COMPANY PROFILE

COMPANY : Greenovoc Specialty Coatings

ADDRESS : R-406, TTC Industrial Area, M.I.D.C.,
Rabale, Navi Mumbai 400701, INDIA

PHONE : 91 22 2769 1959

E-MAIL : solutions@greenovoc.com

WEBSITE : www.greenovoc.com

CORE COMPETENCE:

Indigenous Development of Polymeric Based Specialty Surface Coatings for High End Engineering Applications.

PRODUCT RANGE

ANTICORROSION PROTECTIVE COATINGS

GALVANIZING COATING

HEAT INSULATION COATINGS

WATERPROOF COATINGS

CERTIFICATIONS: ISO 9001-2015

XLC-0767

(ANTICORROSION COATING)

PRODUCT FEATURES

PRODUCT :- XLC-0767

FUNCTION :- Water Based Anticorrosion Protective Coating for Ferrous and Non-Ferrous Metals for High End Engineering Applications

GREEN FEATURES

- Zero VOC
- No Odor
- No Fumes
- Environmental Friendly: Green Coatings

UNIQUE FEATURES

- Single Pack:Ready to Use System
- Quick Drying at Room Temperature: No Longer Curing ; No Oven Baking

PERFORMANCE FEATURES

- Excellent UV Radiation Resistance
- Excellent Resistance to corrosion
- Good Chemical Resistance
- Superior adhesion properties
- Stability against High Temperature and temperature Variations.
- Excellent Flexibility & Impact Resistance

COLOUR: As per RAL & IS standards.

FINISH: Glossy , Semi Glossy, Matt & Textured

ADVANTAGES

- Simple and Operational Friendly Process
- Easy to apply by Brush, Dip & conventional spray techniques.
- Quick & Convenient
- Applicable on Ferrous & Non-ferrous metals.
- Performance does not depend on Human skills

BENEFITS

- Superior Performance in various corrosion prone atmospheres.
- Simple and Hassel free Coating Process.
- Faster deliveries, dispatches and enhanced production output due to quick & convenient painting operations.
- Saves Energy, Environmental Friendly, Higher safety

INGREDIENTS & CHEMICAL COMPOSITION

XLC-0767 coating system contains following components

Ingredients	Chemical Composition
XLC-0767 Finish Coat	Grafted Copolymer *
Solvent	Water Based
Hardener	Not Applicable
Primer	Recommended for $C5_m$ conditions

- The Grafted copolymer formulation is free from Chlorides, Fluorides and any other toxic elements and is RoHS compliant.

Please refer MSDS for application & usage of XLC-0767

TECHNICAL DATA SHEET

TECHNICAL DATA SHEET

PRODUCT NAME: XLC-0767

XLC-0767 is Water Based Anti-Corrosion Protective Coating system for high end industrial applications.

PRODUCT DESCRIPTION

XLC-0767 is Environmental Friendly, Sustainable high-performance coating based on patented GRAFTED CO-POLYMER Technology.

XLC-0767 is a unique formulation specifically designed for targeted use in various environmental situations. It is suitable for applications on steel alone or in combination with various systems. This system gives an excellent corrosion protection with desired cosmetic finish. **XLC-0767** offers excellent Aging & weathering resistance coupled with resistance to chemicals, saline environment and can be used to protect the metal components & structures in the most aggressive conditions.

PRODUCT HIGHLIGHT

- Single pack system
- Quick Drying at ambient temperature
- Excellent Corrosion Resistance
- Excellent Outdoor Stability
- Excellent resistance to UV radiations
- Excellent resistance to chemicals.
- Very Good Heat Dissipation properties

GREEN FEATURES

- Zero VOC
- No Smell
- No Fumes
- Non-Toxic- ROHS compliant
- Energy Saving

APPLICATION SUBSTRATES

- Carbon Steel
- Stainless Steel
- Non-Ferrous Metals
- Alloys

SURFACE PREPARATION

All surfaces should be clean, dry and free from contamination. The surface should be assessed and treated in accordance with ISO 8504. Bare steel Cleanliness: Blast-cleaning to Sa 2½ (ISO-8501-1:2007). Power tool cleaning to min. St 2 (ISO 8501-1:2007) may be acceptable, subject to exposure conditions. Blast Cleaning should be done after solvent wipe (SSPC SP1) to ensure removal of all dust, dirt, oil, grease, etc.

FILM THICKNESS & SPREADING RATE

Film thickness - 45 –50 Microns/ coat
Theoretical spreading rate- 10 m^2 per Liter/coat

CURE TIME

Substrate Temp Deg C	**-10 °C**	**0 °C**	**10 °C**	**23 °C**	**40 °C**
Touch Dry Min	60	50	40	30	15
Dryness for Recoating Min	60	60	60	30	30
Hard Dry / Complete Cure	24 Hours				

Drying times are generally related to air circulation, temperature, film thickness and number of coats, and will be affected correspondingly. The figures given in the table are typical with: * Good ventilation (Outdoor exposure or free circulation of air) *

APPLICATION METHODS

Spray -Use Airless Spray or Air Assisted Spray
Brush- Care must be taken to achieve the specified dry film thickness.
Roller- Care must be taken to apply sufficient material in order to achieve the specified dry film thickness.

APPLICATION DATA

Mixing ratio - Single Pack System: Ready to Use
Pot life - Not Applicable.

APPLICATION GUIDELINES (AIRLESS SPRAY)

Pressure at nozzle- 15 MPa (150 kg/cm², 2100 psi)
Nozzle tip - 0.43-0.79 mm (0.017-0.031")
Spray angle - 40-80°

Filter Check to ensure that filters are clean.

Recommended System

Corrosive Category	Surface Treatment	Exterior
C1 Very Low		2 Coats 70-80 microns
C2 Low		2 Coats 70-80 microns
C3 Medium	Blasting	2 Coats 70-80 microns
C4 High	Blasting	RUSTGRIP-0700 50 microns XLC-0767 40microns XLC-0767 40microns
C5 Very High	Blasting	RUSTGRIP-0700 50 microns XLC-0767 40 microns XLC-0767 40 microns XLC-0767 40 microns

TESTS AND APPROVALS:

Sr. No.	PERFORMANCE TEST	BS-3900 STD	RESULT
1	Scratch Resistance Hardness (4.2Kg)	D3363	No exposure of Metal Substrate Passes the Test
2	Flexibility Test Conical Mandrel	D-522	No Film Cracking / Crazing
3	Adhesion	D3359	No Peel Off
4	Salt Spray Resistance Test 1000 Hrs (At 80 Microns DFT)	BS-117	No Surface Deterioration & Corrosion
5	Chemical Resistance	D 6943	No Dusting
6	Accelerated Weathering	F-16:2007	Passes: Slight Colour Change

PACKING:

PAIL PACKING : 20 Lt

AVAILABILITY:.

Available from network of Distributors / Channel Partners throughout the world for prompt delivery to customers.

TECHNICAL SERVICES:

Complete Technical Assistance is available and includes fully trained technical service personnel

HEALTH AND SAFETY:

Prior to start of use of this material, please read relevant Material Safety Data Sheet.

WARRANTY:

GSC guarantees that the products are carefully manufactured to ensure the highest quality and tested strictly in accordance with acceptable standards.

DISCLAIMER:

The information in this data sheet is given to the best of our knowledge based on laboratory testing and practical experience. However, as the product can be used under conditions beyond our control, we can only guarantee the quality of the product itself. We also reserve the right to change the given data without notice. Minor product variations may be implemented in order to comply with local requirements.

Issued on 14th November 2019 by Greenovoc Specialty Coatings

This Data Sheet Supersedes those previously issued

COMPARISON CHART

SR. NO.	PARAMETERS	SYN. ENAMEL	EPOXY/ PU	**XLC-0767**
1.	Chemical Composition	Alkyd Resin Base	Thermosetting Polymer	Grafted Co-polymer
2.	Base	Solvent Based	Solvent Based	Water Based
2.	System	Single Pack	Two Pack	Single Pack
3.	Mixing	Thinning with the help of thinner necessary	Mixing of two components is very critical with addition of thinner	Ready to use system No Need to mix anything
4.	Necessity of Primer	Red oxide primer necessary	Primer necessary	Self priming coating (Recommended for $C5_m$ conditions)
5.	Drying period	4-5 hours	48-96 hours	30 Min for touch dry 24hours for hard dry
6.	Possibilities of adulteration	Possible	Possible	Not possible
7.	Acid, Alkali and Chemical resistance	No Resistance	Good chemical resistance	Excellent acid, Alkali, Chemical resistance
8.	U.V. Resistance	Poor	Fair	Excellent
9.	Service Temperature	$<70^0C$	90 to 100^0C	-40 to 200^0C
10.	Life (Performance)	6months	2-3 years	5-7 years
11.	Shades	RAL Shades	Limited shades	RAL Shades
12.	Fire Spread Resistance	Nil- Spreads Fire Rapidly	Nil- Spreads Fire Rapidly	Excellent Fire Spread Resistance

Sr. No.	Parameters	POWDER COATING (Epoxy/Polyester)	**XLC-0767**
1.	Base	Thermosetting Polymers	Grafted Co-Polymer
2.	Form	Powder	Water based Liquid
3.	Mixing	No Mixing	Ready to use system
4.	Necessity of Primer	No Primer	Self priming coating (no need of primer application)
5.	Surface Preparation	Seven Tank Process	Two Tank Process
6.	Application Method	Needs special Booth, Electrostatic Gun and Oven for curing	Simple , Conventional Spray technique with no special tools. (Auto. application possible)
7.	Energy Requirement	Huge Consumption of Electricity for Oven curing	Minimum Requirement of Electricity. (No Oven Application)
8.	Drying period	4 to 8 hrs.	30 Min. at Room Temp.
9.	Environmental Safety	Not safe from environmental point of view. (Disposal of Sludge is an issue.)	Water Based Green Coating. Environmental Friendly formulation & Application
10.	Acid, Alkali and Chemical resistance	Moderate	Excellent acid, Alkali, Chemical resistance
11.	U.V. Resistance	Poor	Excellent
12.	Heat resistance	120^0 C Max.	Stable up to 200^0 C
13.	Life (Performance)	Not good for Outdoor Applications.	Excellent Indoor & outdoor performance.
14.	Finish	One Type of Finish	Available in Gloss , Matt, Textured finish
15.	Shades	Limitations in Shades	All RAL Shades
16.	Salt spray resistance	120 Hrs.	1500 hours
17.	Electric Strength	16 -33 kv/mm	55 kv/mm
18.	In case of Damage	Touch up/ Refinishing Not Possible	Touch up/ Over coating Possible
19.	Additional Feature		Resistance to Fire
20.	Cost Saving		No Oven Requirement - Saves Electricity Fast Drying - Saves Time Manpower Enhances Production.

TEST REPORTS

Surface Engineering & Coating Consultant
A Reliable Paint Testing & Certification Laboratory
`

NABL
ISO / IEC 17025 Accredited
TC - 8480

27/08/2019

Report On

Laboratory Test of a Submitted Coating System-XLC-0767
Applied on Steel Substrate

Project No.: SECC-61/19, Revision 0, URL:TC8480190000000013P

Submitted to

SK Formulations India Pvt. Ltd.
R-406, TTC Industrial Area, MIDC Rabale, Navi Mumbai-400701.

Dr. Shailesh K. Dhoke
(Authorized Signatory)

Prof. A. S. Khanna
(Approval Authority)

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DISCLAIMER

This report contains the results pertain to the test samples submitted to Surface Engineering and Coating Consultant (SECC). This report should only be reproduced in full with the permission of SECC. We do not accept any liability if this report is used for an alternative purpose from which it is intended.

Table Of Contents

INTRODUCTION/BACKGROUND INFORMATION

At the request of SK Formulations India Pvt. Ltd. (Reference: E-mail dated June 6th, 2019), Surface Engineering and Coating Consultant (SECC) conducted laboratory evaluation of coating system. The coated samples (3" x 6") were received on July 1st, 2019. The coating name was XLC-0767, Batch Number-SM/XLC-G-02/19, applied in a three coat to a DFT of 120µm on a blasted substrate of profile 25-30µm. The test method and conditions were specified by the client. SECC carried out all test with no addition to, deviation or exclusion from the test methods.

This report contains the results pertain to the test samples submitted to Surface Engineering and Coating Consultant (SECC). The results obtained are given in summary Table.1 along with the photographic documentation.

Summary of the Results

Table 1. Laboratory Test of a Submitted Coating System -XLC-0767 Applied on Steel Substrate

S. No.	Test Methods	Test Conditions	Samples ID	Test Results
1	Salt Fog Test ASTM B117	Test Electrolyte: 5 wt. % NaCl solution at 32±5 °C Test Duration:1000 h	SS-1 SS-2	No Cracking, Discoloration, Rusting and delamination
2	Flexibility Test Conical Mandrel ASTM D 522	Temperature 23±2ºC Humidity 50±5%	F-01, F-02 & F-03	No cracking of coating at a mandrel size of 3.51mm -29.5 mm was observed
3	Pencil Hardness Test ASTM D3363	Temperature 23±2ºC Humidity 50±5%	PH-01 & PH-02	The hardest pencil that did not rupture or scratch the film was found to be Pencil H
4	Cross Hatch Adhesion ASTM D3359	Temperature 23±2ºC Humidity 50±5%	A-01	Rating 5B The edges of the cuts are completely smooth; none of the squares of the lattice is detached

Table 1. Continued…….

S. No.	Test Methods	Test Conditions		Samples ID	Test Results
5	Chemical Immersion Test (ASTM D 6943)	10% HCL	At room temperature for 24 h	HCL-01 HCL -02	No Blistering, Cracking, Discoloration, Rusting and delamination
		10% H_2SO_4		H_2SO_4 – 01	No Blistering, Cracking, Discoloration, Rusting and delamination No Cracking, Discoloration, Rusting and delamination.
				H_2SO_4 -02	
		20% NaOH		NaOH-01 NaOH-02	No Blistering, Cracking, Discoloration, Rusting and delamination

Salt Spray Test

Figure.1 Photographs of the Samples After Salt Spray Test

Surface Engineering & Coating Consultant (SECC)
Data Sheet for Salt Spray Test
(ASTM B117-18)

Project No.:	SECC-61/19	**Start test Date:**	01/08/19
Test Electrolyte:	5% NaCl	**End test date**	24/08/19
Temperature:	35 ± 2ºC	**Coating Name:**	XLC-0767
Test Duration:	552 Hours	**Test Performed By:**	Mr. Rajkumar VK

Parameters	**Sample ID**	
	SS-01	**SS-02**
DFT (ASTM D 7091)	Before Test 197 µm After Test: 197 µm	Before Test: 197 µm After Test: 197 µm
Blistering (ASTM D 714)	None	None
Rusting (ASTM D 610)	None	None
Cracking (ASTM D 661)	None	None
Delamination (Visual)	None	None
Discoloration (Visual)	None	None

Figure .2 Photographs of the Flexibility Tested Samples

Surface Engineering & Coating Consultant (SECC)
Data Sheet for Conical Mandrel –Bend Test
(ASTM D522-17)

Project No.:	SECC-61/19	**Date:**	10/07/19
Temperature:	24.9°C	**Relative Humidity:**	53%
Test Performed By:	Mr. Rajkumar VK	**Coating Name:**	XLC-0767

Sample ID	Dry Film Thickness, DFT (µm)	Distance from the Farthest End of the Crack to the Small End of the Mandrel (mm)	Mandrel Diameter at which Cracking Ceased (mm)
F-01	74.6	No cracking at 3.51 -29.5 mm	No cracking at 3.51 -29.5 mm
F-02	77.7		
F-03	88.3		

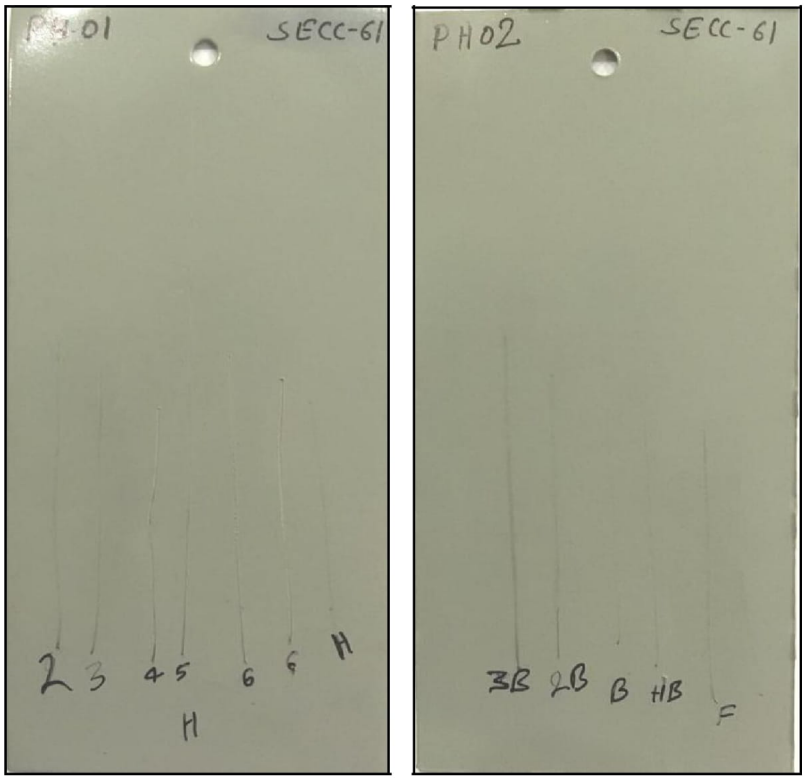

Figure .3 Photographs of the Pencil Hardness Tested Samples

Surface Engineering & Coating Consultant (SECC)
Data Sheet Pencil Adhesion Test
(ASTM D 3363-17)

Project No.:	SECC-61/19	**Date:**	10/07/19
Recorded Temperature:	24.9°C	**Relative Humidity:**	53%
Test Performed By:	Mr. Rajkumar VK	**Coating Name:**	XLC-0767

Samples ID	Dry Film Thickness, DFT (µm)	Pencil Hardness Results
PH-01	82.66	The hardest pencil that did not rupture or scratch the film was found to be Pencil H
PH-02	78.32	

6B-5B-4B-3B-2B-B-HB-F-H-2H-3H-4H-5H-6H
Softer Harder

Pencil Hardness Scale

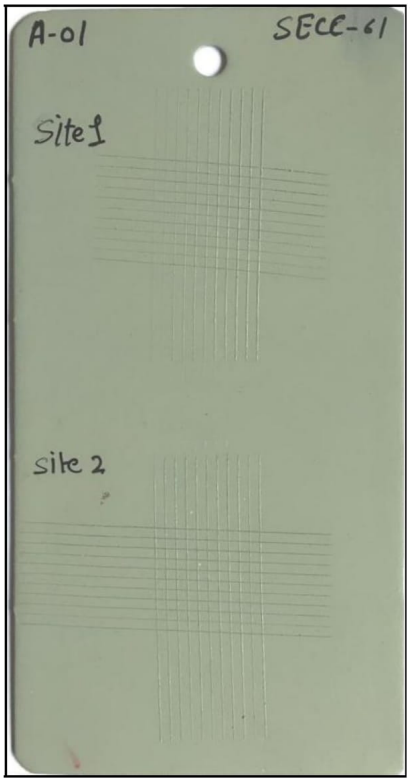

Figure .4 Photographs of the Cross Hatch Adhesion Tested Samples

Surface Engineering & Coating Consultant (SECC)
Data Sheet Cross Hutch Adhesion Test
(ASTM D 3359-17)

Project No.:	SECC-61/19	**Date:**	10/07/19
Recorded Temperature:	24.9°C	**Relative Humidity:**	53%
Test Performed By:	Mr. Rajkumar VK	**Coating Name:**	XLC-0767

Samples ID	Dry Film Thickness, DFT (µm)	Cross-cut Adhesion Classification
A-01	74.0	Rating 5B The edges of the cuts are completely smooth; none of the squares of the lattice is detached

Chemical Immersion (10% HCL)

Figure.5 Photographs of the Sample After Immersion in 10% HCL

Surface Engineering & Coating Consultant (SECC)
Data Sheet for Immersion Testing
(ASTM D6943-15)

Project No.:	SECC-61/19	**Date:**	02/08/19 to 03/08/19
Electrolyte Temperature.	24.9ºC	**Relative Humidity:**	53%
Test Duration :	24h.	**Test Electrolyte :**	10%HCl
Test Performed By:	Mr. Rajkumar VK	**Coating Name:**	XLC-0767

Parameters	**Sample ID**	
	HCL- 01	**HCL- 02**
DFT (ASTM D7901)	Before Test: 190.4µm After Test: 191.6µm	Before Test: 195.6µm After Test: 195.6µm
Blistering (ASTM D714)	None	None
Rusting (ASTM D610)	None	None
Discoloration (Visual)	None	None
Cracking (ASTM D661)	None	None
Delamination (Visual)	None	None

Chemical Immersion (10% H_2SO_4)

Figure.6 Photographs of the Sample After Immersion in 10% H_2SO_4

Surface Engineering & Coating Consultant (SECC)
Data Sheet for Immersion Testing
(ASTM D6943-15)

Project No.:	SECC-61/19	**Date:**	02/08/19 to 03/08/19
Electrolyte Temperature:	24.9ºC	**Relative Humidity:**	53%
Test Duration :	24h	**Test Electrolyte:**	10% H_2SO_4
Test Performed By:	Mr. Rajkumar VK	**Coating Name:**	XLC-0767

Parameters	**Sample ID**	
	H_2SO_4-01	H_2SO_4-02
DFT (ASTM D7901)	Before Test: 191.2µm After Test: 191.6µm	Before Test: 184.2µm After Test: 184.45µm
Blistering (ASTM D714)	None	None
Rusting (ASTM D610)	None	None
Discoloration (Visual)	None	None
Cracking (ASTM D661)	None	None
Delamination (Visual)	None	At Edges

Chemical Immersion (20% NaOH)

Figure.7 Photographs of the Sample After Immersion in 20% NaOH

Surface Engineering & Coating Consultant (SECC)
Data Sheet for Immersion Testing
(ASTM D6943-15)

Project No.:	SECC-61/19	**Date:**	02/08/19 to 03/08/19
Electrolyte Temperature.	24.9ºC	**Relative Humidity:**	53%
Test Duration :	24h	**Test Electrolyte :**	20%NaOH
Test Performed By:	Mr. Rajkumar VK	**Coating Name:**	XLC-0767

Parameters	**Sample ID**	
	NaOH-01	NaOH-02
DFT (ASTM D7901)	Before Test: 181µm After Test: 187.4µm	Before Test: 180.2µm After Test: 180.36µm
Blistering (ASTM D714)	None	None
Rusting (ASTM D610)	None	None
Discoloration (Visual)	None	None
Cracking (ASTM D661)	None	None
Delamination (Visual)	None	None

End of the Report-

OTHER GRADES

SURFACOOL-0712 – HEAT INSULATION COATING
(Temperature Gradient- 10 to 12 ^{0} C)

GALVART-0723 – COLD GALVANIZIG COATING
(Excellent replacement of Hot-Dip Galvanizing)

POLYSEAL-0724 – WATERPROOF COATING

APPLICATIONS

XLC-0767 is applied to prevent the corrosion and enhance the life of metallic structures & equipments..The typical application involves

- Process Equipments
- Industrial Valves
- Motors & Pumps
- Transformers
- Control panels
- Material Handling Equipments
- Pre-Engineered Buildings
- Portable Cabins
- Industrial Structures
- Ovens & Furnaces

WE ENJOY THE TRUST OF

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- ROSH Engineering, UK
- Hi Media Laboratories, INDIA
- TCS, INDIA
- Aditya Birla, INDIA
- SAM CONTRACTING, UAE
- Supima Holding Company, Philippines
- Gulf Lube, Malaysia

CASE STUDY

Client	Rosh Engineering Limited
Location	Newtown Industrial Estate, County Durham, UK
Project	Application of Anti Corrosive Protective coating to existing transformers with XLC- 0767
Earlier system	Solvent Based Alkyd system
Earlier Coating Application	Primer - 1 coat (100 microns) MIO - 1 coat (100 microns) Enamel - 1 coat (100 microns) Total:- 300 microns coating
Challenges faced	• Emission of Hazardous Chemicals due to solvent based alkyd. • To keep three different inventories makes a huge space consumption. • Long Curing Time. • Total Downtime for coating one transformer taken 8 days. • Loss of Revenue & longer days to complete the job
Solutions provided by SK Formulations	1. Environmental friendly water based Anticorrosion coating XLC -0767

Coating Application	XLC 0767 – 1st coat(40 microns) XLC 0767 – 2nd coat(40 microns) Total :- 80 microns coating
Benefits achieved by applying Anticorrosion coating XLC- 0767	• Water based Green Technology- Environment friendly • Minimum inventory required – 1 type of container needed: Less space consumption. • Fast Drying time – 45 minutes even at 5^0 C • Total Downtime taken 5 days against the conventional coating of 8 days (Including scaffolding & surface preparation.) • Superior Performance than Alkyd System.

Application:-

Anticorrosive Protective Coating (XLC 0767)

1. Cleaned the surface with surface treatment chemicals to make it free from oil, grease, rust & foreign deposits
2. After the surface was dried the first coat of (XLC 0767) was applied with Airless Spray gun having tip of 417 and air pressure 3 kg/cm^2
3. Second coat of (XLC 0767) was applied with the interval of 60 minutes uniformly to the entire surface with Airless spray gun having same earlier specifications
4. Dry film thickness of 80 microns is ensured with two coat application

Testing

Coated transformer was inspected after one year for any surface deterioration. Coating was found intact with same gloss level when applied year back and no corrosion/ rusting was observed in any of coated area.

Adhesion test was carried out at couple of critical areas and no peel-off was observed after testing.

Photos:-

(NORTHERN POWER GRID- UK)

CASE STUDY

Client	Gulf Lube
Location	Malaysia
Project	Application of Anti Corrosive Protective coating to lubricant storage tank. XLC- 0767
Duration	3 Days
Earlier system	Epoxy & PU
Earlier Coating Application	High Build Primer - 1 coat (100 microns) High Build Epoxy - 1 coat (100 microns) PU Coat - 1 coat (100 microns) Total:- 300 microns coating
Challenges faced	• Complicated two pack system • To keep three different inventories makes a huge space consumption. • Long Curing Time. • Loss of Revenue & longer days to complete the job • Toxic in nature, contains heavy metals.
Solutions provided by SK Formulations	2. Environmental friendly water based Anticorrosion coating XLC -0767
Coating Application	XLC 0767 – 1st coat(40 microns) XLC 0767 – 2nd coat(40 microns) Total :- 80 microns coating

Benefits achieved by applying Anticorrosion coating XLC- 0767	• Water based Green Technology- Environment friendly • Minimum inventory required – 1 type of container needed: Less space consumption. • Fast Drying time – 45 minutes even at 5^0 C • Superior Performance than Alkyd System.

Photos:-

(Before coating) **(After coating)**