

REPORT NO: DCQ/NGP/2023-24/06

APPLICATION REPORT

INTERNAL ANTI CORROSION COATING OF SOFTENER TANK(VESSEL)



**AT
ITC LIMITED
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BHADRACHALAM, DIST. BHADRADRI-KOTHAGUDEM
(TELANGANA)**

INTRODUCTION:-

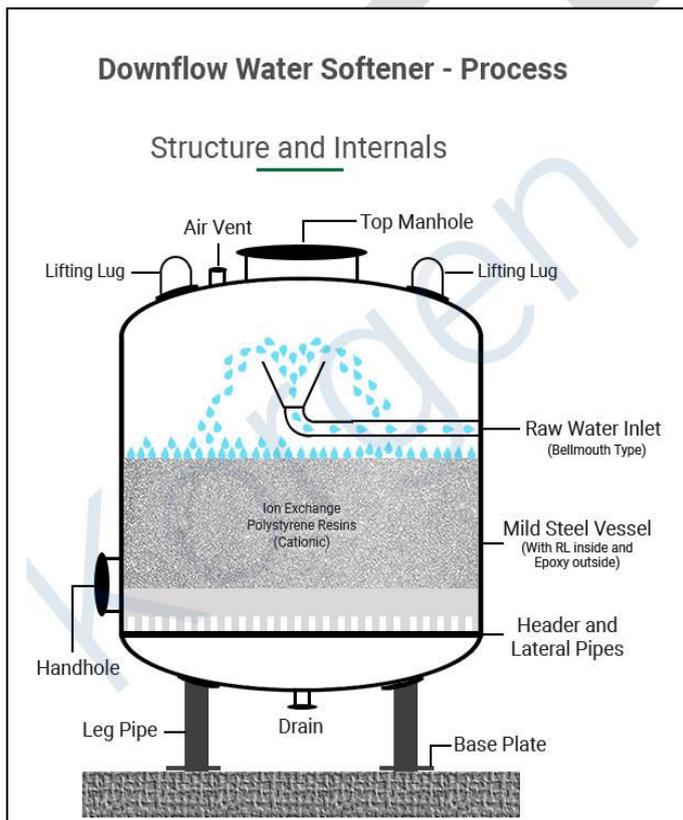
DIFFCOR division of DIFFUSION ENGINEERS LTD successfully completed job work for Anti corrosion coating in Softener tank. This job work was carried out for our customer ITC Limited, Bhadrachalam. Our customer was facing the problem of corrosion. Coating was done with DIFFGLASS XTREME.

A water softener plant is a device that is designed to remove positively charged ions of calcium and magnesium from water. It is essential to treat hard water in industries as it can cause expensive machinery and equipment. In the Softening cycle, water enters the softener and passes through the ion exchange resin charged with sodium (Na^+) ions. As hard water passes through the resin, hardness ions (Ca^{2+} & Mg^{2+}) are physically exchanged with the sodium ions on the ion exchange resin.

5 Different Types of Water Softeners:

- Salt-Based Water Softener.
- Dual-Tank Water Softener.
- Salt-Free Water Conditioner.
- Reverse Osmosis Water Treatment System.
- Magnetic Descaler.

Water softening the process of removing the dissolved calcium and magnesium salts that cause hardness in water. Unlike hard water, softened water will not form insoluble scale or precipitates in pipes and tanks or interfere with cleaners such as soap. The major disadvantage to softening water is the potential health risks for people that might be on low sodium diets. The chemical used in softening of hard water is Sodium carbonate Na_2CO_3 , Slaked lime $\text{Ca}(\text{OH})_2$, Sodium chloride. The chemical which is used for small-scale softening are: Ammonia, Borax, Calcium Hydroxide $\text{Ca}(\text{OH})_2$, etc.

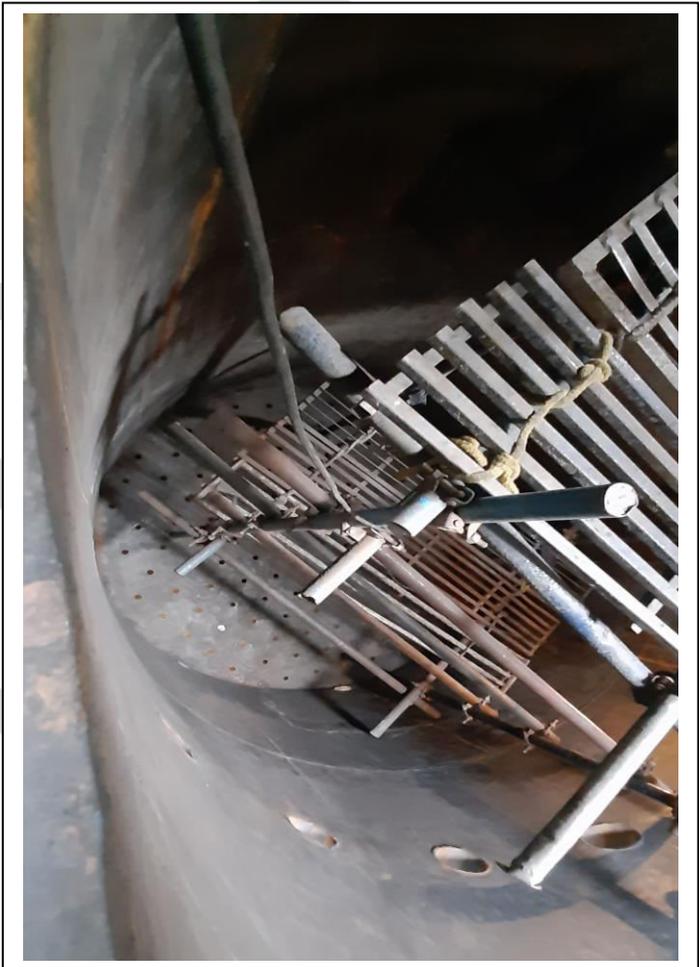


Process diagram of SOFTENER TANK (VESSEL)

PROBLEMS:-

Most soft water falls between the ranges of pH 6-7, while most hard water falls between the ranges of pH 7-8. That's because the minerals in hard water reduce the amount of acid in the water, so when they're removed, the result is a lower pH level. Alkalis are chemical compounds with a pH of greater value and have high numbers of hydroxide ions present in solution. Calcium hydroxide is a strong alkaline base and is harmful to rubber and base metal.

During ion exchange process are used carbonate (Na_2CO_3) and Calcium Hydroxide ($\text{Ca}(\text{OH})_2$) in tank which causes cracks and damage in rubber lining as the cracks are generated on rubber lining. The corrosive media attack to the base metal and corrosion starts below rubber lining and forms in pitting.



Rubber lining damages inside SOFTENER TANK (VESSEL)

PRODUCT RECOMMENDED:-

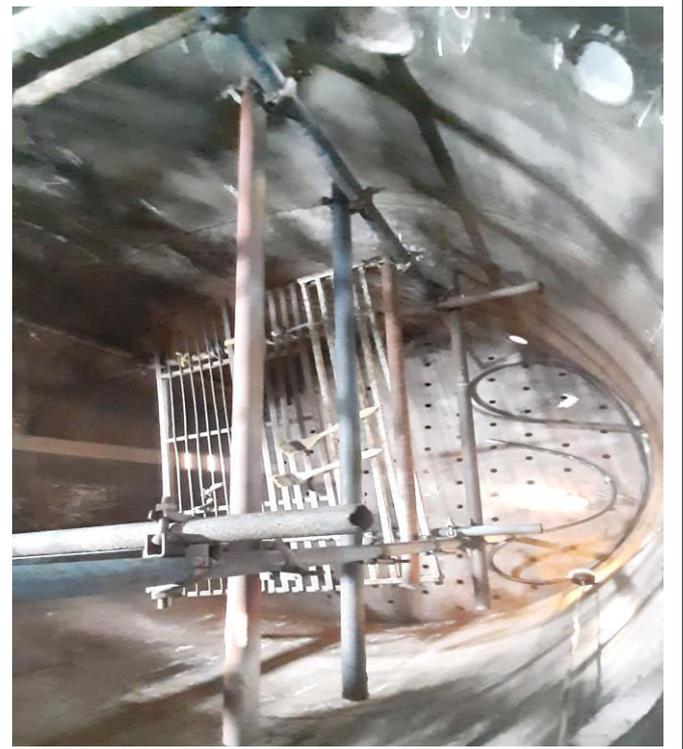
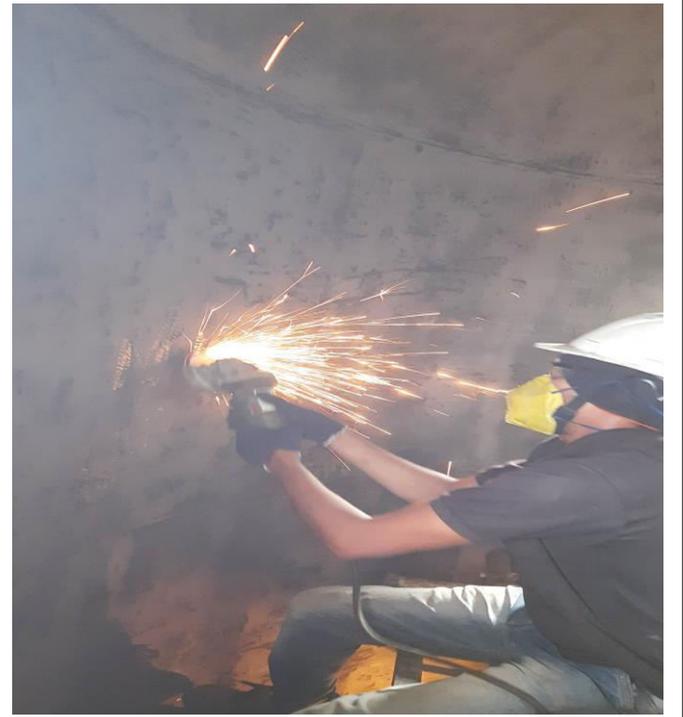
DIFFGLASS XTREME:-

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 PROCEDURED:-

A. SURFACE PREPARATION:

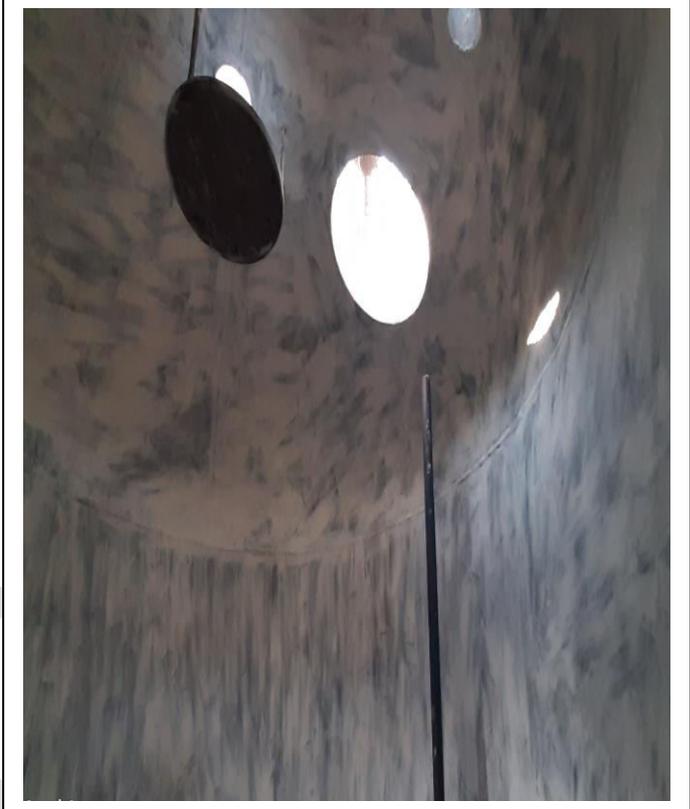
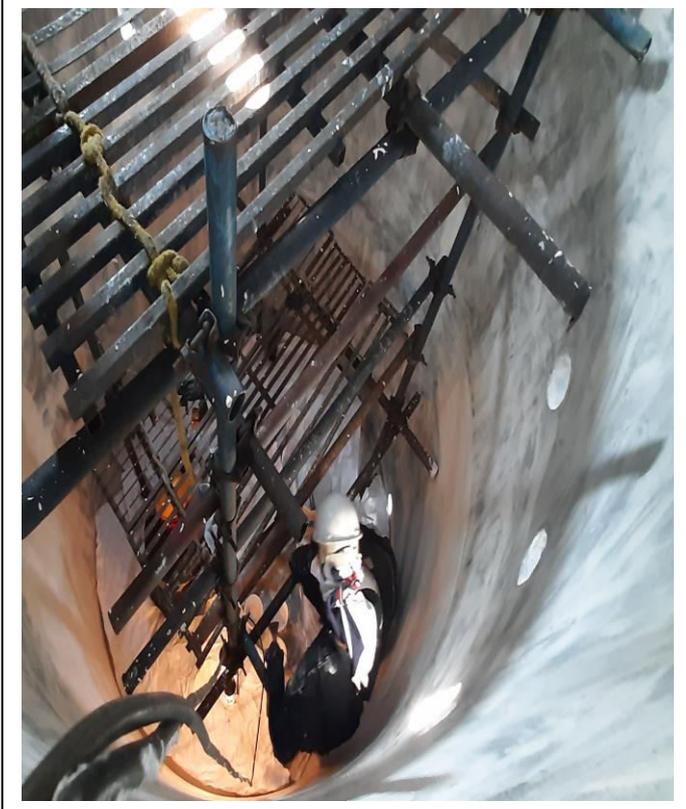
1. Before application of any kind of coating surface preparation is must to activate the base metal so that coating will have better bonding.
2. Removed existing rubber lining inside the softener tank before started Grinding and Blasting.
3. After removed rubber lining, rubber spatters removed by Grinding from base metal of tank.
4. After Grinding, surface was cleaned by grit blasting to remove all loose particles. As per ISO standard surface preparation of SA 2 1/2 by blasting with surface profile achieved of 70-90 microns.



Rubber lining removed & Surface preparation done by Grinding & Grit Blasting

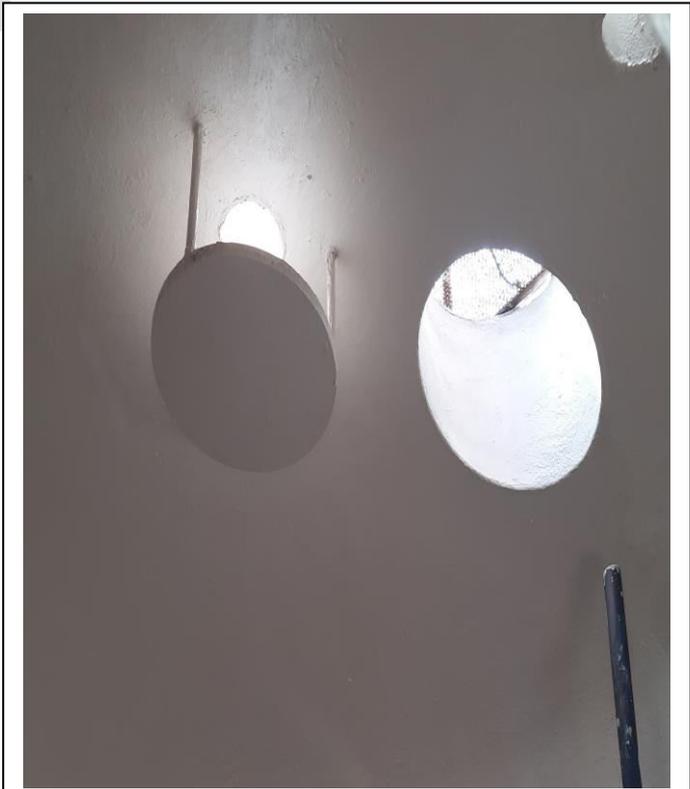
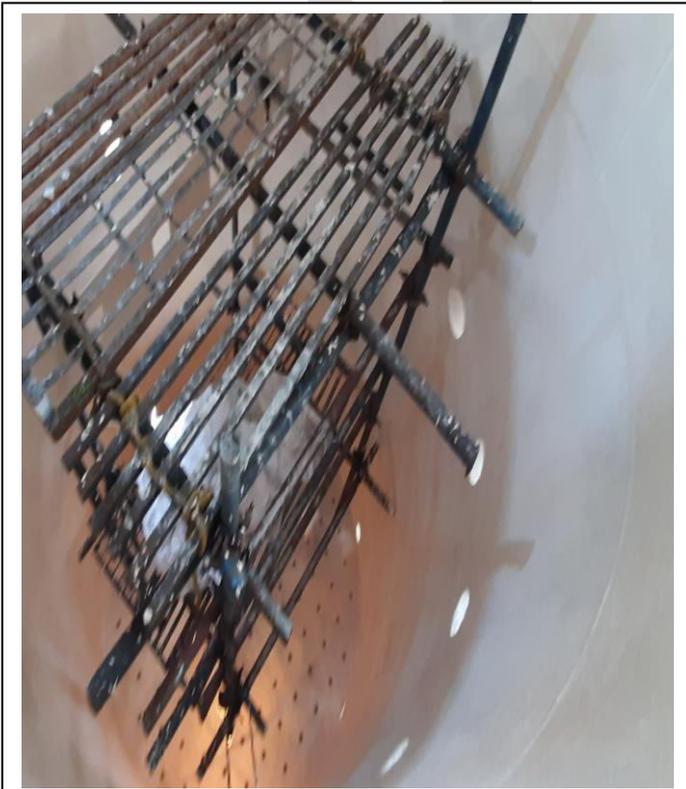
B.PRODUCT APPLICATION:-

1) After surface preparation, priming coat of **DIFFGLASS XTREME** was applied inside the Softener Tank.



Application of DIFFGLASS XTREME as a Primer coat

2) Top coat of **DIFFGLASS XTREME** was applied inside the Softener Tank to improve resistance against corrosion.





Application of DIFFGLASS XTREME as a Top coat

INSPECTION OF COATING:-

1) Dry Film Thickness (DFT): Min. 1000 Microns.



DFT measured on Top coat of DIFFGLASS XTREME coating

2) Spark test (Holiday detector): Min. 8 Kv



Spark checked on Top coat of DIFFGLASS XTREME coating

ACKNOWLEDGEMENT:-

SITE ENGINEER: -

Mr. Ashish Ganvir (Sr. Technical Officer)

AREA ENGINEER:-

Mr. Vinod Yadgiri (Business Manager)

AGENCIES INVOLVED:-

Shri. Lakshmi Tulsi Enterprises, Rajahmundry

APPLICATION TEAM:-

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