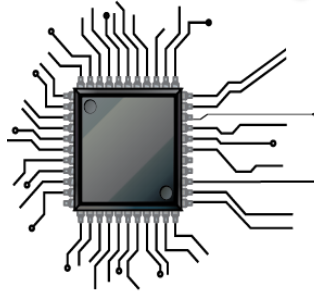


Welcome !

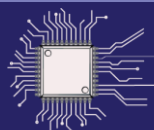


MivaCon

2021



Upgrades Segment begins at 1:00 pm Eastern US Time



MivaCon

2021

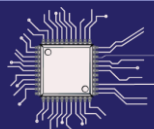
“Every man builds his world in his own image. He has the power to choose, but no power to escape the necessity of choice.”



Upgrade: DART Compliance

▪ DART Technology

- **DART:** Digitally Adaptive Rasterization Technology
- **Speed:** Ability to Rasterize at Imaging Speed
- **Precision:** Rasterization and adjustments occur at 10x imaging resolution to increase precision and eliminate pixilation error.
- **Flexible:** Permits feature measurement after develop, etch or plating.

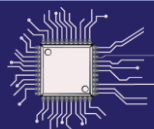




Scale on the Fly

- **DART Compliance:** Each panel is completely re-rasterized for maximum precision.
 - Measurements identify Dx,Dy in the as-built
 - Gerber data is directly scaled at the global/zone level
 - Strips are rasterized at 10x actual resolution
 - Strips are snapped to imaging resolution to eliminate pixilation
 - First strip is uploaded, imaging begins, next strip is rasterized and uploaded during strip imaging for zero delay.

- **Upgrade:**
 - Software and Firmware changes
 - Vision System Upgrade
 - Price: \$12,500 plus labor [\$10,000]
 - Price (LSU) : \$9,500 plus labor [\$7,600]





Upgrade: OS First Article

■ First Article Tool

- Converts machine into QC Tool
- Auto measure feature size at coupons
- System suggested LWC to adjust
- Post-develop or etch

■ Feedback Loop:

- Confirm feature size through total process
- Latent Image - Post-develop - Post-etch

■ Upgrade:

- Requires DART Compliance
- OS First Article : \$29,000 [\$23,200]

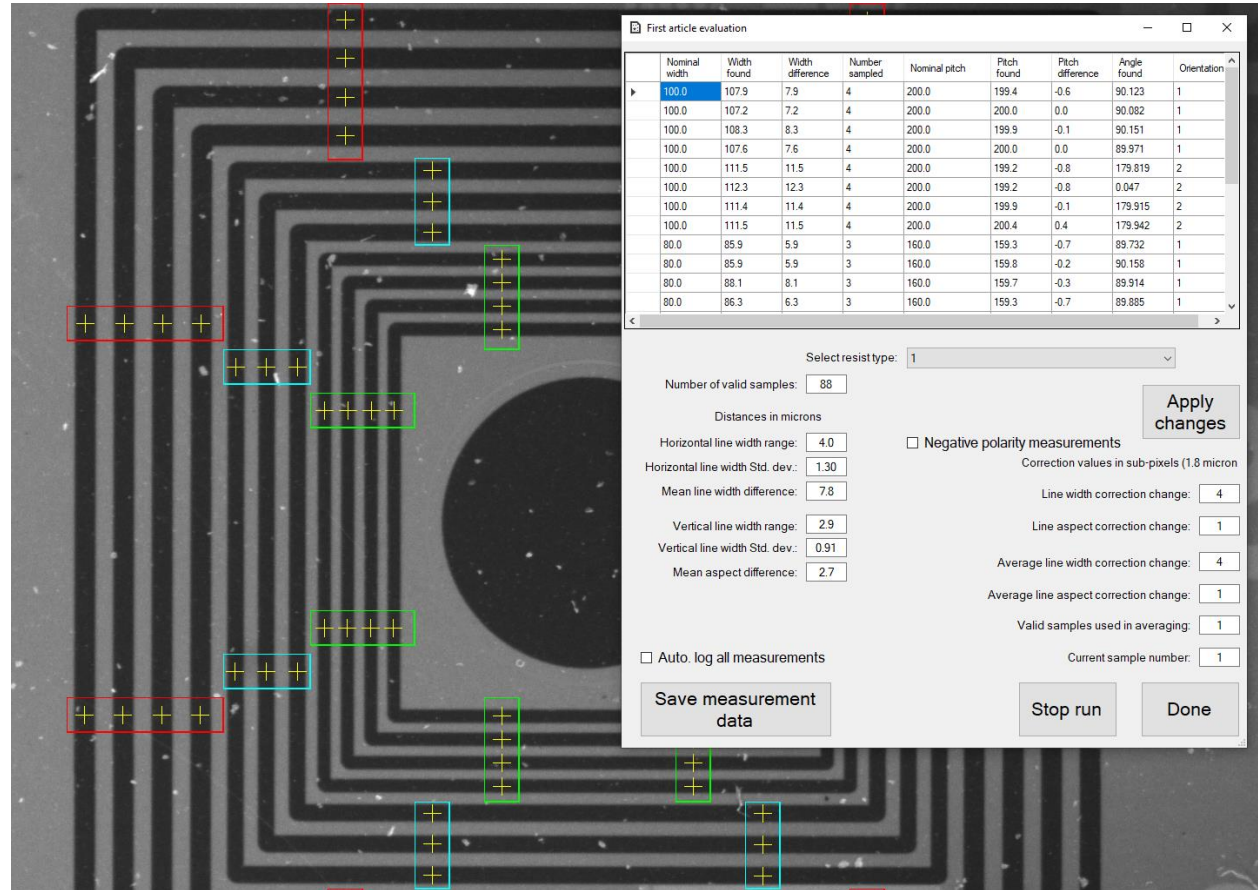




Optimize : First Article

Auto-measure:

- 96 points
- Develop or etch
- Aspect Ratio





Upgrade : OS Process Control

• Process Control Tool:

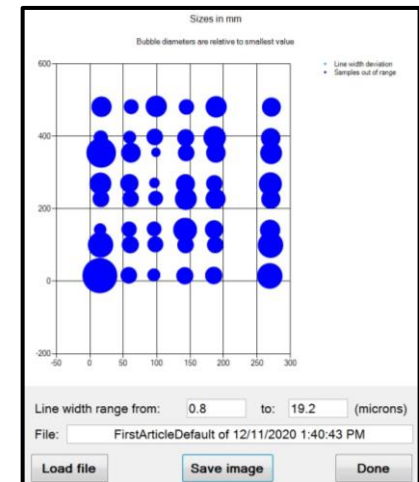
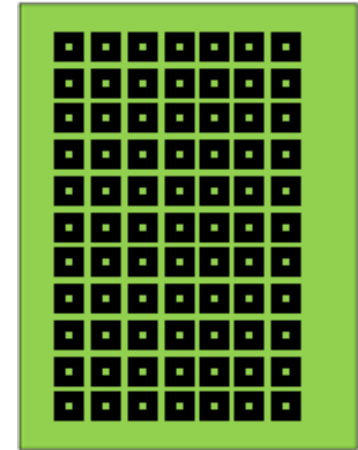
- Standard matrix of coupon elements
- Topographical map of feature size distribution
- Allows for operator level adjustments to process capabilities for etch and develop.

■ Feedback Loop:

- Determine the source of feature variation
- Latent Image - Post-develop - Post-etch

■ Upgrade:

- Requires DART Compliance
- OS First Article : \$7,500 [\$6,000]





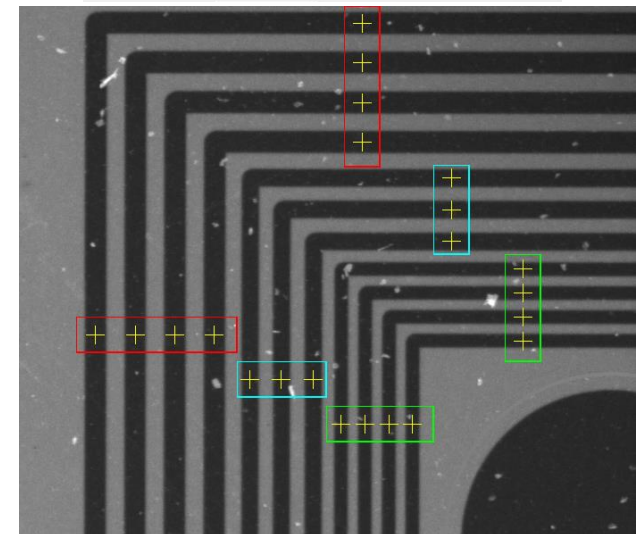
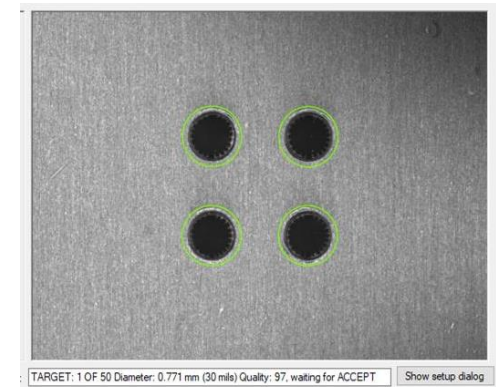
Upgrade: Vision System

■ Vision Upgrade

- Hard and software upgrade
- Improves first time pick up
- Allows for improved feature measure and detect
- Simplifies job set up and operation

■ Upgrade:

- Part of DART Compliance
- Vision Upgrade: \$9,500 [\$7,600]





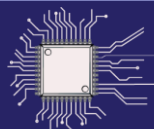
Upgrade: Windows 10

■ Windows 10 Upgrade

- Hard and software upgrade
- Windows 10 required by ITAR
- Windows 7 will no longer be supported by Microsoft

■ Upgrade:

- Operating System Upgrade: \$950 [\$760]





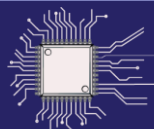
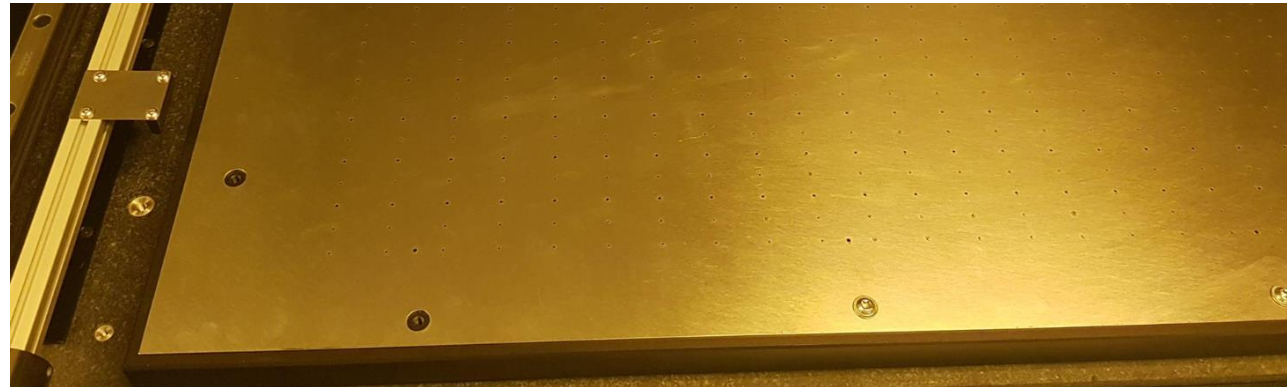
Upgrade: Vacuum System

■ Vacuum Upgrade

- Improves distribution of vacuum
- Helps overcome some additional panel warp
- Includes vacuum 'burp' to release vacuum faster for IL

■ Upgrade:

- Vacuum Upgrade: \$4,500 [\$3,600]





DART Desktop: Offline OS

- **Expected Release: October 2021**
- **Tools to measure offline**
 - Dual Camera System for Offline feature and registration confirm.
 - DART Coupon measure for linewidth after develop and etch.
 - AB Registration confirmation
- **Results:**
 - Manual approach to adjust digital linewidth compensation or calibrate AB registration.





Upgrade: Flexible Panel Clamping

- **Expected Release: October 2021**
- **Pneumatic clamping for 2000L series machine**
 - Eliminates vacuum hold down issues for warped panels
 - Clamp anywhere on the table with floating clamp system
- **Requires:**
 - Vacuum Upgrade to add magnetic concentration plate.