Ballard Power Systems Europe A/S
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Revision history		
Rev.	**Date.**	**Description**
001	15/07/2024	First Issue

Document Title:	**BLPH Project - Painting/Insulation Inspection Report**
Document Number:	K559-2254-CWIWP4202202-L19-001
Revision:	Rev001
Sequence Number:	001
File Name:	K559-2254-CWIWP4202202-L19-001Rev001
Purchaser Job:	K559-2254
Purchase Order:	CWIWP4202202
Code:	L19
Requsition Number:	n/a
Customer:	CrossWind C.V., Rotterdam, The Netherlands

Short Title	Painting/Insulation Inspection Report
Full Title	L19 – Painting/Insulation Inspection Report

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Revision Record

Rev #	Description	Revised By	Date
1.0	Initial Release	EZE	July 15, 2024

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Table of Contents

1.0 General 4
2.0 References 4
3.0 Containers 5
4.0 Cooling Flatbed 6
5.0 LT Cooler Support Structure 8

List of Tables

Table 1: Reference Documents 4

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1.0 General

This document gathers all Painting/Insulation Inspection Reports that verify that painting and/or insulation is in accordance with Purchaser's specifications and provided by the painting/insulation contractor for the relevant components corresponding to the CrossWind BLPH Project.

Namely:

1. 40 ft and 10 ft containers
2. 40 ft cooling flatbed
3. LT cooler support structure

Document K559-2254-CWIWP4202202-J04-001 details the Surface Preparation and Painting Specifications.

2.0 References

Table 1: Reference Documents

Document ID	Document Title	Source
K559-2254-DM-PRO-001	Supplier Documentation Requirements Listing (SDRL) Definitions	Shell / KBR
K559-2254-CWIWP4202202-J04-001	Surface Preparation and Painting Specification	Ballard

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3.0 Containers

Malerspecifikation PPG Protective Coating

Kunde: Bulegården
Projekt: 40 fod highcube container (udv.)
Område: System CX

Forbehandling: ISO 8501-3 P3
Renhed: ISO 8501-1 Sa 2½
Ruhed: ISO 8503-1 40-70µm RyS
Salt ISO 8502-6 <50mg/m2 NaCl
Støv: ISO 8502-3 Maksimum antal og størrelse rate 2

Udarbejdet af: Claus Refstrup
Dato: 25-10-2023
Udløbsdato: 24-10-2024

	Produkt navn	Generisk type	VS%	TFT (µm)	VFT (µm)	Farve	Overmalings & hærdeinterval 10°C Min	10°C Maks	10°C FC	20°C Min	20°C Maks	20°C FC	30°C Min	30°C Maks	30°C FC	Blande ratio Vol.	Fortynder Blande fortynder	Mængde %	Rense fortynder
1	SigmaZinc 68 GP	Zink epoxy	68	60	88	Grey	3t	3m	15d	1,5t	3m	10d	1t	3h	7d	90/10	91-92	0-5	90-53
2	SigmaFast 278	Epoxy	80	170	213	Div. Ral	4t	Se PDS	8d	2t	Se PDS	4d	1t	Se PDS	3d	75/25	91-92	0-10	90-53
3	SigmaDur 550	Akryl PU	55	50	91	Div. Ral	8t	U/B	6d	6t	U/B	4d	5t	U/B	3d	88/12	21-06	3-5	90-53
				280	392														

Generelle noter

1 Det anbefales at udføre stripe coat for hvert malingslag på svært tilgængelige områder, sevjsesøm Osv.
2 Det anbefales at konsultere tekniske samt sikkerhedsdatablade inden arbejdet påbegyndes.
3 TFT skal være iht. ISO 19840

System noter

1 Alle overflader skal være rene, fri for snavs, forurening og salte.
2 Ovenstående system er iht. ISO 12944-9 CX.
3 -
4 -
5 -

PPG Coatings Belgium BV ved inspektion og teknisk rådgivning, på intet tidspunkt overtager det ansvar for overfladebehandlingen.
PPG Coatings Belgium BVindestår for vores produkters kvalitet, samt at specifikation, datablade og rådgivning er afgivet/udarbejdet efter bedste viden og overbevisning.

4.0 Cooling Flatbed

MK STÅL & MASKINTEKNIK	Paint Report		Page 1 of 1
	Rev. A	19/9 2016	Created by: KSJ
	Doc. Name	Paint Report	Approv.: TS

Item:	Number/Name:	Draw./Specifications:
1 pc. 40ft flatbed	4007950	4007950 Hempel NORSOK Coating Systems

Inspections before blasting:	
Oil or grease removed	OK
Steel work: No spatters, laminations, sharp undercuts, rough welds, sharp edges or welding smoke	OK
Steel original rust rating acc. To ISO 8501-1	A

Sandblasting:	
Blasting material:	Quartz sand size 4 (1,0-2,0 mm)
Blasted to cleanliness acc. To ISO 8501-1	SA 2,5
Roughness acc. ISO 8503-1	Medium (G)

Painting:		
Paint used:	Base	Part B
Hempadur Avantguard 750	043045212	043015553
Hempadur 4774D ral 7035	043076721	043095678
Hempadur 4774D ral 9001	043087366	043095678
Hempathane HS 55610 RAL 7035	043125327-C	043116805
Surface control between each layer acc. To ISO 2801	OK	

Climate Controls:					
	Humidity %	Steel Temp.	Air Temp.	Dew point	Steel - DP
Sandblasting	53,2	8,6	8,1	-0,9	9,5
Hempadur Avantguard 750	29,8	17,6	21,8	3,4	14,2
Hempadur 4774D ral 7035	29,8	22,4	22,0	3,5	18,8
Hempadur 4774D ral 9001	32,8	20,2	20,3	3,4	16,7
Hempathane HS 55610 RAL 7035	30,3	23,3	23,0	4,7	18,5

Date and time of process:				
	Date start	Time Start	Date Stop	Time Stop
Sandblasting	11-12-2023	5.00	11-12-2023	14.00
Hempadur Avantguard 750	12-12-2023	5.30	12-12-2023	8.30
Hempadur 4774D ral 7035	12-12-2023	13.00	12-12-2023	16.00
Hempadur 4774D ral 9001	13-12-2023	5.30	13-12-2023	9.00
Hempathane HS 55610 RAL 7035	13-12-2023	14.00	13-12-2023	17.30

Control of dry film surface:	
Topcoat with uniform, color gloss, no sagging, no running, no spraying dust, no contaminations, full coverage, no pinholes and no rusty spots	OK

Date: 14-12-2023

Approved by:

Kent S. Johansen

Frosio Inspector Level 3

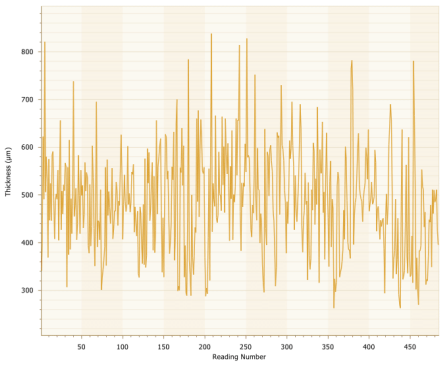
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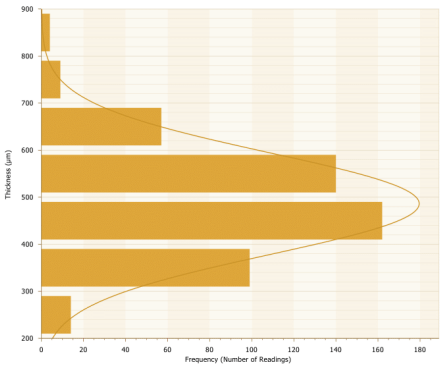
Inspection Report - Dry Film Thickness

LTek\Ballard\
2023-12-13 1 pc. 4007950 - 40 ft flatbed

Individuals / Run Chart



Histogram



Project	
Name	LTek

Gauge	
Type	Elcometer 456/4
Serial #	RH19862

Probe	
Type	F1
Serial #	YA26275

Calibration	
Calibration Method	Smooth
Type	F1
Date	14-12-2023 14:16
Thick Foil	252,0
Thin Foil	0,0

Batch	
Type	Thickness
Name in Gauge	Serie 8
User ID	2023-12-13 1 pc. 4007950 - 40 ft flat
Created Date	14-12-2023 14:17:07
Updated Date	14-12-2023 14:17:07
First Reading Date	14-12-2023 15:20:19
Last Reading Date	14-12-2023 16:42:25

Statistics	
# Readings	485
Mean	486,24 µm
Maximum	838,0 µm
Minimum	263,0 µm
Standard Deviation (σ)	107,75 µm
Mean + 3σ	809,48 µm
Mean - 3σ	163,00 µm
Coefficient of Variation	22,2%
# Readings < NDFT	4 (0,8%)
# Readings >= NDFT	481 (99,2%)

Limits			
High Limit	840,0 µm	# Readings Above	0 (0,0%)
Low Limit	280,0 µm	# Readings Below	4 (0,8%)
NDFT	280,0 µm		

Dry Film Thickness Statistics	
90,0% of NDFT	252,0 µm
# Readings < 90,0% of NDFT	0 (0,0%)

Rules Applied (IMO PSPC)	
(1) No readings are below 90,0% of the NDFT	Pass
(2) No more than 10,0% of readings are below the NDFT	Pass

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5.0 LT Cooler Support Structure

MK STÅL & MASKINTEKNIK	Paint Report		Page 1 of 1
	Rev. A	19/9 2016	Created by: KSJ
	Doc. Name	Paint Report	Approv.: TS

Item:	Number/Name:	Draw./Specifications:
1 pc. LT Cooler Support Structure	002-F40S	002-F40S Hempel NORSOK Coating Systems

Inspections before blasting:	
Oil or grease removed	OK
Steel work: No spatters, laminations, sharp undercuts, rough welds, sharp edges or welding smoke	OK
Steel original rust rating acc. To ISO 8501-1	A

Sandblasting:	
Blasting material:	Quartz sand size 4 (1,0-2,0 mm)
Blasted to cleanliness acc. To ISO 8501-1	SA 2,5
Roughness acc. ISO 8503-1	Medium (G)

Painting:		
Paint used:	Base	Part B
Hempadur Avantguard 750	043045212	043015553
Hempadur 4774D ral 7035	043076721	043095678
Hempadur 4774D ral 9001	043087366	043095678
Hempathane HS 55610 RAL 7035	043125327-C	043116805
Surface control between each layer acc. To ISO 2801	OK	

Climate Controls:					
	Humidity %	Steel Temp.	Air Temp.	Dew point	Steel - DP
Sandblasting	53,2	8,6	8,1	-0,9	9,5
Hempadur Avantguard 750	29,8	17,6	21,8	3,4	14,2
Hempadur 4774D ral 7035	29,8	22,4	22,0	3,5	18,8
Hempadur 4774D ral 9001	32,8	20,2	20,3	3,4	16,7
Hempathane HS 55610 RAL 7035	30,3	23,3	23,0	4,7	18,5

Date and time of process:				
	Date start	Time Start	Date Stop	Time Stop
Sandblasting	11-12-2023	5.00	11-12-2023	14.00
Hempadur Avantguard 750	12-12-2023	5.30	12-12-2023	8.30
Hempadur 4774D ral 7035	12-12-2023	13.00	12-12-2023	16.00
Hempadur 4774D ral 9001	13-12-2023	5.30	13-12-2023	9.00
Hempathane HS 55610 RAL 7035	13-12-2023	14.00	13-12-2023	17.30

Control of dry film surface:	
Topcoat with uniform, color gloss, no sagging, no running, no spraying dust, no contaminations, full coverage, no pinholes and no rusty spots	OK

Date: 14-12-2023

Approved by:

Kent S. Johansen

Frosio Inspector Level 3

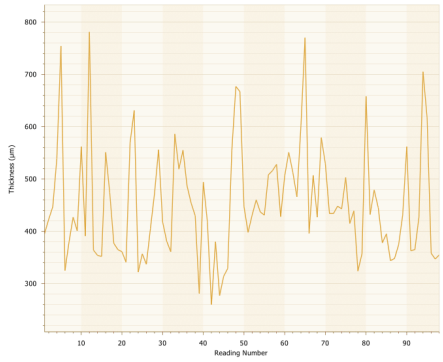
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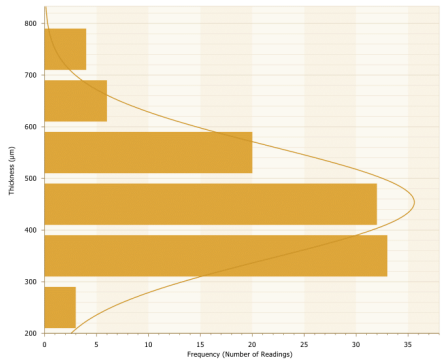
Inspection Report - Dry Film Thickness

LTek\Ballard\
2023-12-13 1 pc. 002-F40S LT Cooler Sup. Struc.

Individuals / Run Chart



Histogram



Project

Name	LTek

Gauge

Type	Elcometer 456/4
Serial #	RH19862

Probe

Type	F1
Serial #	YA26275

Calibration

Calibration Method	Smooth
Type	F1
Date	14-12-2023 14:16
Thick Foil	252,0
Thin Foil	0,0

Batch

Type	Thickness
Name in Gauge	Serie 9
User ID	2023-12-13 1 pc. 002-F40S LT Cooler
Created Date	14-12-2023 16:43:07
Updated Date	14-12-2023 16:43:07
First Reading Date	14-12-2023 16:43:10
Last Reading Date	14-12-2023 16:45:15

Statistics

# Readings	98
Mean	453,76 µm
Maximum	781,0 µm
Minimum	260,0 µm
Standard Deviation (σ)	109,55 µm
Mean + 3σ	782,40 µm
Mean - 3σ	125,11 µm
Coefficient of Variation	24,1%
# Readings < NDFT	2 (2,0%)
# Readings >= NDFT	96 (98,0%)

Limits

High Limit	840,0 µm	# Readings Above	0 (0,0%)
Low Limit	280,0 µm	# Readings Below	2 (2,0%)
NDFT	280,0 µm		

Dry Film Thickness Statistics

90,0% of NDFT	252,0 µm
# Readings < 90,0% of NDFT	0 (0,0%)

Rules Applied (IMO PSPC)

(1) No readings are below 90,0% of the NDFT	Pass
(2) No more than 10,0% of readings are below the NDFT	Pass

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