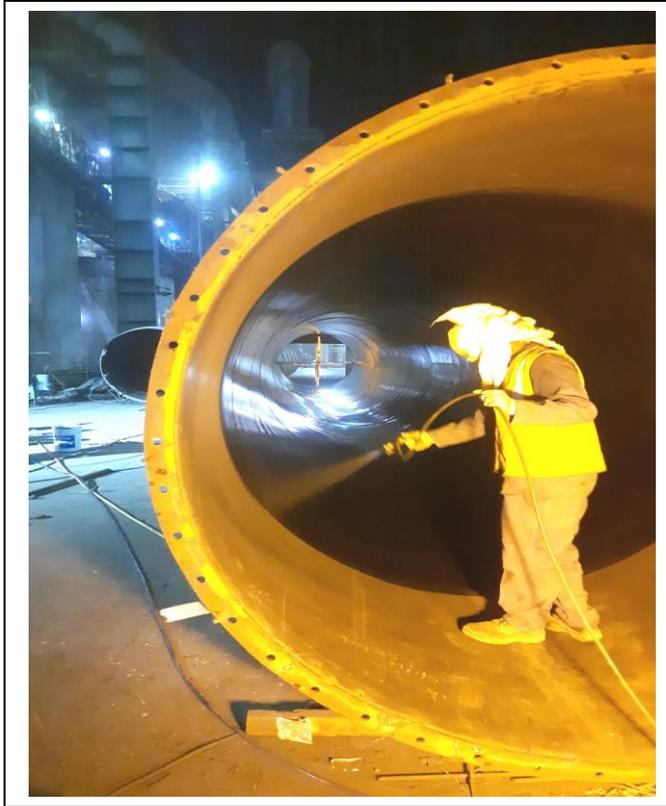
B. FABRICATION WORKS OF COAL MILL CHIMNEY:-

Total 54 meter length new chimney pipe were fabricated during plant shutdown before anticorrosive coating work.

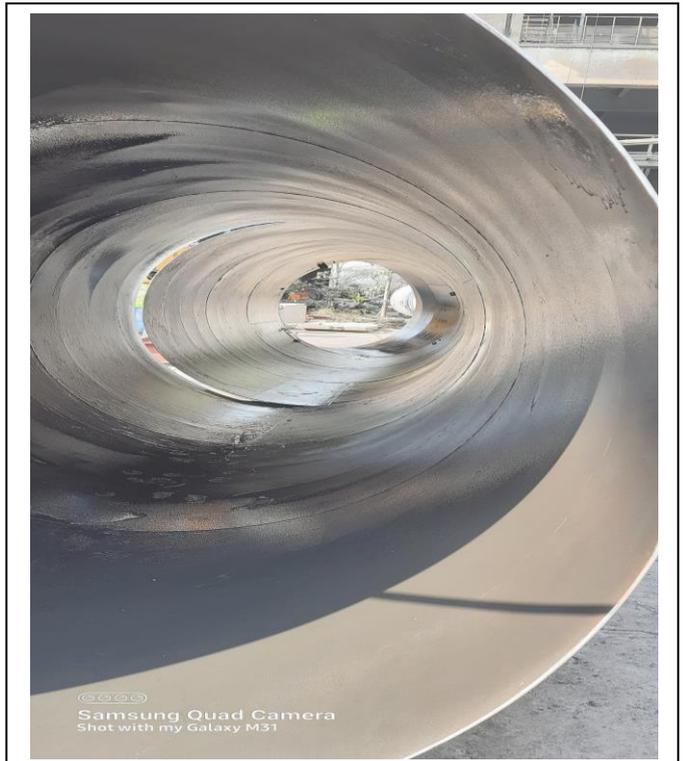
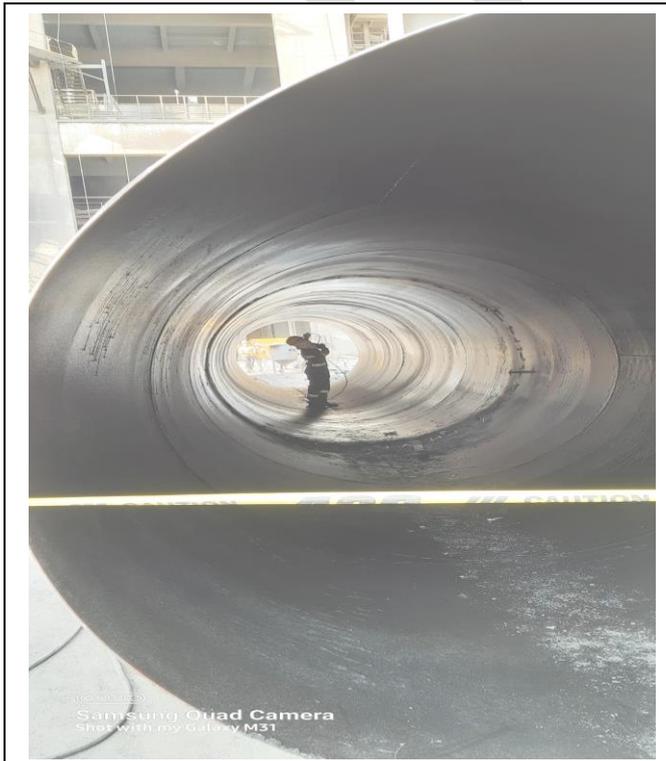


B. PRODUCT APPLICATION:-

1) After surface preparation priming was done by **DIFFGLASS XTREME** by used Airless spray pump with coating gun.



2) To give resistance against corrosion top coat of **DIFFGLASS XTREME** was applied.



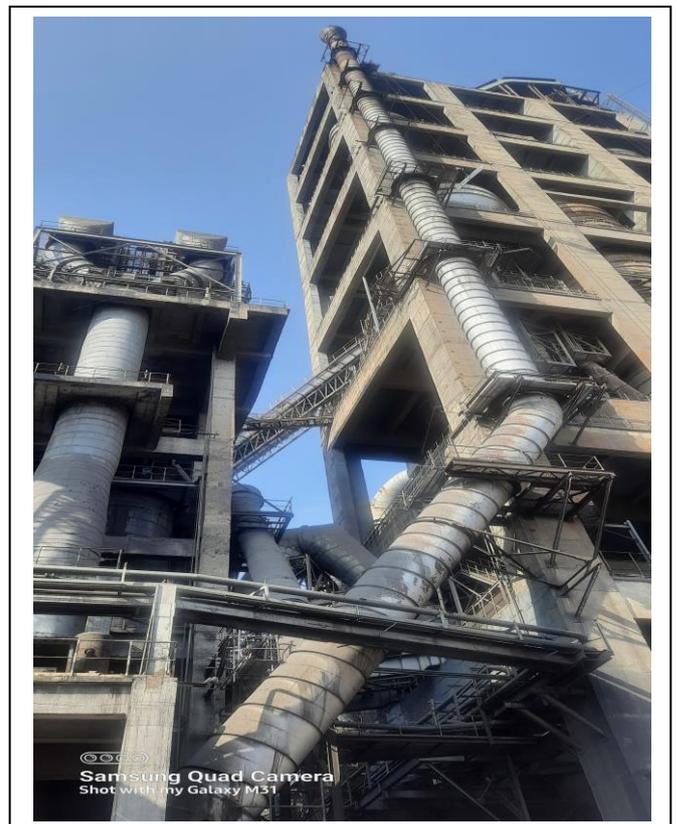
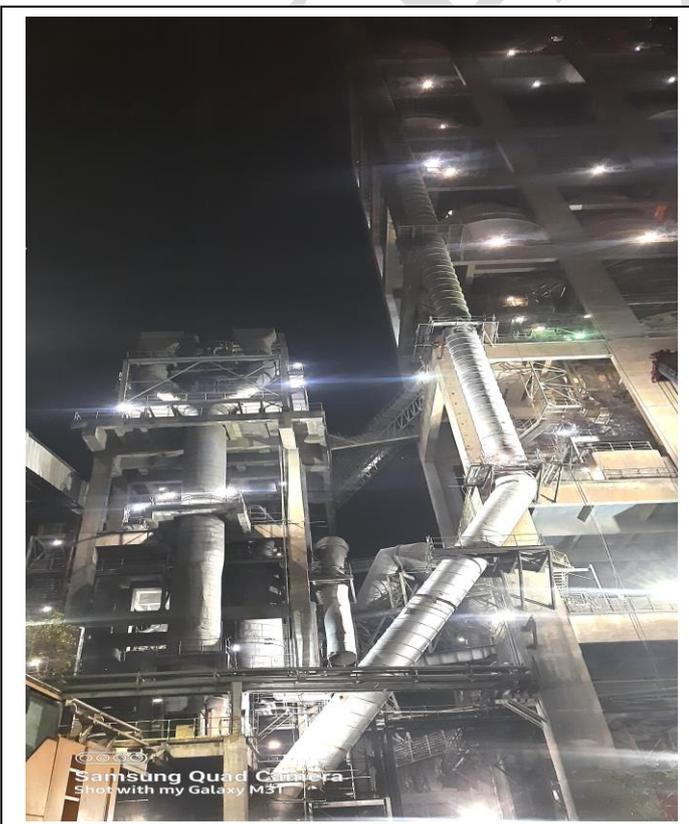


After completed of internal coating work of coal mill chimney, erection and installation work was done.

Length of chimney (L) – 54 meter

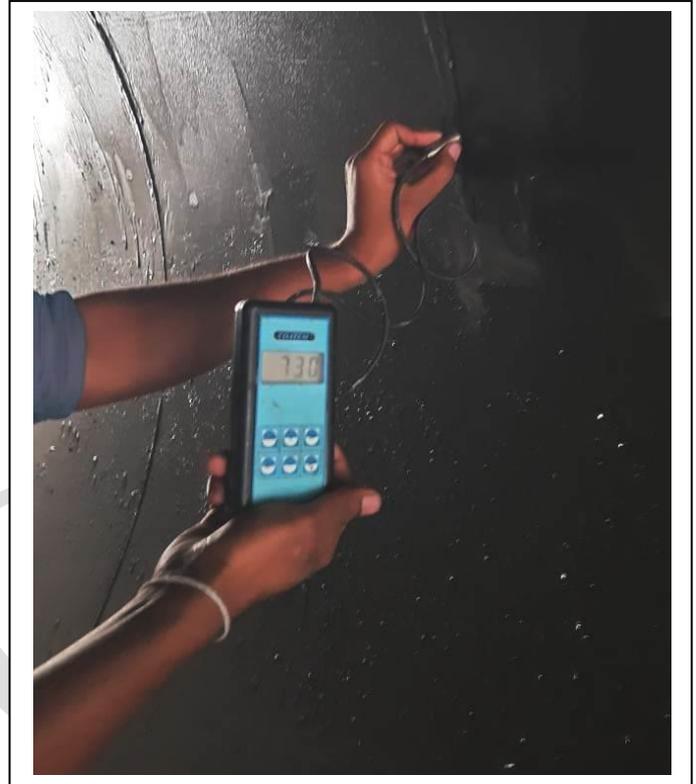
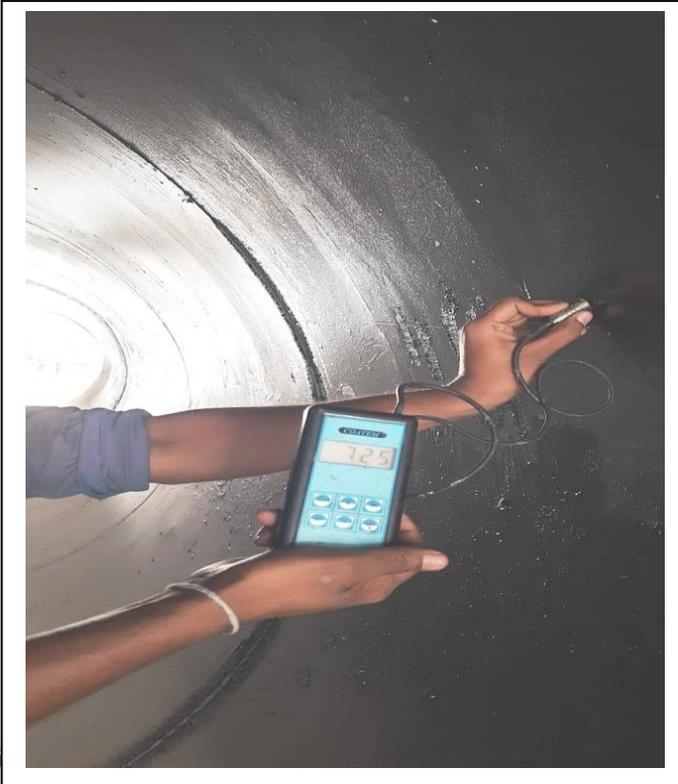
Internal Diameter of chimney (ID) – 2.23 meter.

Total area was completed of coal mill chimney (A) – 378 sq. Meter.



COATING INSPECTION:-

DRY FILM THICKNESS (DFT): - Range: 700-750 (Micron)



ACKNOWLEDGEMENT:-

SITE ENGINEER:-

Mr. Ashish Ganvir (Product Specialist)

AREA ENGINEER: -

Mr. Gautam Bhagat (Sr. Sales Representative)

Mr. Vivek Tiwade (Business Manager)

AGENCIES INVOLVED: -

Ganpati Sales Corporation, Chandrapur

APPLICATION TEAM: -

Ashish Deshmukh , Baliram Bisen & Contractor Team



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