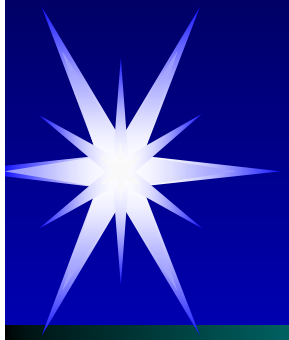


Product Information & Test Procedure

DJH Designs Inc.

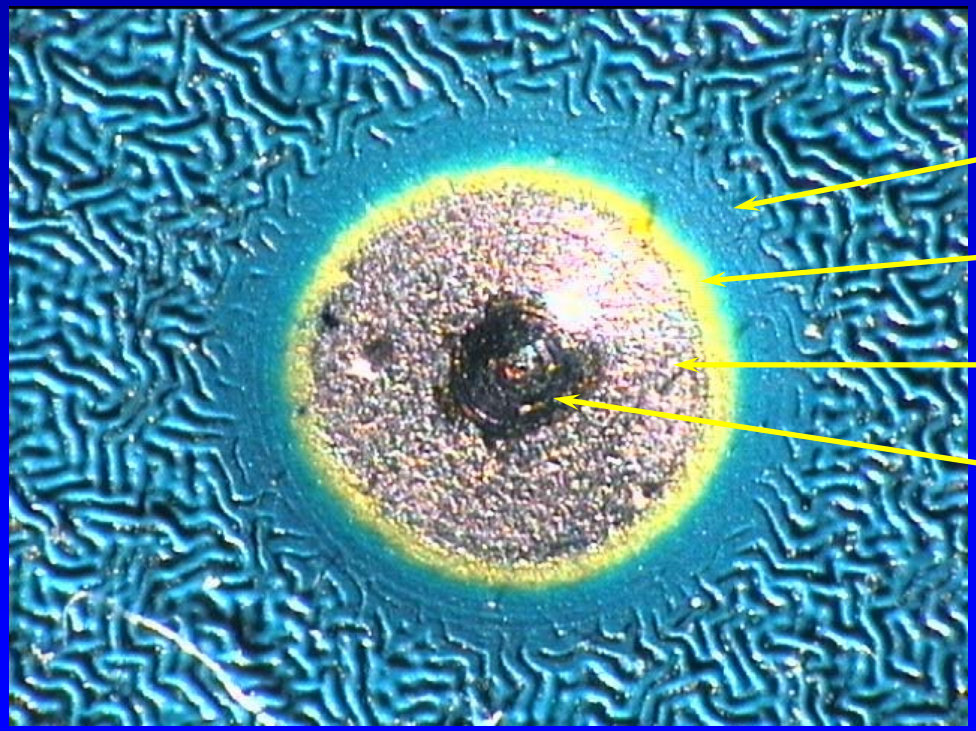
DJH Designs *History*

- 1994 ASTM Begins Study of System
- January 1996 System wins ASTM Approval

ASTM D5796-95

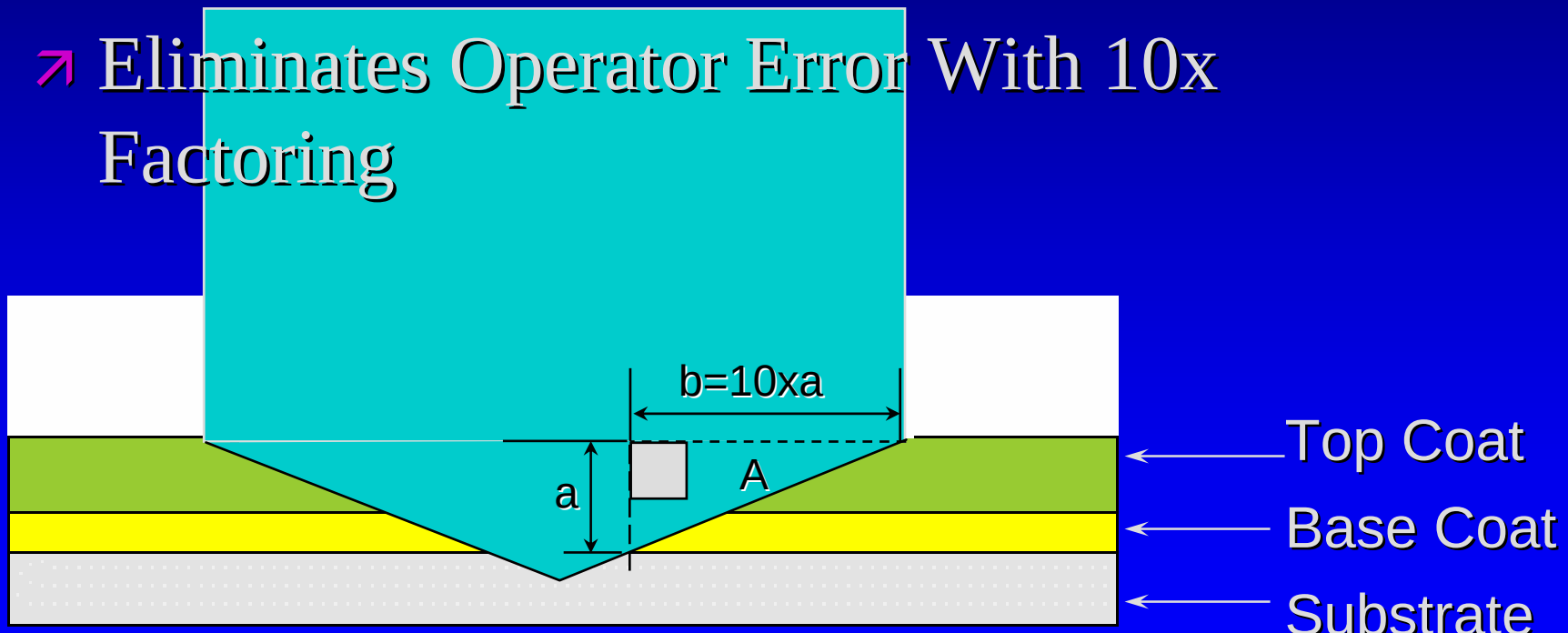
Crater Film Build System

- Setting The Standard
- Specially Designed Borer Machine



Crater FTS - How It Works

- Not Effected By Substrate Composition
- Eliminates Operator Error With 10x Factoring



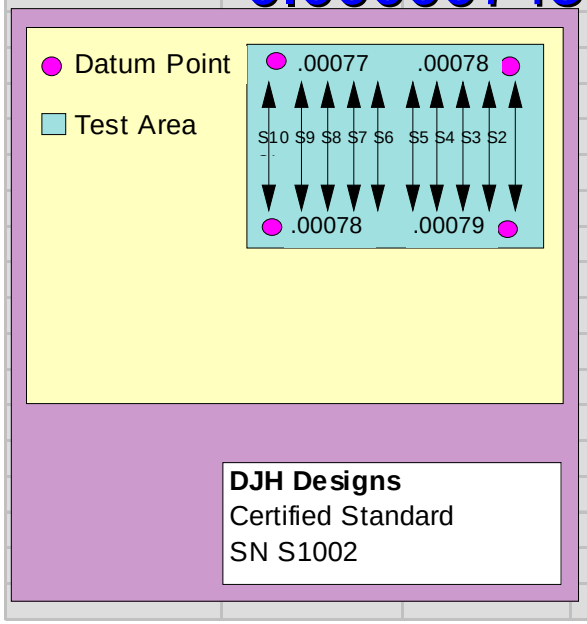
tan A=a/b , Angle = 5° 42’ 38”

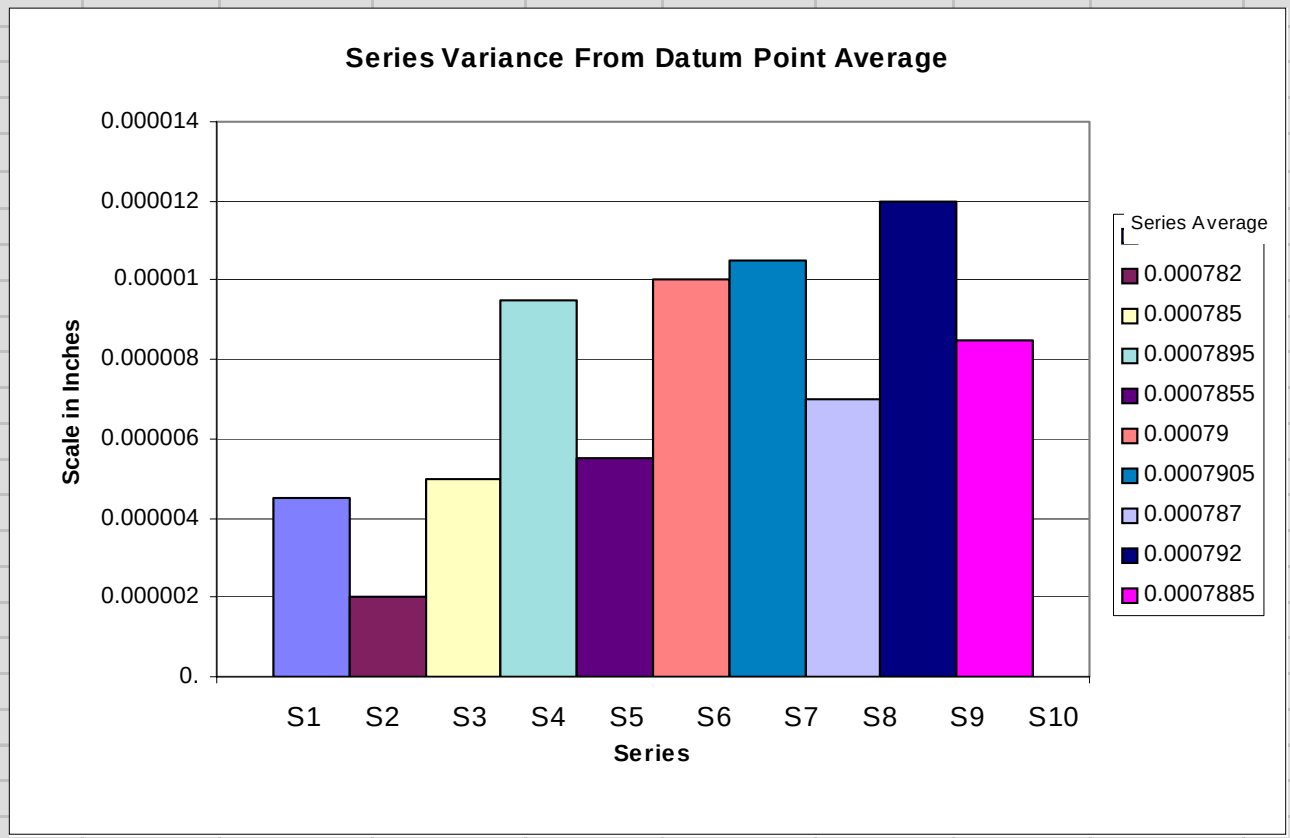
	Datum Point	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10
	0.00077	0.000775	0.000775	0.00079	0.0008	0.00077	0.00078	0.000785	0.000775	0.00078	0.000775
	0.00078	0.000775	0.00077	0.000775	0.00078	0.000785	0.00079	0.00079	0.000785	0.00079	0.000785
	0.00078	0.0008	0.000785	0.000785	0.000785	0.00079	0.00077	0.000785	0.00078	0.00079	0.000785
	0.00079	0.000795	0.0008	0.000775	0.00079	0.000775	0.000785	0.00078	0.00078	0.000785	0.00079
		0.000785	0.0008	0.0008	0.0008	0.0008	0.000795	0.00079	0.00079	0.000795	0.000785
		0.000785	0.00077	0.00078	0.000785	0.00077	0.00079	0.000795	0.0008	0.0008	0.00079
		0.00078	0.00077	0.000785	0.0008	0.000805	0.0008	0.000795	0.00079	0.000785	0.0008
		0.000785	0.000785	0.00078	0.000785	0.0008	0.0008	0.000795	0.0008	0.0008	0.0008
		0.000795	0.00078	0.00079	0.000785	0.00078	0.0008	0.0008	0.000785	0.0008	0.000785
		0.00077	0.000785	0.00079	0.000785	0.00078	0.00079	0.00079	0.000785	0.000795	0.00079
Series Average	0.00078	**0.0007845**	**0.000782**	**0.000785**	**0.0007895**	**0.0007855**	**0.00079**	**0.0007905**	**0.000787**	**0.000792**	**0.0007885**
Var. Series / Datum Average		**0.0000045**	**0.000002**	**0.000005**	**0.0000095**	**0.0000055**	**0.00001**	**0.0000105**	**0.000007**	**0.000012**	**0.0000085**

Datum Point Average 0.00078
Series Average 0.00078745

Var. Series / Datum Average 0.00000745

0.00000745”





Crater FTS - Benefits

- Environmentally Safe - No Solvents
- Cost Savings
- Low Maintenance
- No Calibration Required For Different Substrates
- Can Read Primer & Top Coat at One Time
- Optics Can Be Used for Other Purposes

Surface Film Defects Substrate Surface Defects

Cost Analysis/Financial Benefits

- Quick And Accurate Measurements
- No Down Time For Calibration Due To Material Change, Or Change In Coatings
- Can Be used On The Line For Increased Productivity
- Little Training Time Required
- Able To Maintain Closer Tolerance To Customer Specifications

Cost Analysis/Financial Benefits

- Research has shown on an average coil line using 8 million litter's of paint per year, for every micron the cost savings is …….

$1,000,000.00 per micron

Competitive Analysis

- Repeatability
- Not Effected By Substrate
- A.S.T.M. accredited Testing Method
- Flexibility, Optics can be used for other purposes.

DJH Designs “Crater”

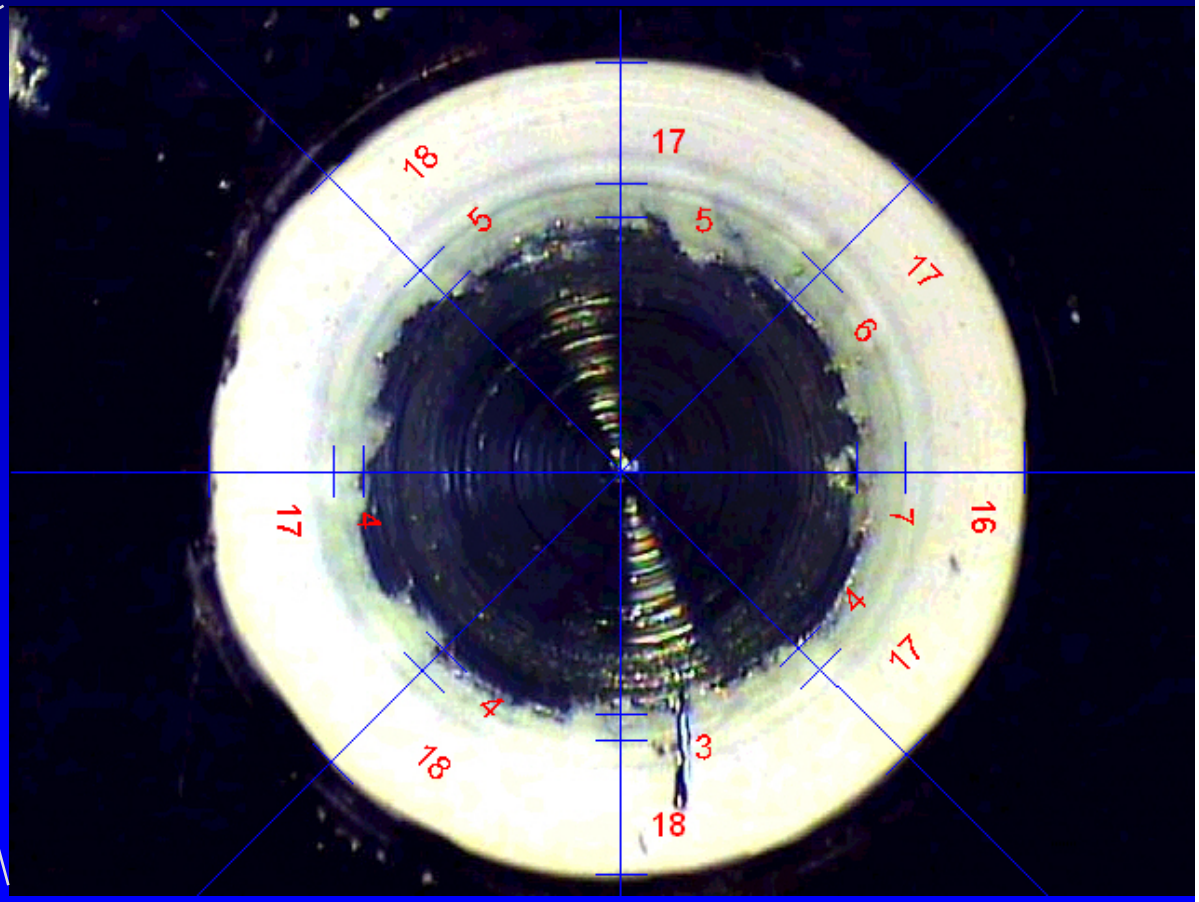
Meeting The Needs

DJH View

The Next Generation Image & Archival Software

- PC Based measurement system
- Capture images, manipulate, measure, and annotate.
- Multiple databases can be maintained
- Limitless uses, Film Builds, Defects, Component Parts, Integrated database.
- Export, E-mail, Print Records.
- New HTML Based Help System

DJH View



↗ 다층(Primer, Top Layer) 동시 측정

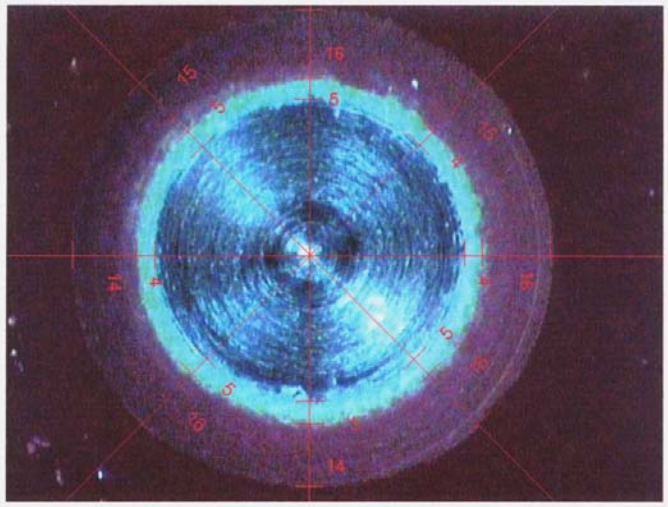
DJH View

- Automatic Reporting
- Excel Formatted

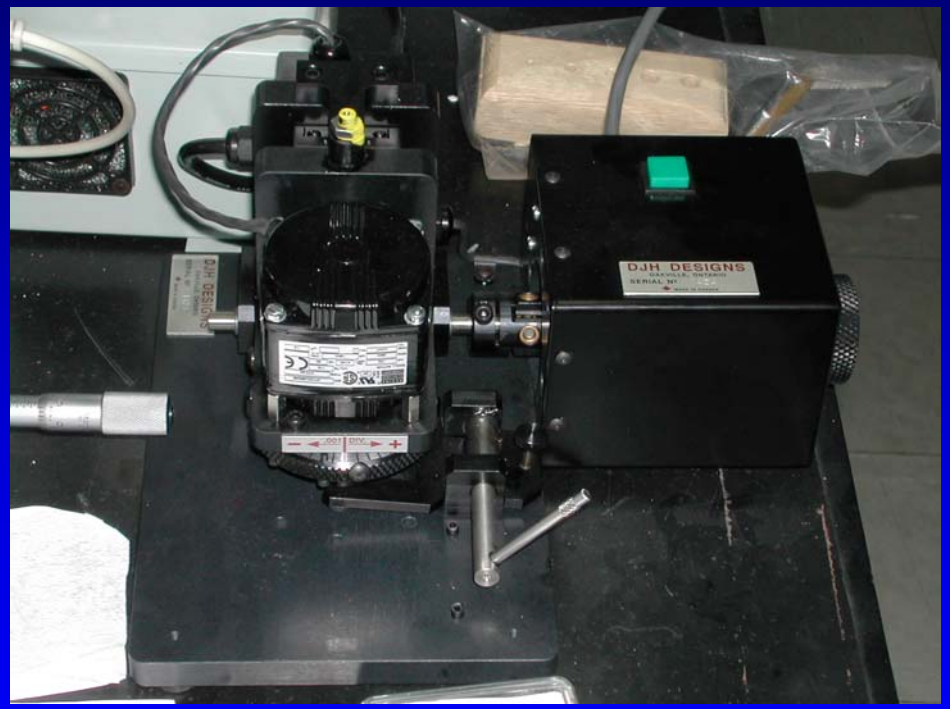
Reporting

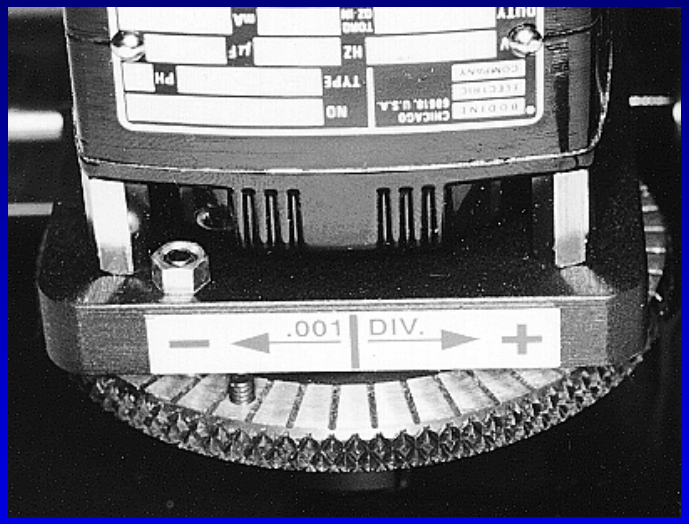
Company: Union Steel Manufacturing Company	Date: 10/10/2000
Department:	User Name: Doo Chul Park
Testing Method: ASTM D5796	

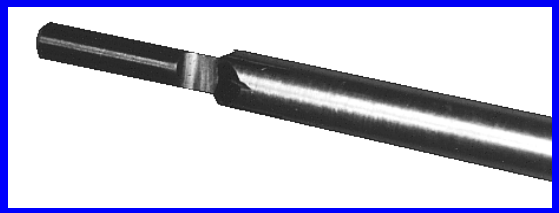
Sample ID: Red Panel									
Measurement Type: Line									
Tool Selected: 8 Point Average									
Unit of Measure: Micron			10x Factor : ON						
Position	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Average**
Layer1	5	5	4	5	5	5	4	4	5
Layer2	16	15	14	16	14	16	16	15	15
Layer3									
Layer4									
Layer5									
Total Film Build: 20									



Test Procedure (Boring)

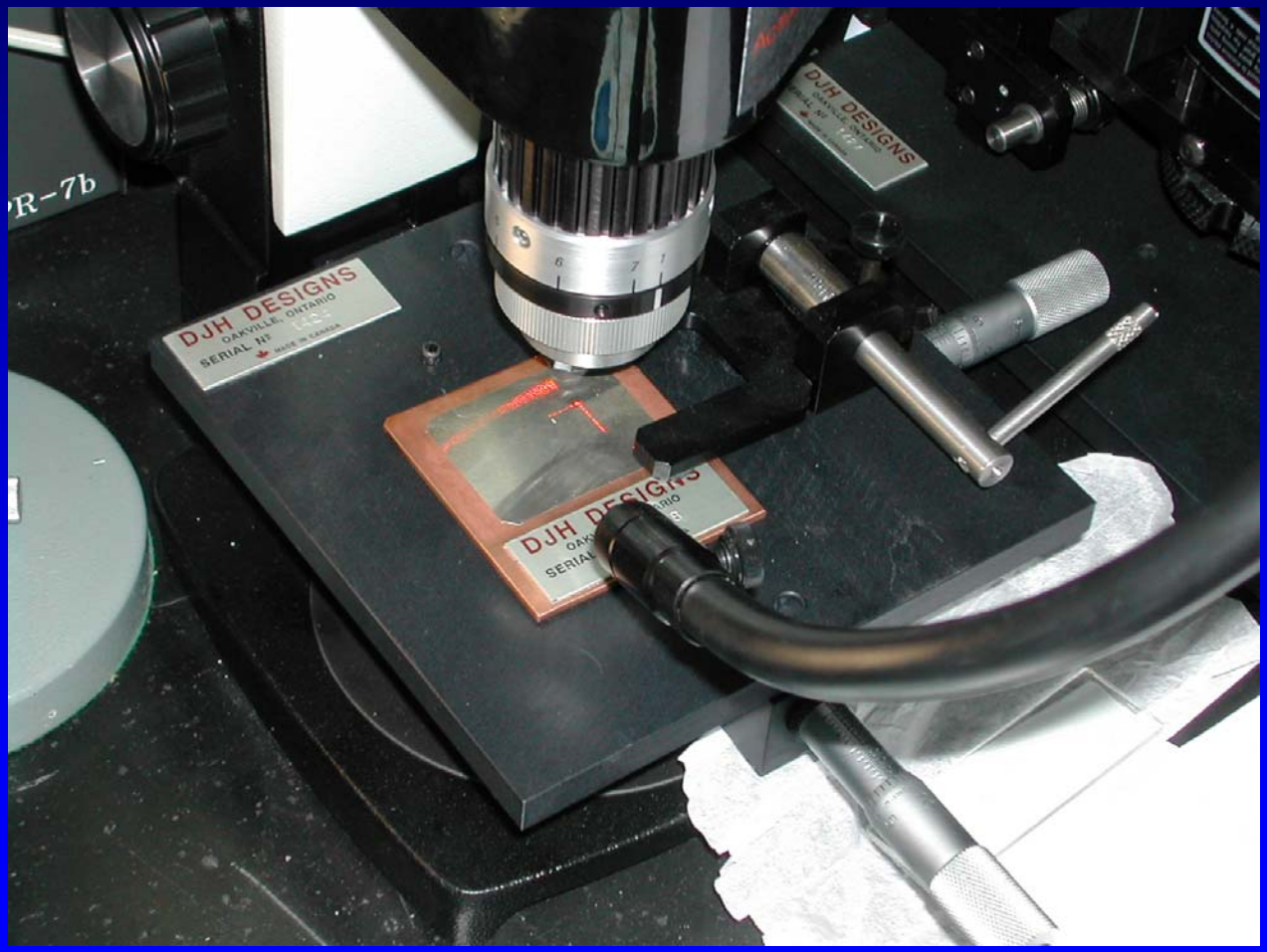




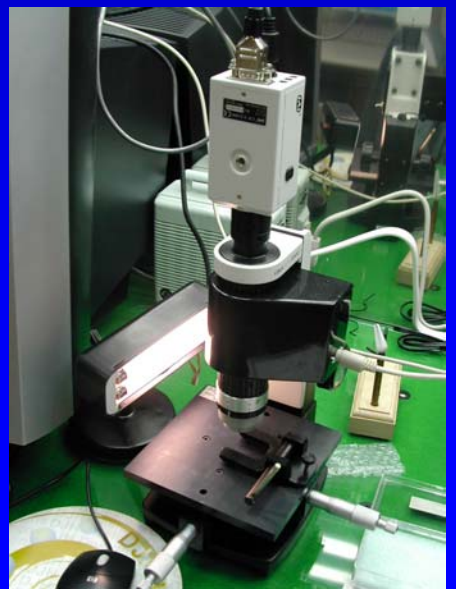


- 깊이조절 레버를 고정대에 닿을때까지 최대한 –쪽으로 돌립니다
- 깊이 조절 레버를 1-1/2 (one and one half)칸 +측으로 이동합니다.(1칸은 0015” = 30 um입니다.)

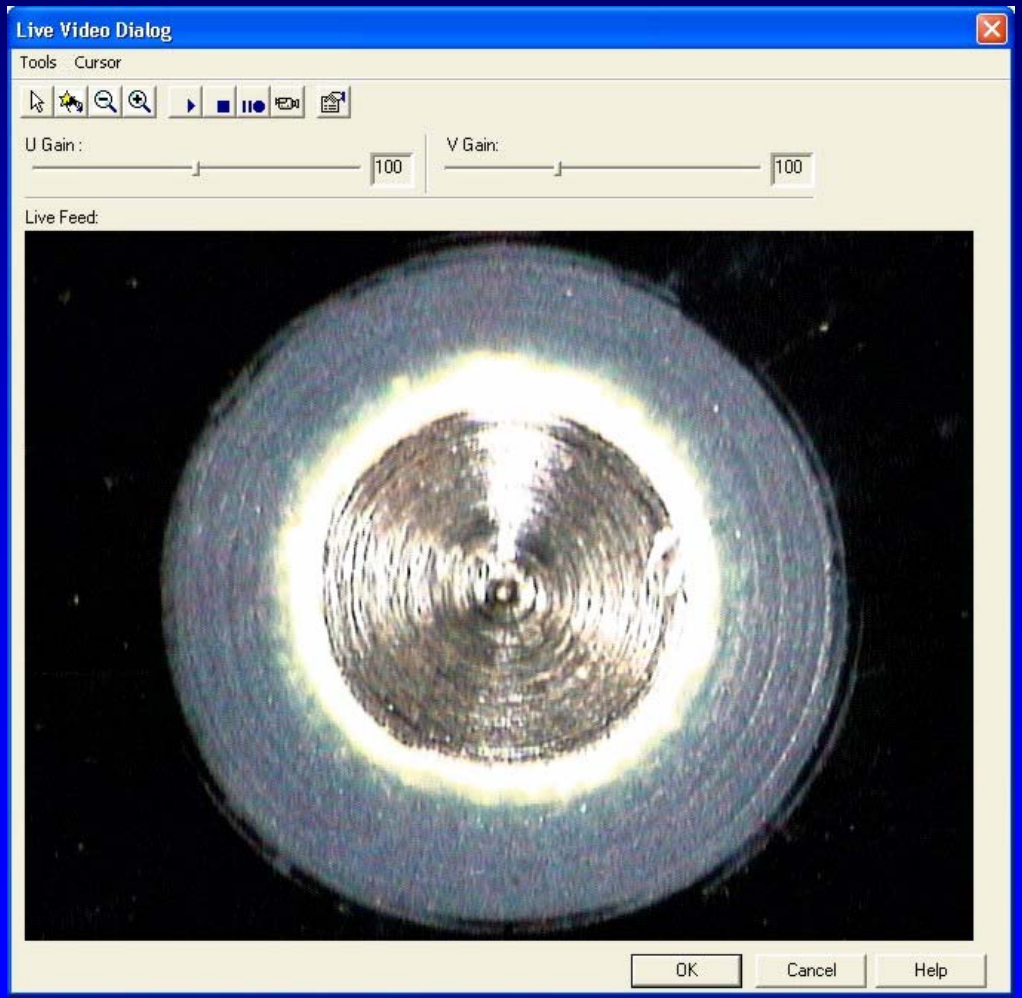
Test Procedure (Measuring)



- Sample 고정
- Laser Target으로 위치 설정
- 배율 조정(최대 320배까지 확대가능)
- Focusing
- 화면 Capture
- 두께 측정

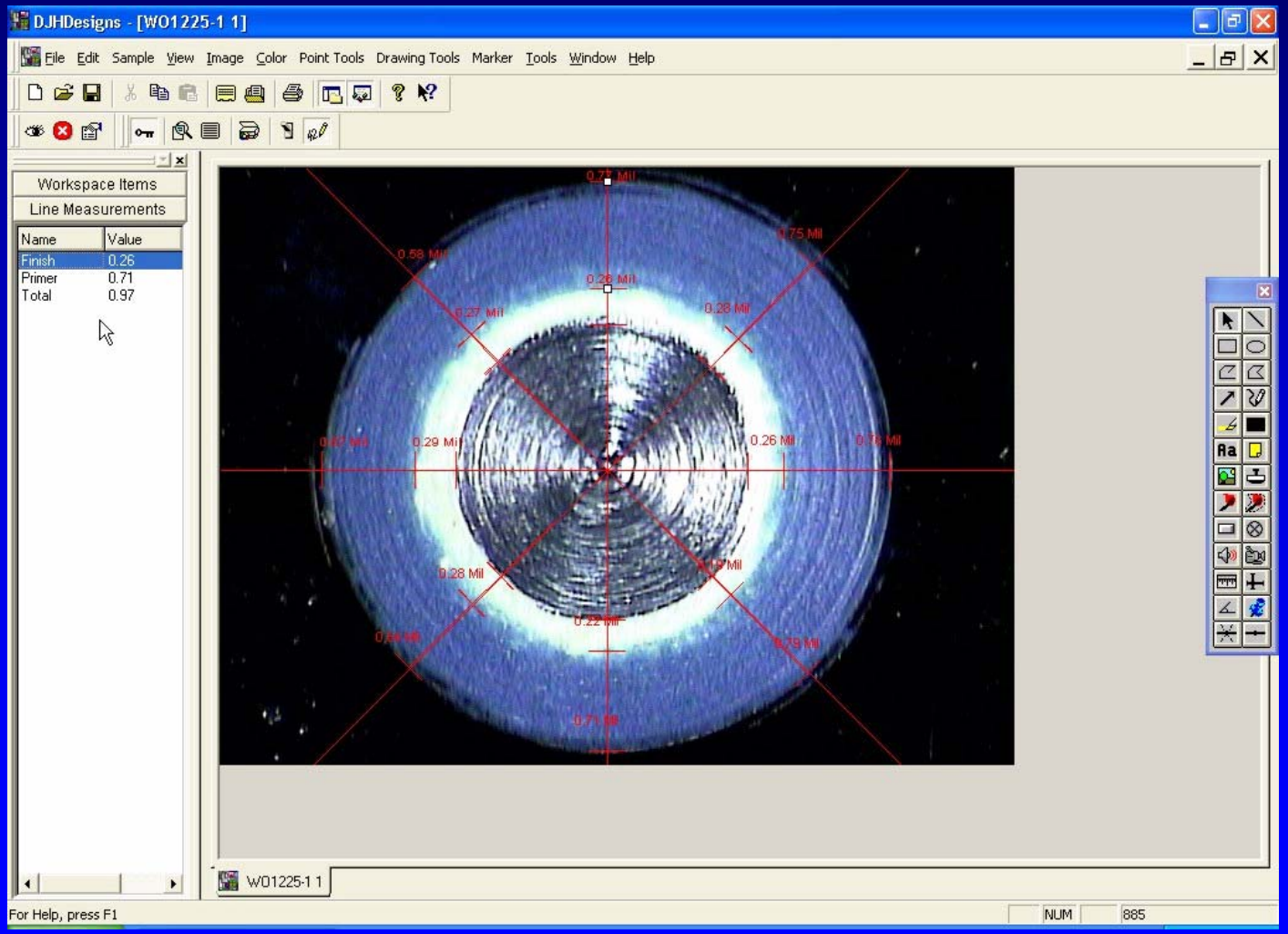


Test Procedure (화면 Capture)



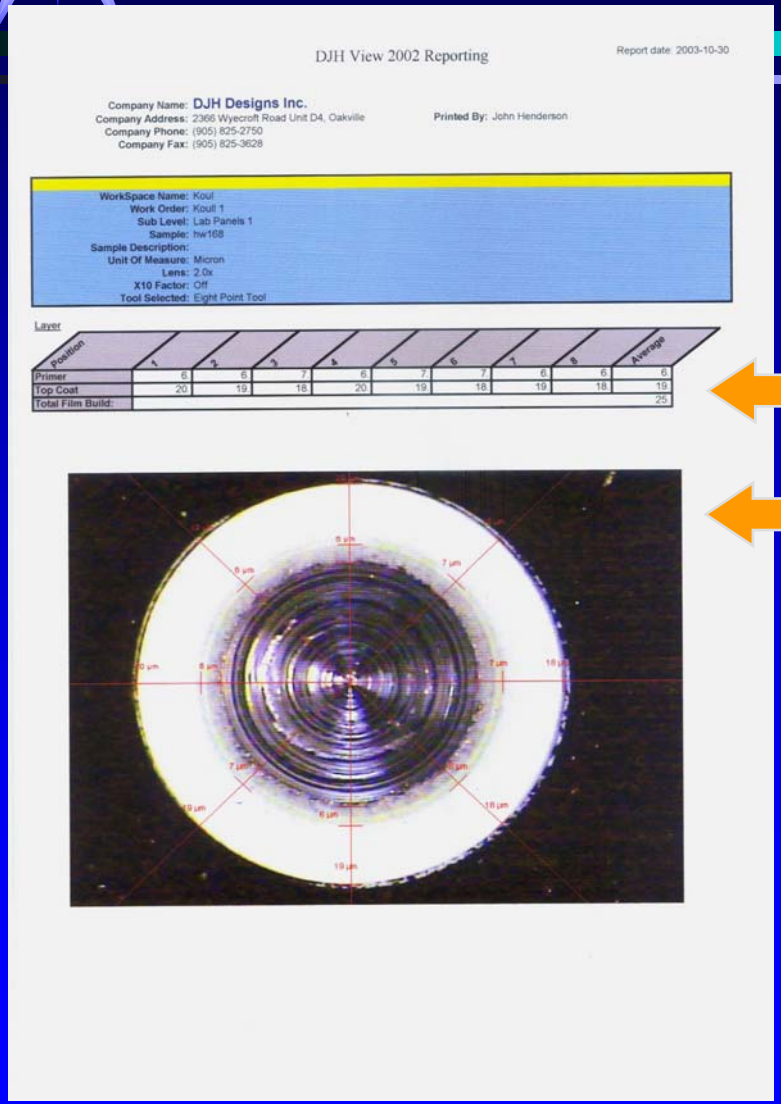
- Layer의 명확한 구분을 위해 제공된 형광등, 할로겐램프의 조사각도 조정
- 비슷한 색 구분을 위해 U, V Gain 조정

Test Procedure (두께측정)



- 안쪽 부터 마우스클릭으로 측정하고자 하는 Layer선택
- 왼쪽 Live Measurement창에 각 Layer별 평균두께 및 총 두께 표시됨.

Test Procedure (Reporting)



DJH View 2002 Reporting

Report date: 2003-10-30

Company Name: DJH Designs Inc.
Company Address: 2366 Wyecroft Road Unit D4, Oakville
Company Phone: (905) 825-2750
Company Fax: (905) 825-3628

Printed By: John Henderson

WorkSpace Name: Koul
Work Order: Koul 1
Sub Level: Lab Panels 1
Sample: hw168
Sample Description:
Unit Of Measure: Micron
Lens: 2.0x
X10 Factor: Off
Tool Selected: Eight Point Tool

Layer

Position	1	2	3	4	5	6	7	8	Average
Primer	6	6	7	6	7	7	6	6	6
Top Coat	20	19	18	20	19	18	19	18	19
Total Film Build:									25

- Excel format으로 자동으로 Report가 생성됨
- 표시내용 :

1) 각 Layer별 두께
2) 각 Layer별 평균두께
3) 전체 두께
4) bored된 화면의 사진

Calibration

- Optical Unit Calibration
  : 제품에 제공된 Glass Ruler로 0.1mm단위로 교정
  : NIST Traceable Certification.

- Borer Calibration
  : 제품에 제공된 표준 coating plate로 측정
  : NIST Traceable Certification