



# Laser Cut Stencils

Laser Cut  
Stencils



Laser Cut Stainless  
Steel and Nickel



Close Up View

AGI is now a franchise of DEK Stencils. By integrating DEKs proven manufacturing processes, quality control procedures and supply chain, we will produce a stencil that will maximize throughput and yields. AGI's proven track record of quality products and on time delivery, partnered with DEKs technical expertise, will ensure a quality product delivered to meet your needs.

Our state of the art **DEK Stencil Laser** uses a diode pumped, air-cooled, fiber laser, which produces a 19 micron beam size ensuring phenomenal cut accuracy and smooth walls. The closed loop linear actuators with glass scales mounted to an Aerotech granite gantry ensure an accuracy of 0.5  $\mu\text{m}$ . **GC-CAM PowerStation** with proprietary DEK software tools completely automates aperture modifications and provides DFM tools to ensure ideal stencil design and paste release characteristics. We 100% inspect every stencil with **ScanSTENCIL**. This creates a superior platform to provide the highest quality stencils within 24 hours.

## FEATURES AND BENEFITS

- We offer Mesh Mount, VectorGuard, and other frameless technologies.
- We offer Laser Cut Stainless Steel & Nickel, Chemically Etched Step Down and Additive Electroformed stencils.
- 150W, Air Cooled, Diode Pumped Solid State Laser with 19 $\mu\text{m}$  Beam Diameter.
- 24 hour turn times for Laser Cut stencils!
- Industry Standard and Customizable Libraries which ensures all modifications are done correctly.
- Stencil thickness: 50 $\mu\text{m}$  – 500 $\mu\text{m}$  (4 mil - 20 mil).
- Cutting accuracy: +/- 5 $\mu\text{m}$  over entire print area
- Input data: Gerbers, HPGL, DPF or AGI can scan direct from PCB
- DFM analysis ensuring proper aspect ratios for paste release for each and every stencil.
- 100% inspection, post manufacture, with ScanCAD.



DEK Stencil Laser

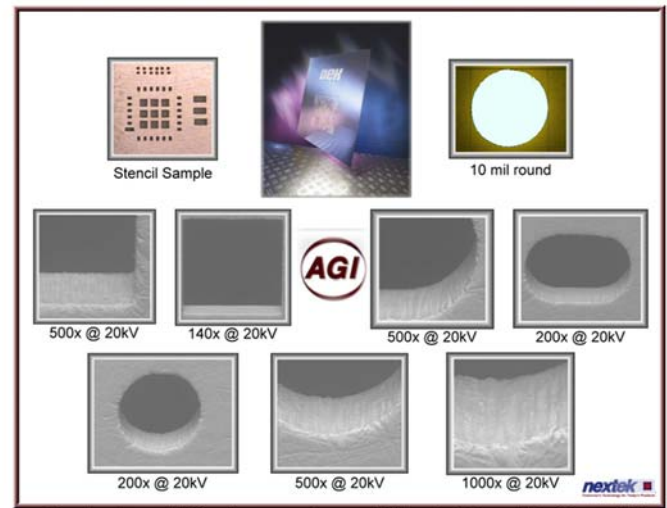
# AGI Corporation

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# With the DEK Laser, the Benefits of Electroforming are Lessened

- Laser cutting assures better geometrical accuracy than electroformed apertures and is a more repeatable process
- Traditional YAG Lasers have a >40µm beam diameter and higher power requirements.
- Using the new 150W Fiber DPSS Laser with 19 µm beam diameter, the wall smoothness is getting closer to E-form, making the benefits of electroform smaller.
- Using Nickel in the laser cut process provides better paste release compared to Stainless Steel
- Harder Nickel material enhances the stencil's lifetime.
- Laser cutting process eliminates root cause errors with less physical interventions during manufacturing.



Analysis and Photos courtesy of Nextek Inc., Madison, AL

	Laser-cutting	Laser-cutting	Electroforming
<b>Material</b>	Stainless Steel	Electroform Nickel	Electroform Nickel
<b>Hardness</b>	370HV	500HV	600HV
<b>Thickness Tolerance (% of nominal thickness)</b>	+/- 5%	+/- 5%	+/- 7%
<b>Aperture wall smoothness ( Ra )</b>	2 µm	0.8 µm	0.5-0.8 µm
<b>Dimensional Accuracy (µm/mm)</b>	0.04 µm/mm	0.04 µm/mm	0.2 µm/mm
<b>Dimensional Accuracy (over 406mm/16")</b>	16 µm	16 µm	81 µm

Data courtesy of DEK © International

## Software Specifications



GC-CAM PowerStation is the industry leading choice of software packages for the designing of stencils. The convenient design modification capability and powerful panelization and editing tools, make it a powerful stencil design tool. AGI's engineers can load your modification requirements and write a script, which will automate the stencil design process. GC-CAM PowerStation also reduces your manufacturing expenses by automatically providing DFM analysis ensuring proper aspect ratios for paste release for each and every stencil.



AGI 100% verifies the apertures using ScanSTENCIL, designed for process control, measurements and a final QC workstation after stencil manufacturing operations have been completed. This integrated package allows for 100% inspection of absence, presence and correct size of apertures in both stencils and screens.

ScanSTENCIL also performs as a calibrated scanner for additional inspection of stencils and screens. ScanSTENCIL reads from any scannable image, PCB, and hand tape layouts. The software will then confirm cut stencils and screens, verify aperture accuracy, size, blockage and stencil stretch.

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# DEK VectorGuard®

Why does AGI highly recommend the VectorGuard® System...



- **VectorGuard® is space saving.** Can easily store multiple VectorGuard® stencils in the same space as one 1-1/2" Tubular Framed stencil. It also has a larger print area than a mesh mounted stencil with the same outside frame dimensions.
- **VectorGuard® has consistent tensioning.** The stencil is mounted directly to the frame so there is no stretch like with mesh mounted stencils. A spring actuated cam tensions the stencil, not a bladder that can leak and vary the tension.
- **VectorGuard® means "no more de-bonding."** After repeated wash cycles your stencil stays intact.

## Specifications:

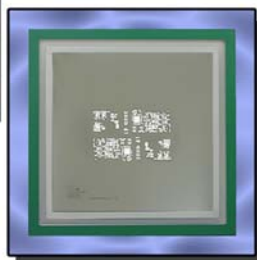


- Electroform foils, accurate to +/-8µm throughout print area
- Standard foil thicknesses: 2.95 mil to 7.87 mil and 9.84 mil
- Common Frame Sizes:  
584.2 x 584.2 mm (23" x 23")  
736.6 x 736.6 mm (29" x 29")
- Total VectorGuard® foil thickness, including aluminum extruded edge: 5mm
- Manufactured to fit most screen printing platforms worldwide

# Mesh 1-1/2" Tubular Frame or 1/2" SpaceSaver



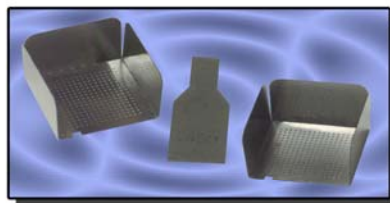
Standard



Lead Free

- Stencil thickness: 50µm – 500µm (4 mil - 20 mil).
- Cutting accuracy: +/- 5µm over entire print area
- Input data: Gerbers, HPGL, DPF or AGI can scan your PCB
- 100% inspection, post manufacture, with ScanCAD.
- Mesh, SpaceSaver and VectorGuard® available in Lead Free.
- Lead Free frames coated with durable Polane paint.
- Common Frame Sizes:  
584.2 x 584.2 mm (23" x 23")  
736.6 x 736.6 mm (29" x 29")

# BGA Rework Kit



AGI's BGA Rework Kit comes with two stencils and a squeegee blade that easily fits into your standard blade handle. You can get the stencils either flat or with the bent tabs, as shown, for easier handling.

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