

NSRP

Surface Preparation and Coatings Panel Meeting

Ketchikan, AK

August 24-26, 2010

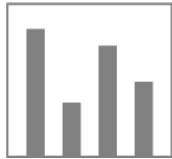
Technology Advancements for
Paperless QA Measurement
Applications

Fischer Technology

Fischer Technology - Product Segments



- Coating Thickness



- Material Analysis



- Microhardness



- Material Testing

Coating Thickness Measurement Applications

Discussion Topics

- Overview
- Solutions for Common and Complex Applications
- Efficiency

Applications and time saving techniques

- Paperless Data for Coating Thickness Measurement

Solutions for SSPC-PA2, IMO PSPC and other industry specifications

Type II Coating Thickness Gauges



Fischer DFT Gauges

Integrated Probes

Separate
Interchangeable probes

Basic

Memory

Ferrous

Non-Ferrous

Dual Ferrous and Non-
Ferrous

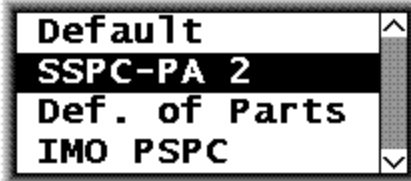
Measurement Strategies

SSPC-PA2 Capabilities

IMO PSPC Capabilities

Measuring and Documenting Inspection Reports According to SSPC-PA2

Meas. specificat.



A dropdown menu with four options: 'Default', 'SSPC-PA 2', 'Def. of Parts', and 'IMO PSPC'. The 'SSPC-PA 2' option is highlighted with a black background and white text. The menu has a scroll bar on the right side.

Entry: ^v

User Selects SSPC-PA 2 Mode

Number of readings per spot



A rectangular input field containing the number '3'. The field has a scroll bar on the right side.

OK: ENTER

User can select the number of gauge readings per spot

Number of spots per 100ft²-Area



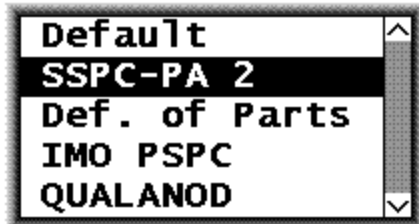
A rectangular input field containing the number '5'. The field has a scroll bar on the right side.

Entry: ^v

Number of spot readings per area

Measuring and Documenting Inspection Reports According to SSPC-PA2

Meas. specificat.



Back: DEL



Print: PRINT

Measurement specifications such as SSPC-PA2 and IMO PSPC are built into some DFT Type II Gauges

Up to 100 applications corresponding to approximate location can be named by user

SSPC-PA 2 mils
9.96
Aft Bkhd
App1:16 Area: 1
Spot: 5 n= 1/ 3


Gauge readings, Area locations, and Spot readings all displayed on screen

Measuring and Documenting Inspection Reports According to SSPC-PA2

SSPC-PA 2
Lower sp. limit 8.00 mils
80%: 6.40 mils
Upper sp. limit 12.0 mils
120%: 14.4 mils
OK: ENTER

Set tolerances and monitor
80%-120% rule

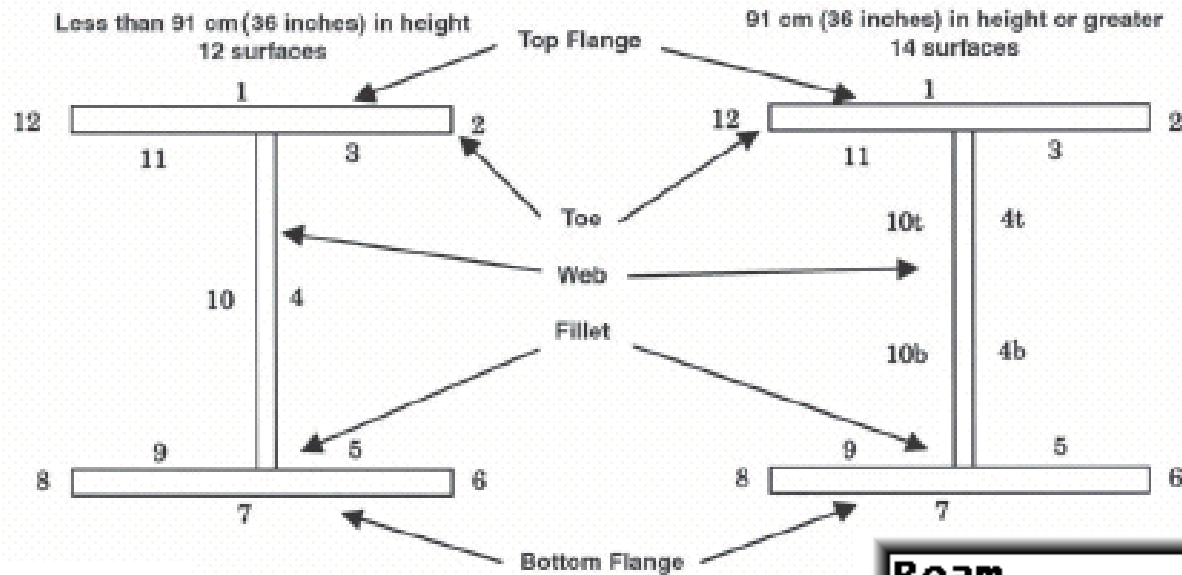


SSPC-PA 2 mils
↑ **30.9**
Aft Bkhd
Ap:16 th.= 23.85 
Sp: 5 Area: 1

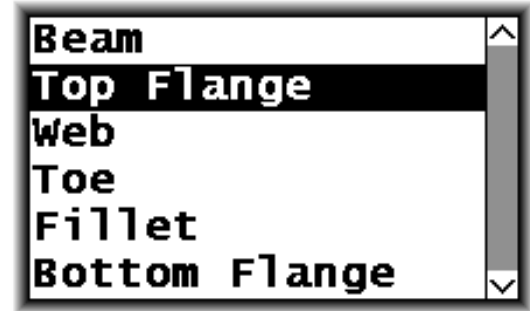
Audible and Visual
indicator if spot
readings are out of
tolerance

Efficiency in Coating Thickness Measurement

The Surfaces of a Steel Beam

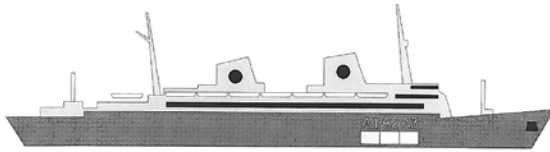


Naming applications reduces the likelihood of documentation errors



Info:APPL

Efficiency in Coating Thickness Measurement



Deck
Port Bkhd
Stbd. Bkhd
Overhead
Aft Bkhd
Fwd. Bkhd

Print: PRINT

Calibration settings can also be stored in applications yielding greater accuracy

Measuring Mode

Default
Auto. Measurement
Area measurement

Entry: ^v

Auto and Area measurement are quick and repeatable ways to determine dry film thickness

SSPC / IMO Applications



Measuring and Documenting According to IMO Performance Standard for Protective Coatings

(Continuous Monitoring and Block Results)



IMO PSPC μm
489
90% ✓ 10% ✓
Blck: 2 ✓
n= 25
App1: 5 NDFT=320

Block:	2
PSPC ✓	n=50
90% ✓	
$\geq 320.0=100.00\%$	
10% ✓	
$< 288.0=$	0
Leave open: ^	
Delete block:DEL	

- The 90/10 Rule Explained:
- Nominal Dry Film Thickness (NDFT) for epoxy coated tanks to be 320 microns. 90% of all DFT readings must be greater or equal to 320 microns. All remaining thickness measurements must be greater than or equal to 288 microns (i.e. 10% of the NDFT reading)

Measuring and Documenting According to IMO Performance Standard for Protective Coatings

(Non-conformance and Block Result Summary)



IMO PSPC µm
242

 90% ✓ 10% ✗
 Blck: 3 ✗
 n= 17
 Appl: 5 NDFT=320

Block: 3
 PSPC ✗ n=50
 90% ✓
 ≥320.0= 98.00 %
 10% ✗
 <288.0= 1
 Single meas: MENU
 change block: ✓

- Sample measurement below Nominal Dry Film Thickness Requirement
- In this example 90% of all readings were within 320 microns
- The remaining readings were not equal to or above 288 microns

- Sample of block summary below specification
- 50 readings taken
- One gauge reading was below 288 microns

Data Communication



Common Data Communication Methods

Bluetooth® (Optional)

USB Port

RS-232 (Optional)

Fischer Instruments are
Compatible with CQATK



Coatings Quality Assurance Tool Kit

Press Start and Values are Imported to Report

QA INSPECTION FORM - DRY FILM THICKNESS MEASUREMENTS

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG	Approximate Location
1		
2		
3		
4		
5		
Average:	-	

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG of 3	Approximate Location
1		
2		
3		
4		
5		
Average:	-	

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG	Approximate Location
1		
2		
3		
4		
5		
Average:	-	

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG of 3	Approximate Location
1		
2		
3		
4		
5		
Average:	-	

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG	Approximate Location
1		
2		
3		
4		
5		
Average:	-	

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG of 3	Approximate Location
1		
2		
3		
4		
5		
Average:	-	

Changes to Report Format Are Simple

Appendix 7 - Quality Assurance Inspection Form – Dry/Wet Film Thickness Measurements									
NAME & HULL #:		CONTRACT/TASK ORDER/CLIB/TWD:							
LOCATION OR TANK:		WORK ITEM:							
REQ'T DOCUMENT:		FY:	TABLE:	LINE:	COLUMN:	(I) <input type="checkbox"/>	(V) <input type="checkbox"/>	(G) <input type="checkbox"/>	(N/A) <input type="checkbox"/>
CONTRACTOR: PRIME:		SUB:		NAVAL FACILITY:					
(All readings are in mils)									
D O N O T	QA Equip No from App 2	Area/Location/Edge(A,B,C)		Reading (1)	Reading (2)	Reading (3)	Average (1) ²	WFT / DFT:	
		(A)						COAT:	
		(B)							
		(C)							
		(D)							
W R I T E		Area/Location/Edge(A,B,C)		Reading (1)	Reading (2)	Reading (3)	Average (1) ²	Average (2): #DIV/0!	
		(A)						WFT / DFT:	
		(B)						COAT:	
		(C)							
		(D)							
I N M A		Area/Location/Edge(A,B,C)		Reading (1)	Reading (2)	Reading (3)	Average (1) ²	Average (2): #DIV/0!	
		(A)						WFT / DFT:	
		(B)						COAT:	
		(C)							
		(D)							
R G I N S	Sat <input type="checkbox"/>	Unsat <input type="checkbox"/>	Average (3) WFT/DFT Total:		Visual Holiday Check		Shop/Contractor Signature & Date ¹ :		
					Sat <input type="checkbox"/>	Unsat <input type="checkbox"/>			
Remarks (continue on back if needed) <input type="checkbox"/>						See back for Continuation:			
						(G) Quality Assurance Inspector Signature & Date ¹ :			

¹ Signature certifies, based on personal observation, that the data entered above is complete and accurate. Signature includes at least first initial, last name, badge/employee number or inspector certification number and date.

² For electronic equipment that accumulates information in batches and self averages, it is acceptable to enter only the average of the readings for each spot.

Readings Transferred From Unit to DFT Log

ACCEPT CRITERIA

<input type="checkbox"/> PRIMER DFT	TO	MILS	<input type="checkbox"/> STRIPE COAT DFT	TO	MILS
<input type="checkbox"/> # 1 INTERMEDIATE DFT	TO	MILS	<input type="checkbox"/> TOPCOAT DFT	TO	MILS
<input type="checkbox"/> # 2 INTERMEDIATE DFT	TO	MILS	<input type="checkbox"/> TOTAL SYSTEM DFT	TO	MILS
Lower Specification Limit :	8.00	MILS	Lower Specification Limit :	12.04	MILS

TOTAL SPOT MEASUREMENTS REQUIRED PER SQUARE FOOT OF AREA PRESERVED

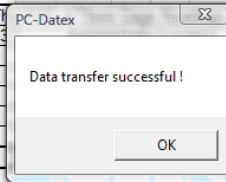
0 - 100 SQFT = 5 SPOTS REQUIRED	201 - 1000 SQFT = 15 SPOTS REQUIRED
101 - 200 SQFT = 10 SPOTS REQUIRED	> 1000 SQFT = 5 ADDITIONAL SPOTS REQUIRED PER 1000 SQFT AREA

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG	Approximate Location
1	10.03	1
2	10.01	2
3	10.02	3
4	10.01	4
5	10.02	5
Average:	10.02	

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG of 3	Approximate Location
1	10.02	1
2	10.03	2
3	10.02	3
4	10.03	4
5	10.04	5
Average:	10.03	



Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG	Approximate Location
1	10.01	11
2	10.01	12
3	10.02	13
4	10.02	14
5	10.01	15
Average:	10.01	

Note: Each Spot Measurement = The AVG of Three Gage Readings.

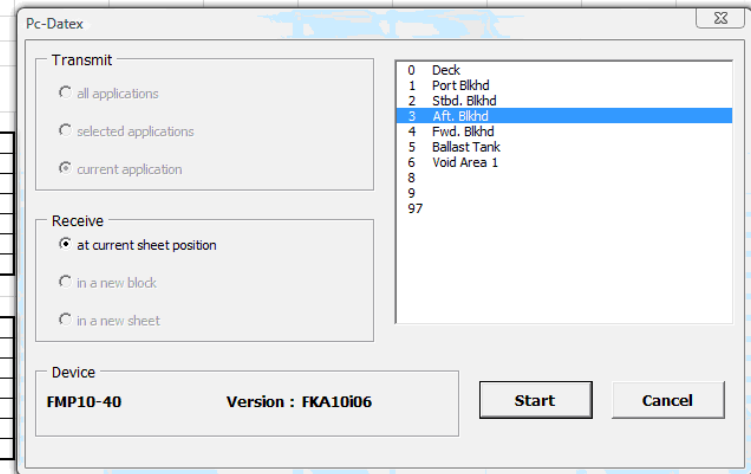
SPOT	DFT (Mils) AVG of 3	Approximate Location
1	10.01	16
2	10.02	17
3	10.01	18
4	10.03	19
5	10.01	20
Average:	10.02	

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG	Approximate Location
1	10.00	21
2	10.01	22
3	10.00	23
4	10.01	24
5	10.00	25
Average:	10.00	

Note: Each Spot Measurement = The AVG of Three Gage Readings.

SPOT	DFT (Mils) AVG of 3	Approximate Location
1	10.00	26
2	9.99	27
3	10.01	28
4	10.01	29
5	10.02	30
Average:	10.01	



Documentation is Necessary

Efficiency is the Key

DUALSCOPE® FMP100 is the Answer

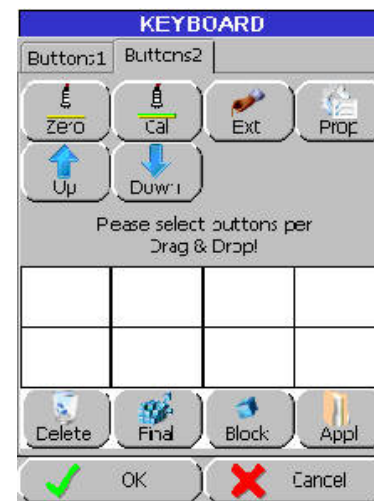
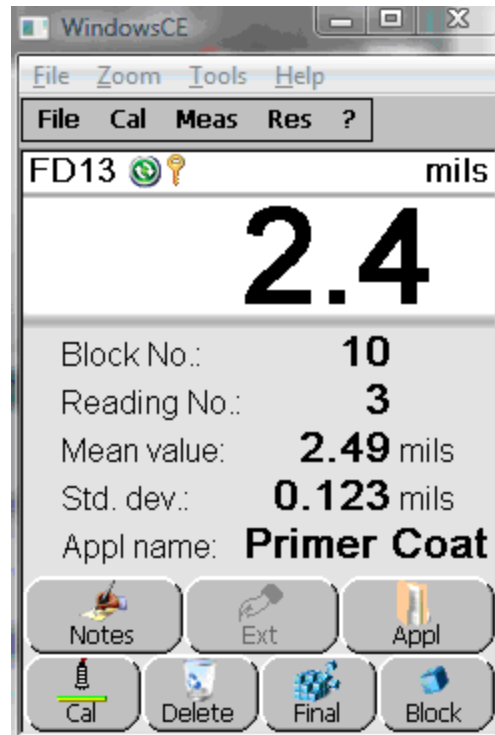
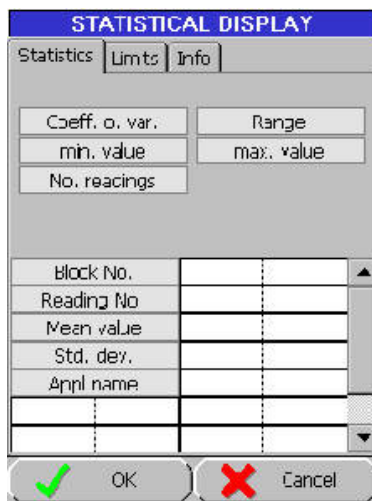


- Touchscreen
- Drag and Drop Configuration
- Automatic Data Backup
- Printforms in PDF



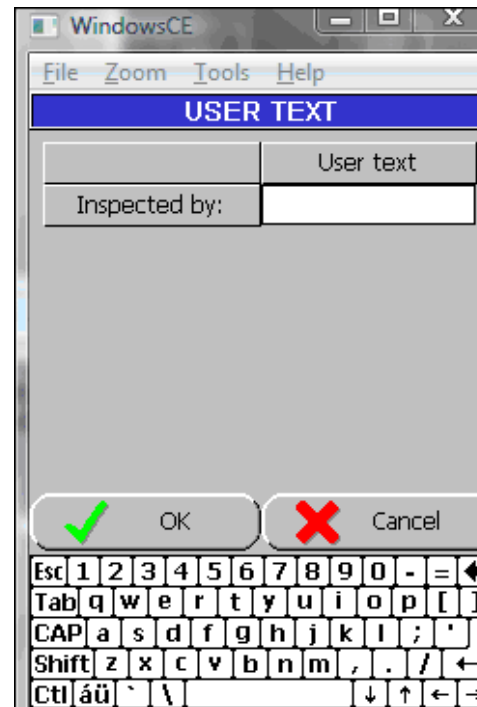
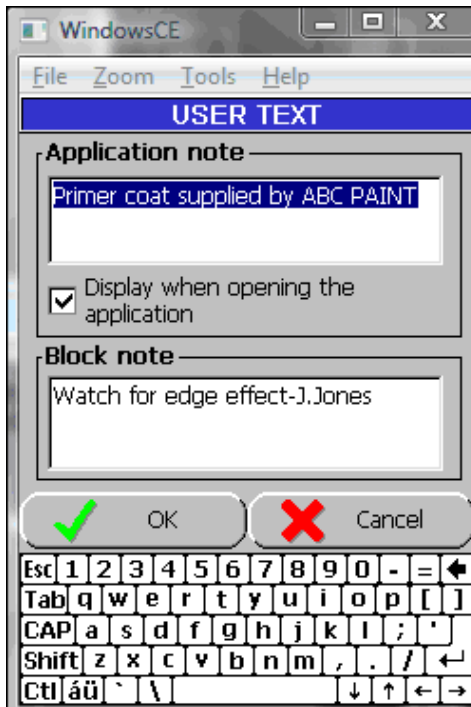
What Value do You Put on Your Time?

Customization of the unit display, functions, stats, and reports reduce administrative work related to coating inspection and documentation.

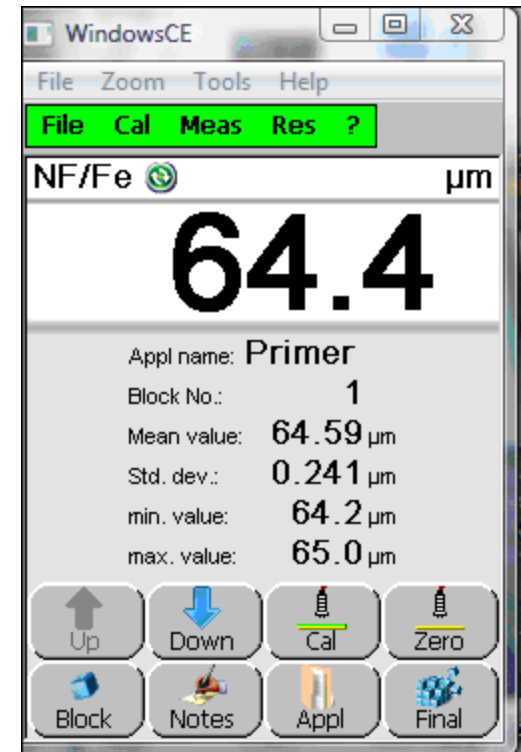
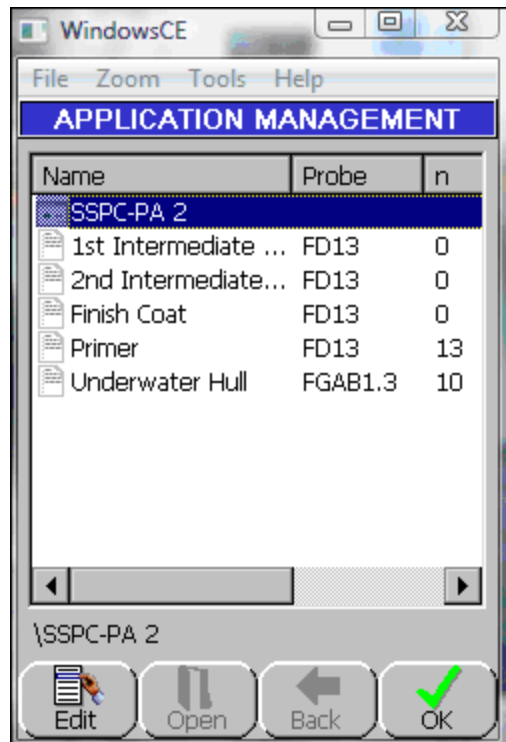


Ever question the validity of data?

Customization of notes, and user text provide instant documentation.

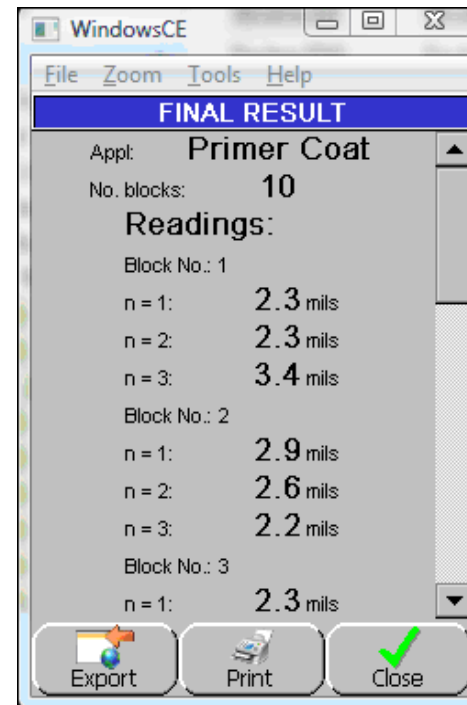


Applications Including Calibration Settings can be Named and Stored



Record Keeping and Documentation cont.

PDF exports and custom inspection report formats for data transfer to PC.



Coating Thickness Measurement

Conclusion

- Type II Coating Thickness Gauges offer various capabilities - Basic, Memory, Integrated or Separate Probes
- Accuracy and efficiency is enhanced even further with the hardware and software capabilities such as SSPC PA2 and IMO PSPC measurement specifications.
- Measurements according standards are accomplished quickly and easily through paperless inspection report documentation
- Utilizing Technology Advancements are important key in the reduction of costs