

Update ESR Laser Cutting

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Materials

Genmitsu CFL55P Compressed Spot
Fixed Focus Laser Module

- 5.5W diode laser.

- Wavelength 445nm

Genmitsu 3018-PROVer V2 CNC Router
Machine

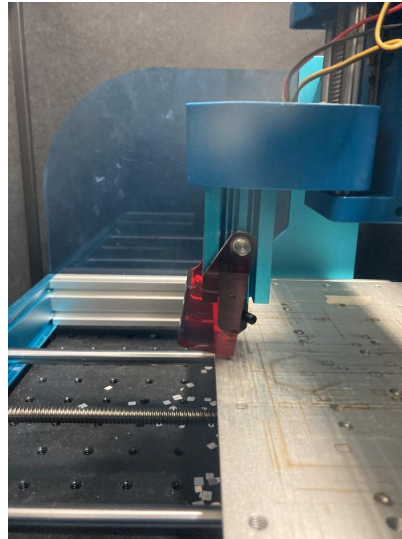
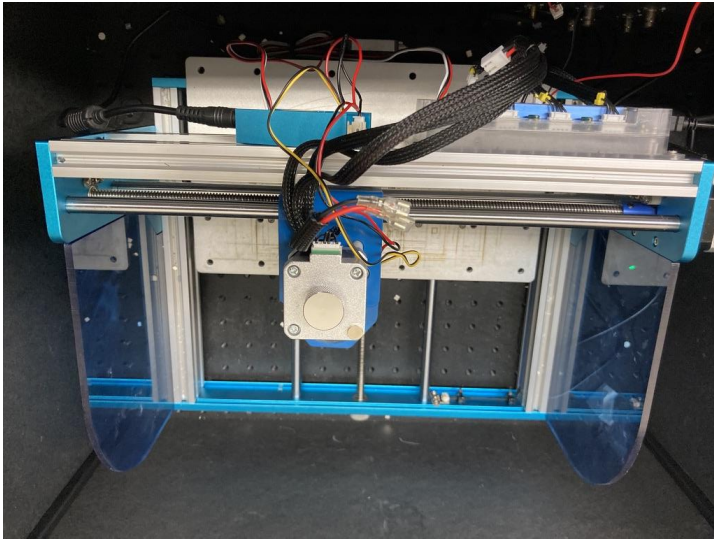
LaserGRBL Software

Fusion360 CAD Software



Set Up

Laser component attached to CNC Machine, and placed in a dark box for safety.

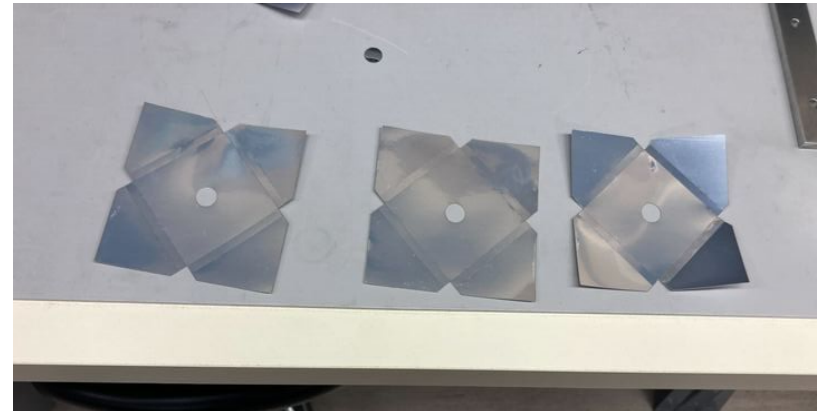
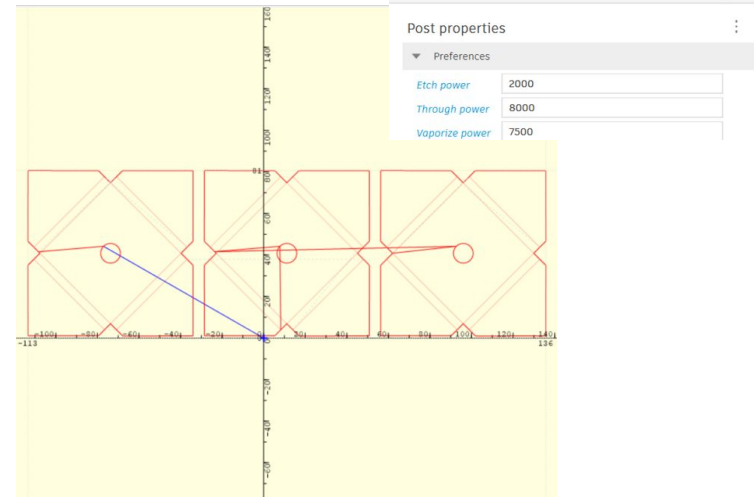


Update Procedure:

Improved procedure allows foil to be cut and create folds without having to paint with black sharpie.

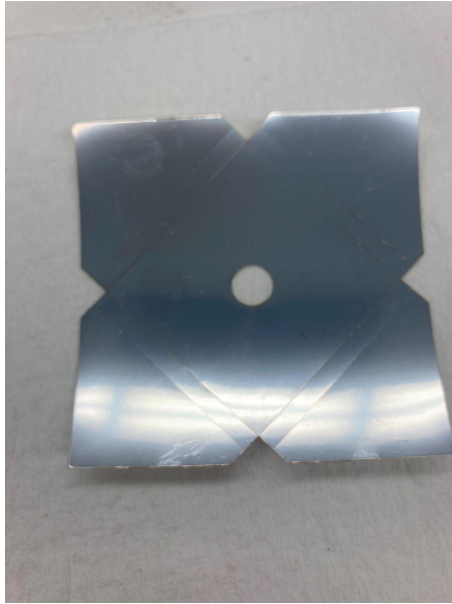
Time it takes to cut three at a time is 7 min per foil

Foil must be as flat as possible for best results.

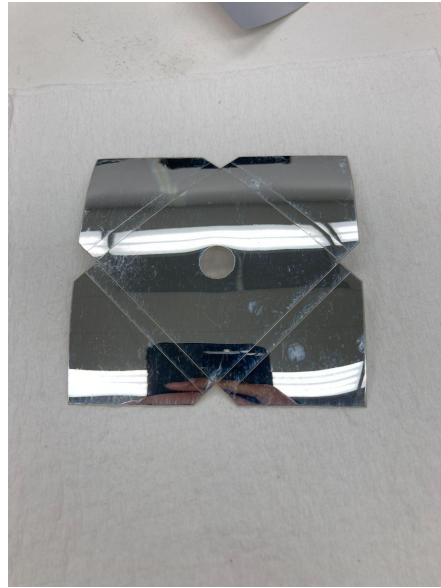


Procedure Results

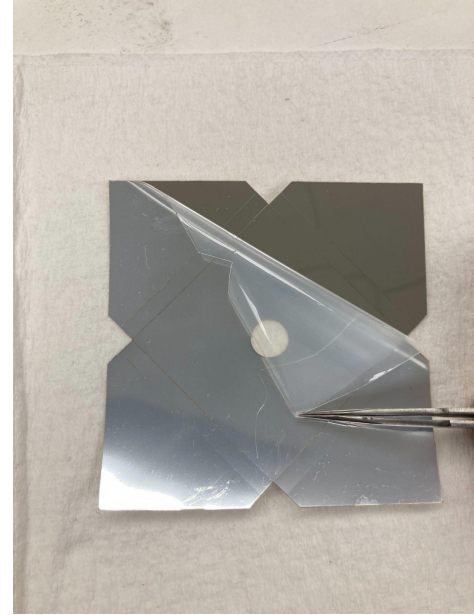
One side(top side) may look stained due to laser. This side is not the side in contact with the scintillator.



Bottom
Side

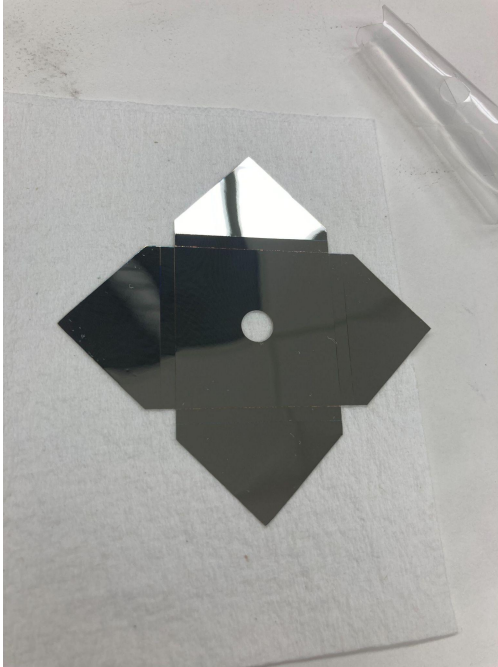


Top
Side



This shows the side that faces
the scintillator being peeled.

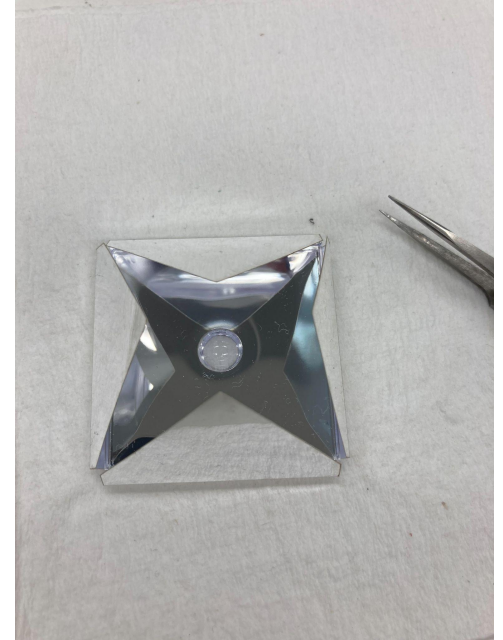
Procedure Results



Laser cut sides with etched folds.



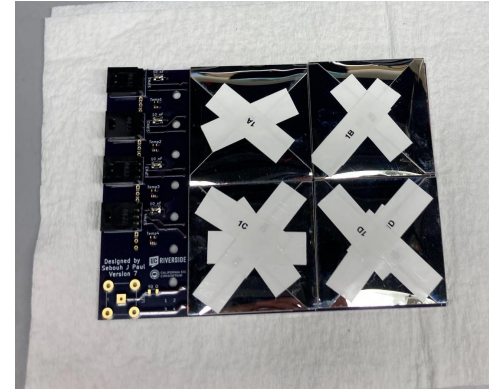
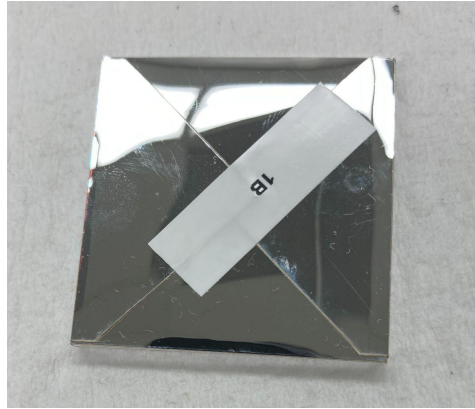
Folds are made.



Scintillator is placed

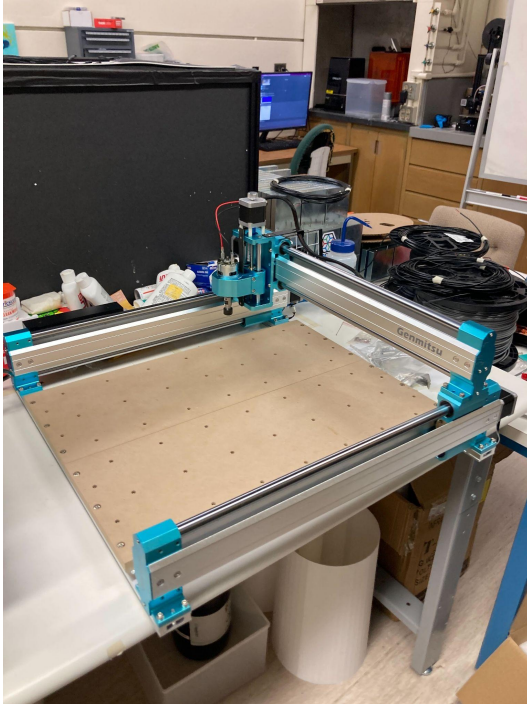
Procedure Results

Scintillator is wrapped and taped over.



Future Set-Up

Future plans are to use a larger CNC Machine for a larger Board.



Big Picture

Goal: To develop a cost-effective, scalable, easy-to-use, geographically distributed way to produce large quantities of SiPM-on-tile tiles.



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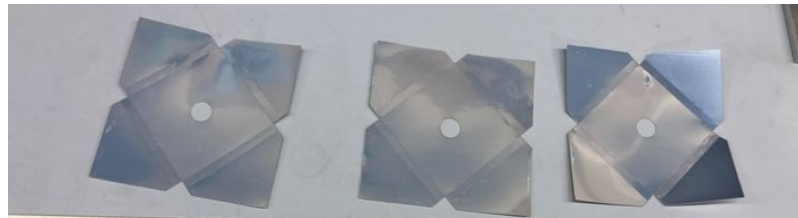
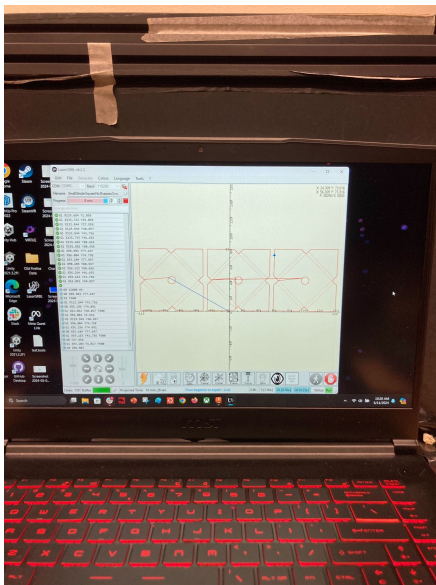
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Conclusions

New updated procedure with desktop CNC and laser is working.

Updating now to bigger CNC to get larger number of ESR foils in one shot

Goal to get cheap scalable way to produce ESR foils is near completion