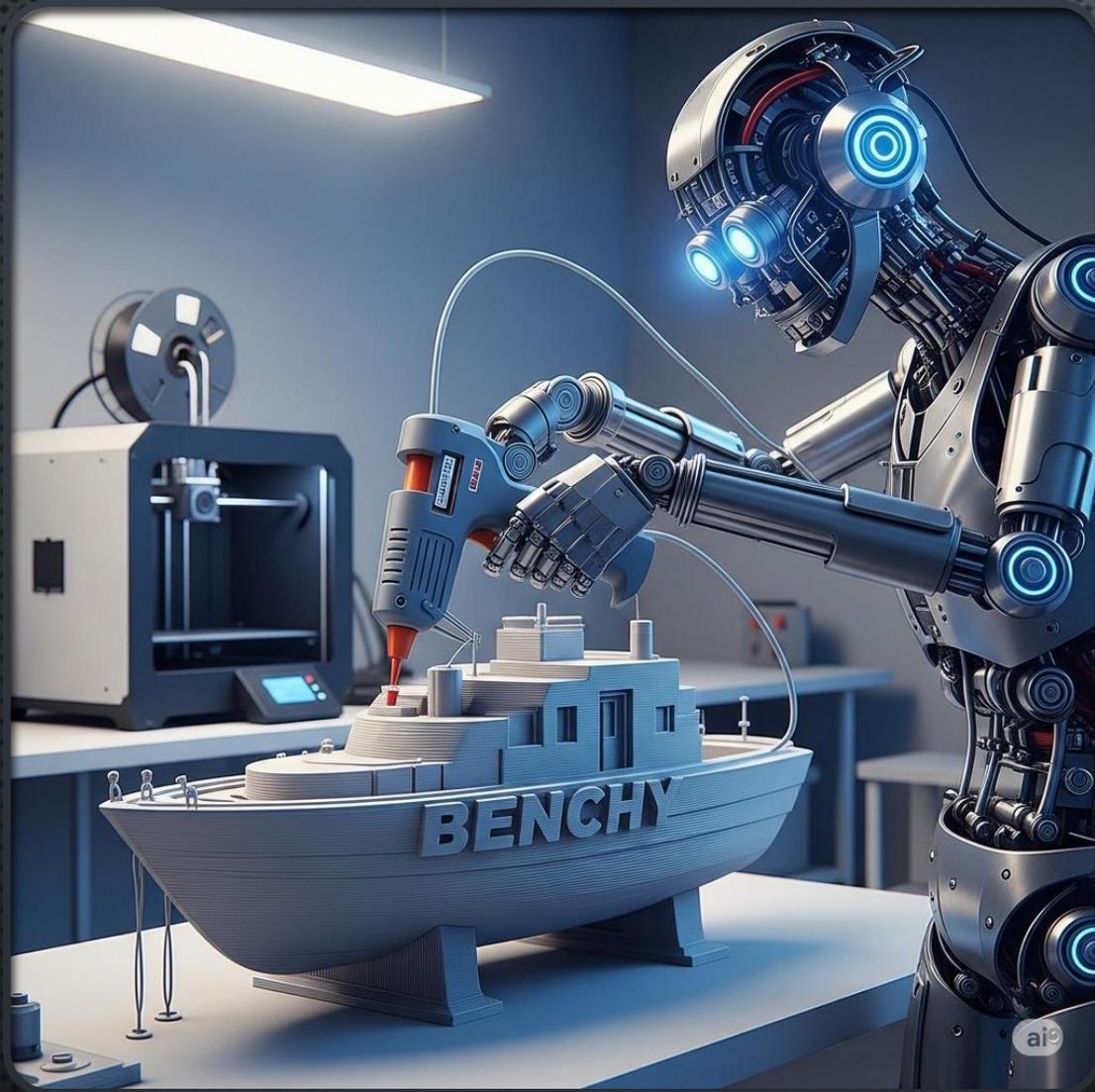


GETTING STARTED WITH 3D PRINTING

TOM, N8FDY

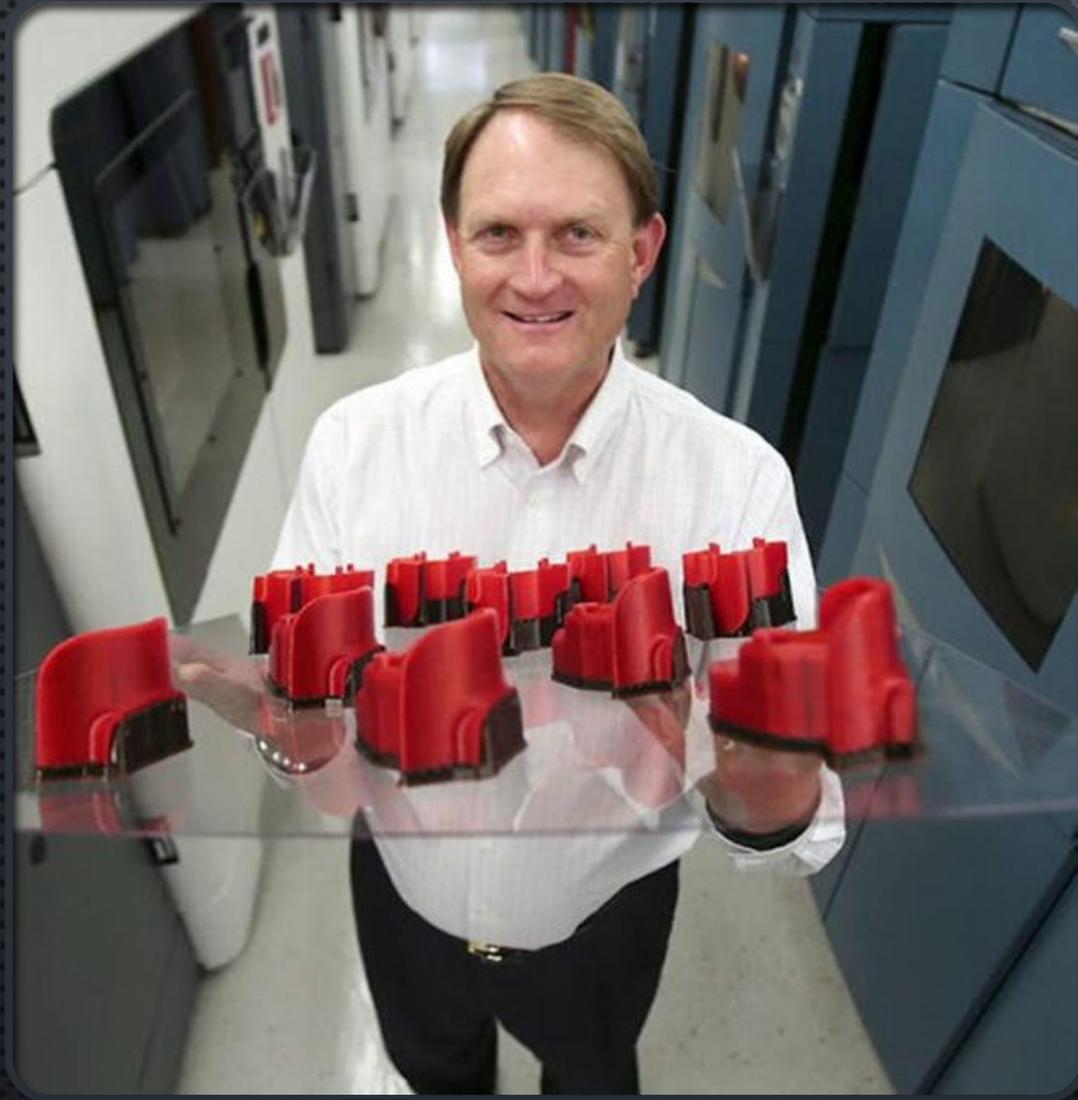
AGENDA

- WHAT IS 3D PRINTING
- HOME USE OF 3D PRINTING
- HOBBY USE OF 3D PRINTING
- GETTING STARTED
- THE PROCESS
- WHAT COULD GO WRONG
- QUESTIONS



WHAT IS 3D PRINTING

- ADDITIVE MANUFACTURING
- FUSED DEPOSITION MODELING (FDM)
[TRADEMARK BY STRATASYS]
- FUSED FILAMENT FABRICATION (FFF)



INVENTOR OF FDM 3D PRINTING

SCOTT CRUMP INVENTED FUSED DEPOSITION MODELING (FDM) 3D PRINTING TECHNOLOGY IN 1988, WITH HIS WIFE LISA CRUMP, FOUNDING STRATASYS TO COMMERCIALIZE IT THE FOLLOWING YEAR.



MY FIRST 3D
PRINTER IN 2017

MONOPRICE MP SELECT MINI



MY SECOND 3D PRINTER 2018

CREALITY ENDER 3

CREALITY



MY THIRD 3D PRINTER 2018

CREALITY ENDER 5 PLUS



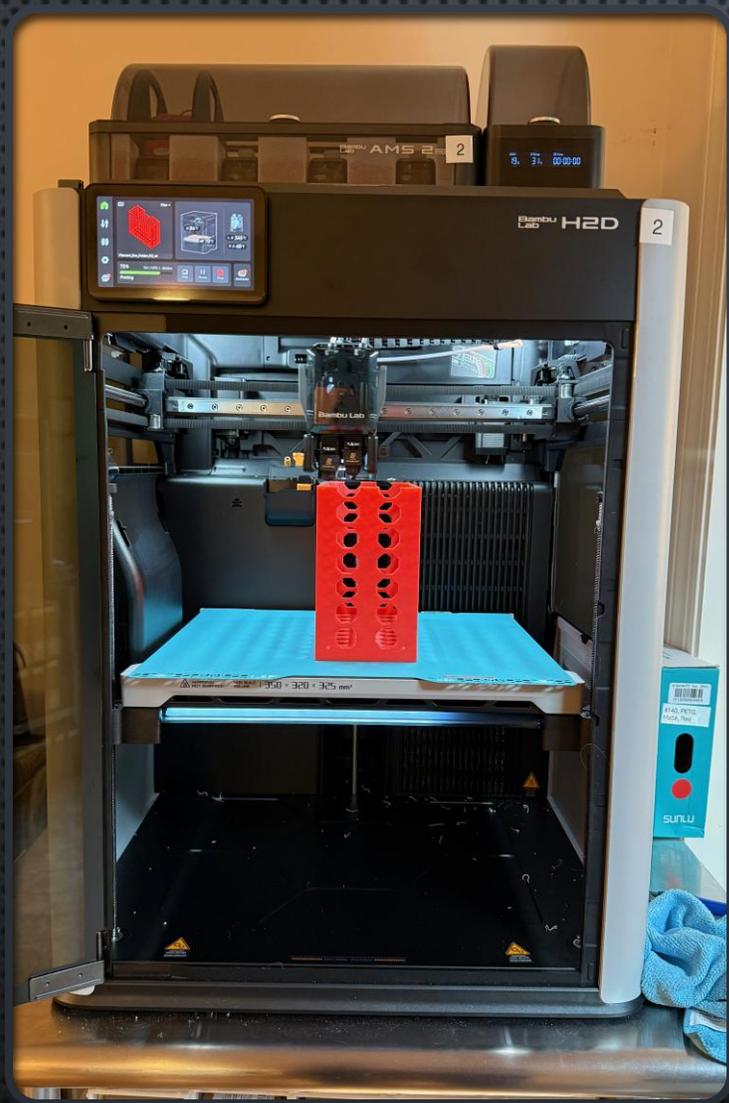
MY FOURTH 3D PRINTER 2025

QIDI PLUS 4



MY FIRST MULTICOLOR 3D PRINTER 2025

BAMBU LAB A1 COMBO



MY SECOND MULTICOLOR 3D PRINTER

BAMBU LAB H2D

HOME USE OF 3D PRINTING: DECORATION



HOME USE OF 3D PRINTING: DECORATION



HOME USE OF 3D PRINTING: DECORATION



HOME USE OF 3D PRINTING: DECORATION



HOME USE OF 3D PRINTING: KITCHEN



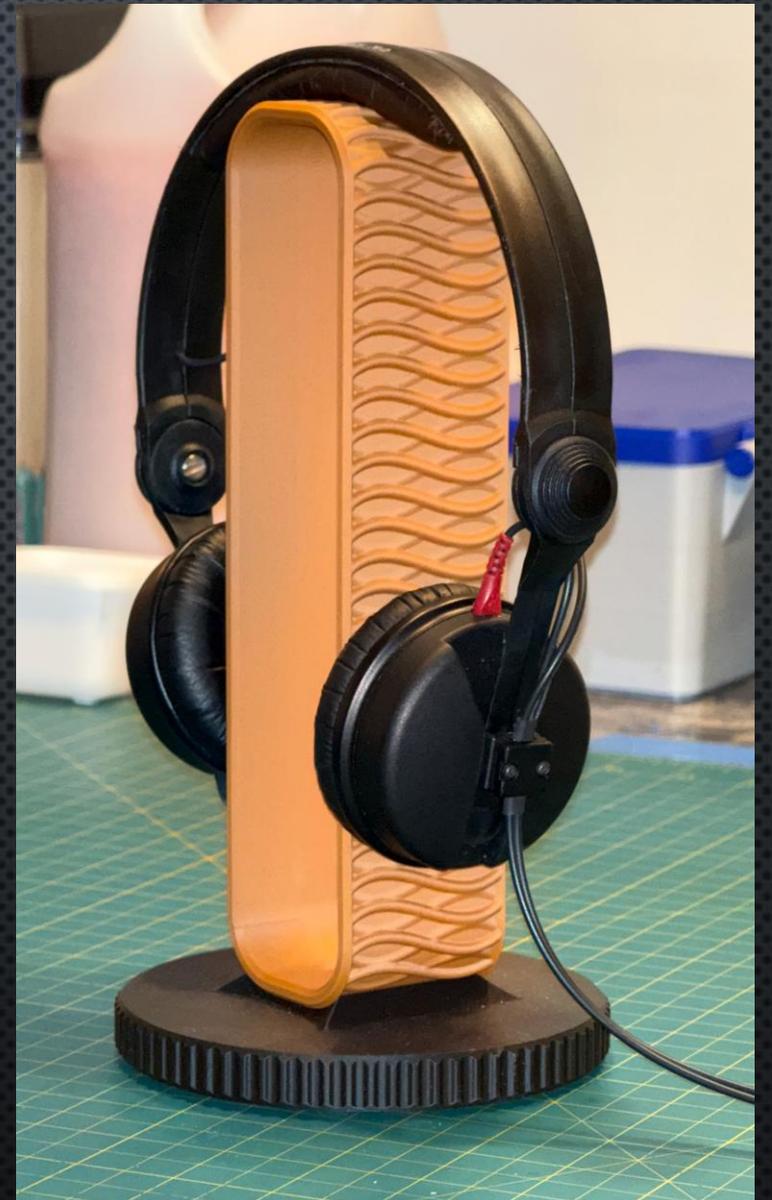
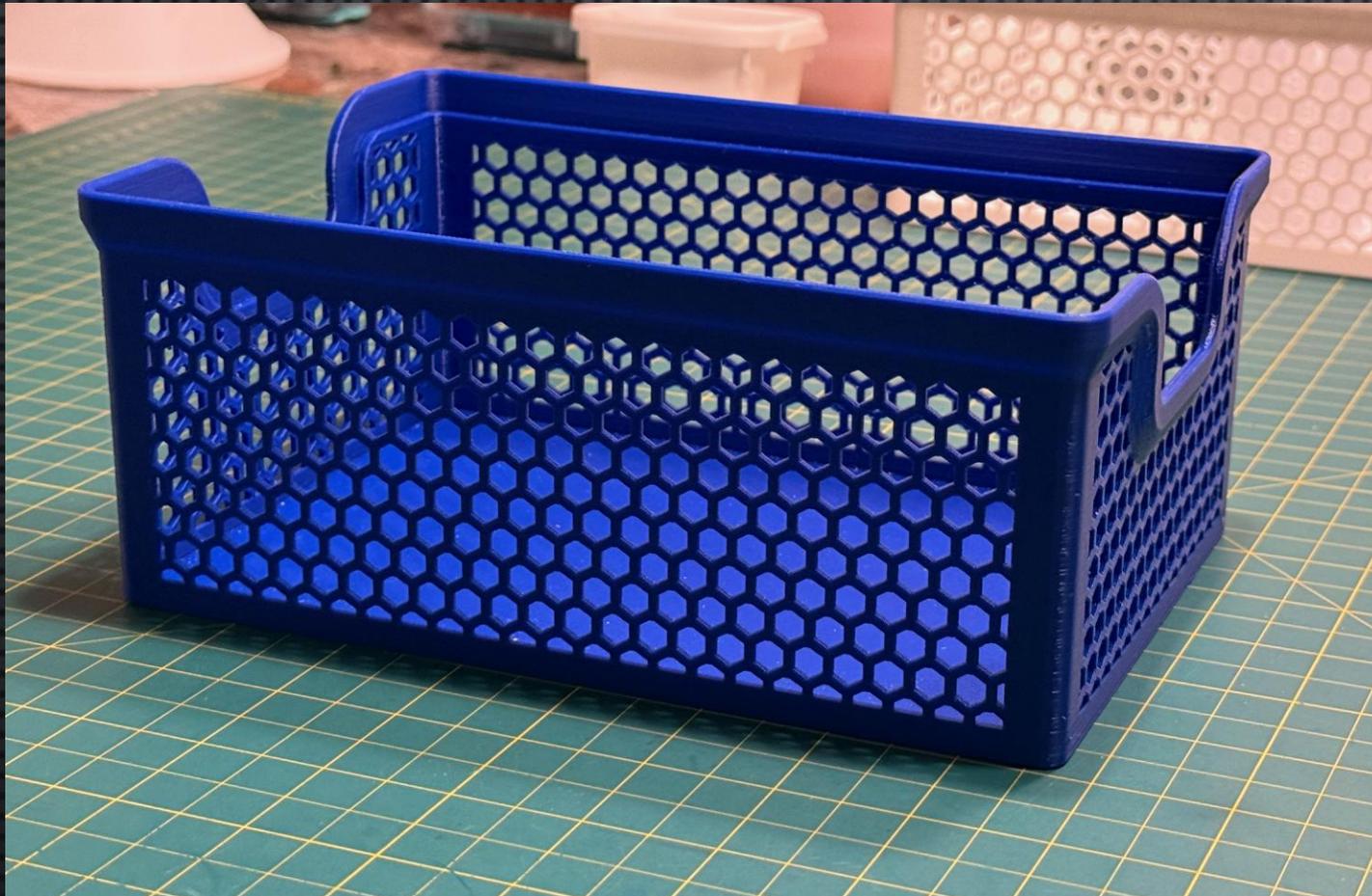
HOME USE OF 3D PRINTING: KITCHEN



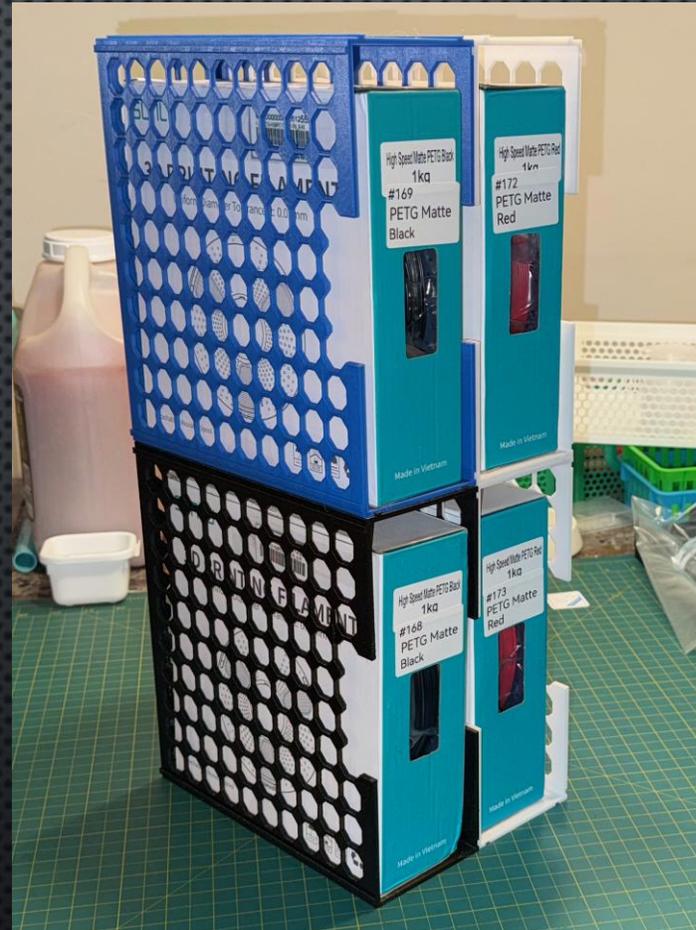
HOME USE OF 3D PRINTING: KITCHEN



HOME USE OF 3D PRINTING



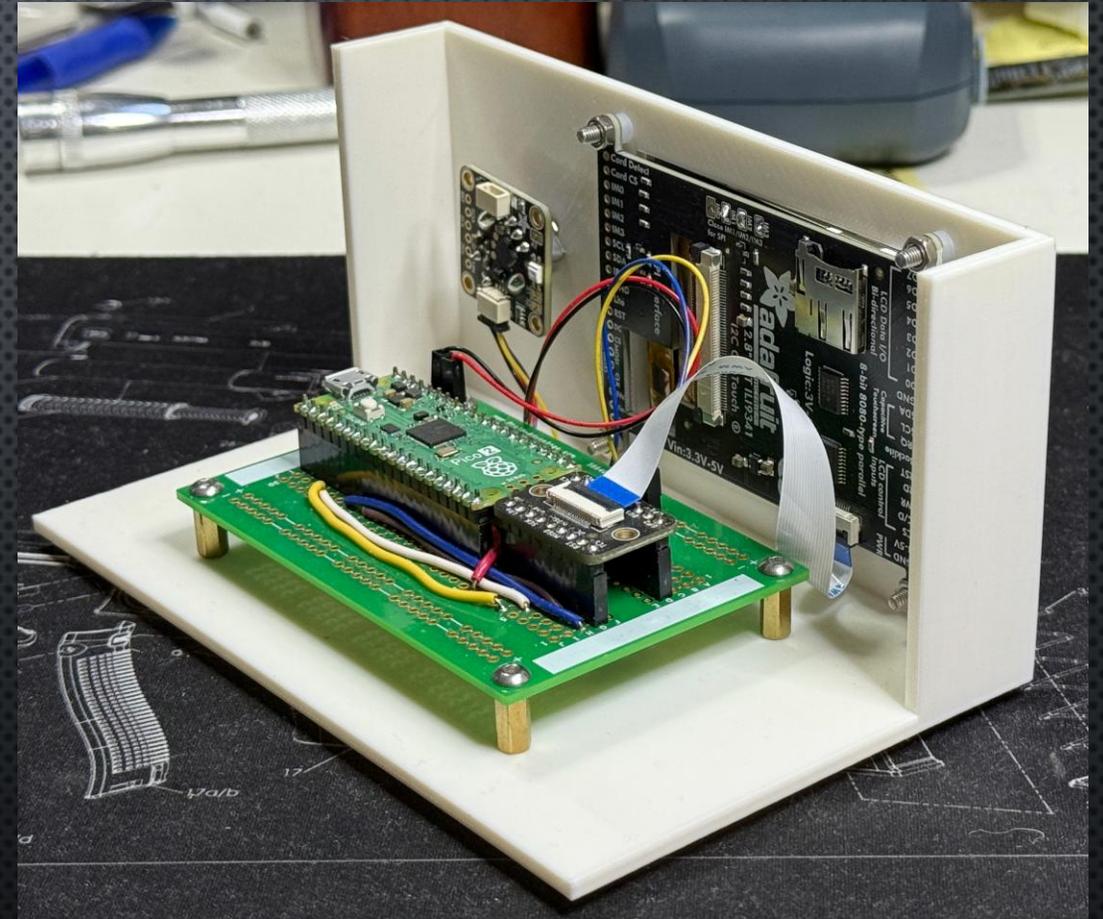
HOME USE OF 3D PRINTING



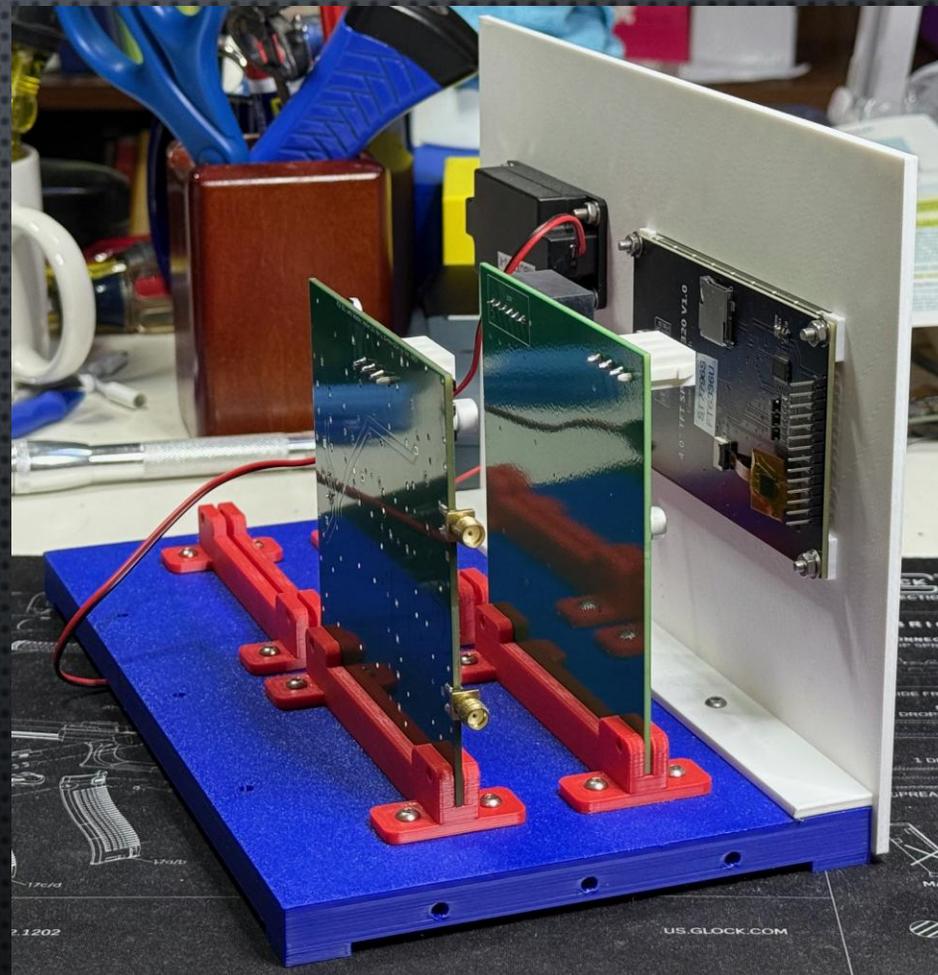
HOME USE OF 3D PRINTING



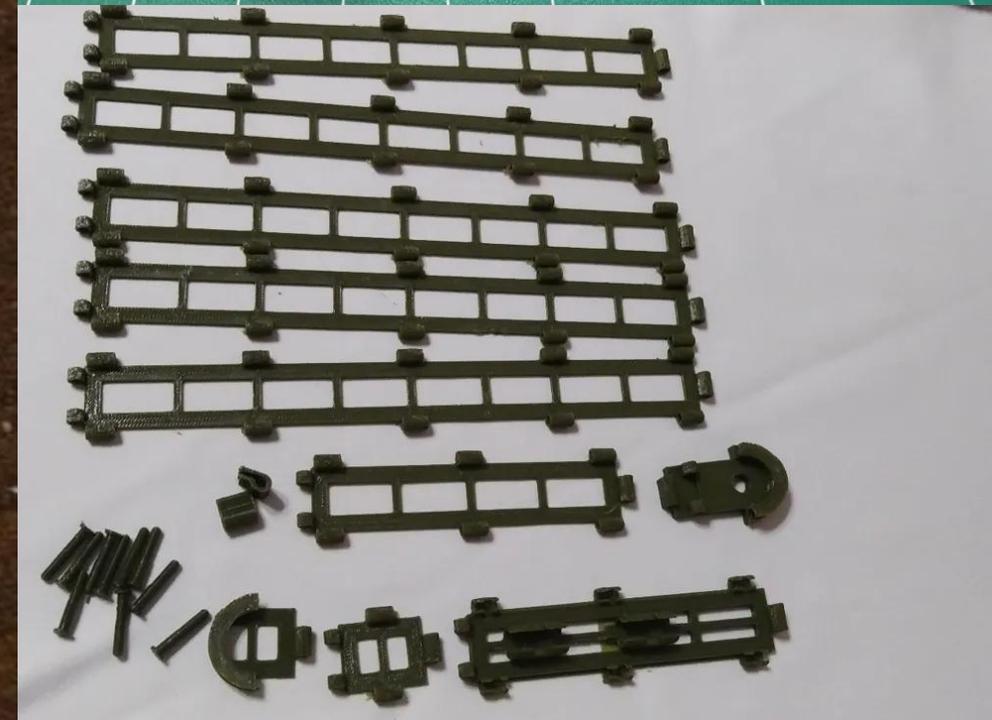
HOBBY USE OF 3D PRINTING: MICROCONTROLLERS



HOBBY USE OF 3D PRINTING: RADIO



HAM RADIO USE OF 3D PRINTING

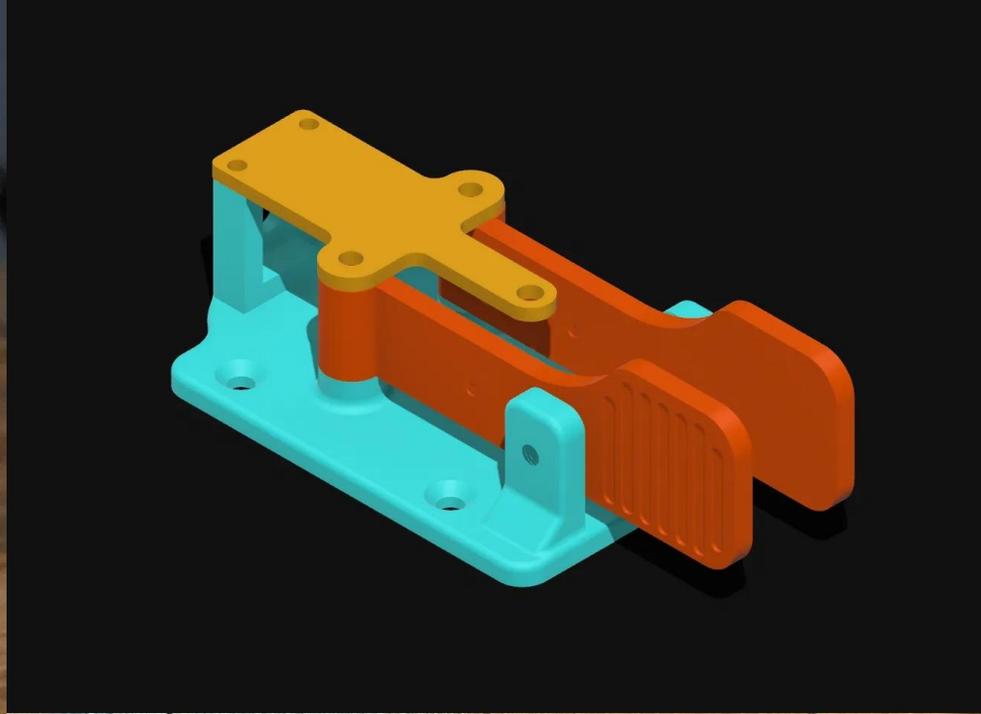


HAM RADIO USE OF 3D PRINTING





HAM RADIO USE OF 3D
PRINTING



GETTING STARTED: QUESTIONS

Why do YOU want to do 3D printing?

How much will you print a month?

How much can you afford to spend on a printer?

How much can you spend on filament?

Can you get a friend to 3D print things for you?

Is it cheaper to use a printing service?

GETTING STARTED: 3D PRINTING SERVICE

- CUYAHOGA COUNTY PUBLIC LIBRARY
- LORAIN PUBLIC LIBRARY, AVON BRANCH
- \$0.10 A GRAM, \$1 MINIMUM
- ONLY PLA FILAMENT
- MUST SUBMIT FILE IN STL FORMAT, LIMITED TO 30MB
- MUST BE LEGAL TO PRINT AND NOT VIOLATE ANY LIBRARY POLICY

GETTING STARTED: ENTRY LEVEL 3D PRINTER

- SINGLE-COLOR:
 - BAMBU LAB A1 3D PRINTER \$349.00
 - 4 ROLLS OF FILAMENT \$64.38
 - TOTAL BEFORE TAX AND SHIPPING \$413.36
- MULTI COLOR:
 - BAMBU LAB A1 COMBO 3D PRINTER \$499.00
 - 8 ROLLS OF FILAMENT \$128.76
 - TOTAL BEFORE TAX AND SHIPPING \$627.76

GETTING STARTED: SINGLE VS MULTI COLOR

Feature	Single-Color Printer	Multicolor Printer
Cost & Simplicity	Low cost, easy to use, minimal hardware	Higher cost, more complex setup and maintenance
Creative Possibilities	Limited to one color or manual changes	Automatic color swaps, with some printers multi-material use
Speed & Waste	Fast with minimal waste	Slower, more filament wasted on purging/swaps
Best For...	Functional parts, simple prototypes, low budget	Prototyping, visually appealing models, design precision

PROCESS: HINTS

- LEARN TO LOVE THE METRIC SYSTEM



- PRINTS TAKE A LONG TIME

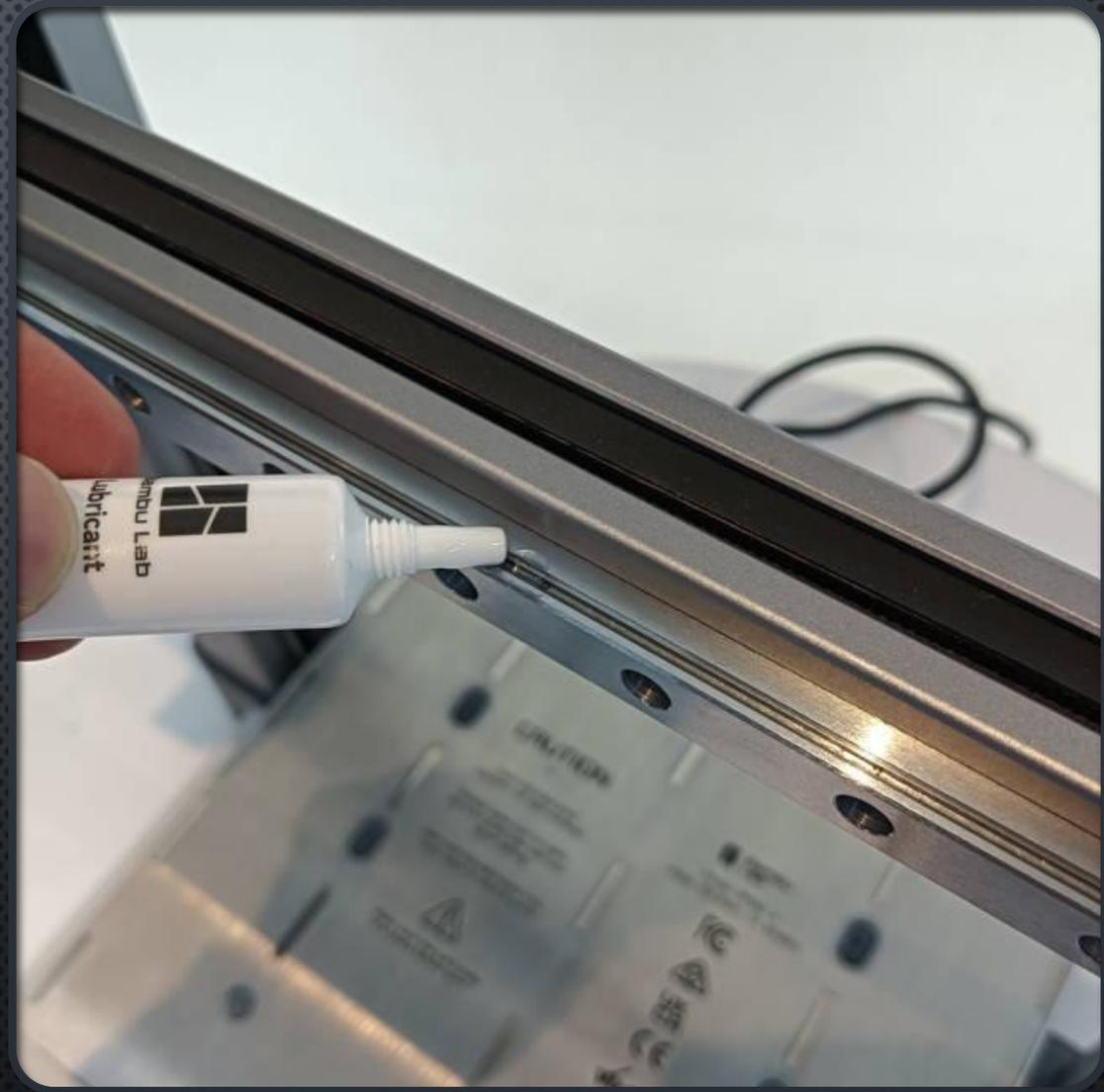


PROCESS: TOOLS



PROCESS: MAINTENANCE

3D PRINTERS REQUIRE
PERIODIC CLEANING,
OILING AND GREASING



PROCESS: MAKING A PRINT

1 A FIND A MODEL TO PRINT

OR

1 B DESIGN A MODEL TO PRINT

2 DECIDE WHAT FILAMENT TO USE AND MOUNT IN ON THE 3D PRINTER

3 SLICE THE MODEL TO CREATE G-CODE

4 SEND THE G-CODE TO THE PRINTER

5 WATCH THE PRINTER TO MAKE SURE THE FIRST LAYER IS OK

6 WHEN THE PRINT IS DONE, REMOVE THE PRINT FROM THE BUILDPLATE

PRINT PROCESS: FIND A MODEL TO PRINT

MY FAVORITE SITE: MAKERWORLD: [HTTPS://MAKERWORLD.COM/](https://makerworld.com/)

BEST SEARCH RESULTS:

THANGS: [HTTPS://THANGS.COM/](https://thangs.com/)

PRINTABLES: [HTTPS://WWW.PRINTABLES.COM/](https://www.printables.com/)

CULTS3D: [HTTPS://CULTS3D.COM/](https://cults3d.com/)

OTHERS IN NO PARTICULAR ORDER:

THINGIVERSE: [HTTPS://WWW.THINGIVERSE.COM/](https://www.thingiverse.com/)

ULTIMAKER MAKERBOT MERGER ARTICLE: [HTTPS://WWW.PRNEWSWIRE.COM/NEWS-RELEA...](https://www.prnewswire.com/news-relea...)

MYMINIFACTORY: [HTTPS://WWW.MYMINIFACTORY.COM/](https://www.myminifactory.com/)

CREALITYCLOUD: [HTTPS://WWW.CREALITYCLOUD.COM/](https://www.crealtycloud.com/)

MAKERWORLD



3D Models Laser & Cut Models Contests Crowdfunding Forum Maker's Supply MakerLab CyberBrick Community



Categories

All

3D Printer

Art

Education

Fashion

Hobby & DIY

Household

Miniatures

Props & Cosplays

Tools

Toys & Games

Generative 3D Model

Model Tag

Featured Exclusive CyberBrick

Maker's Supply Customizable

Parametric

3D Models

Explore our 'All' category, containing our entire collection of 3D printing models in one place. Browse through our diverse range of models and find the perfect one for your project or personal use. Start discovering and creating with our 3D printing models today!

Trending Boosts Newest Downloads Likes Random 7 Days



GripFix - The ultimate fitment
Acki3DPrint
101 3.4 k 3.3 k



Handicap Dog Cart
Bubbles2Legs
985 1.9 k 226



Cylinder Tambour Box | Rolling
Matthew Ghost
72 1.4 k 1.9 k



Strong Rugged Case
FlorinV
76 690 617



Urban Ghost - Multi-Part Skull
Slevin
54 960 2 k



Panther F Medium Tank Pz...
Bavaria_3D Tanks
41 407 415



Mini Screen Hexo Shelf
Daniele
23 728 353



Hornet - Hollow Knight : Silenced
mail.iou
56 782 938



Batman Wallet - ID and Card Holder
cositas con alma
19 1.5 k 1.9 k

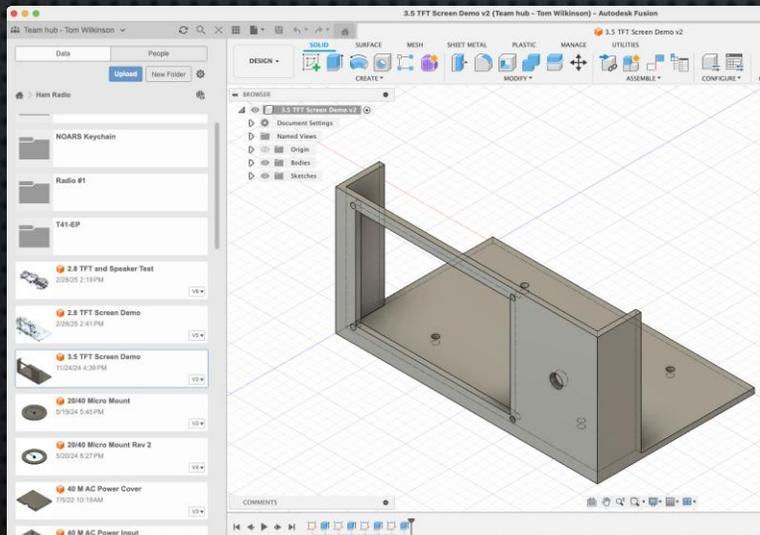


Flexi Track Fidget Toy
SOFUN_ART
33 1.2 k 4.6 k

PRINT PROCESS: DESIGN A MODEL TO PRINT

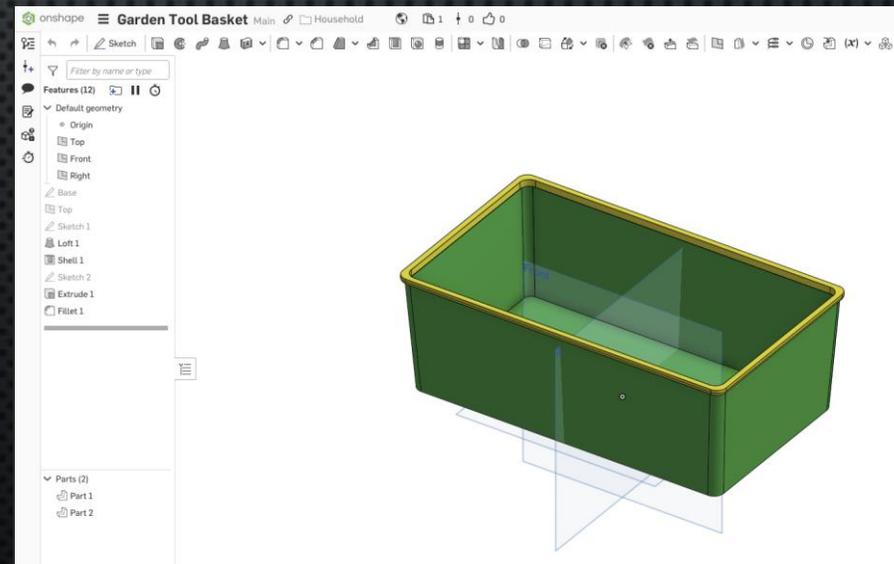
AUTODESK FUSION

- FREE LIMITED VERSION FOR NON COMERITAL USE
- NEED POWER GRAPHICS PC WITH WINDOWS OR MAC OS
- ALL DOCUMENTS ON THE CLOUD



ON SHAPE

- FREE VERSION ALL YOUR DOCUMENTS ARE OPEN TO THE PUBLIC
- RUNS ON ON THE CLOUD USING A BROWSER
- ALL DOCUMENTS IN THE CLOUD



PRINT PROCESS: FILAMENT CHOICE

PLA (POLYLACTIC ACID)

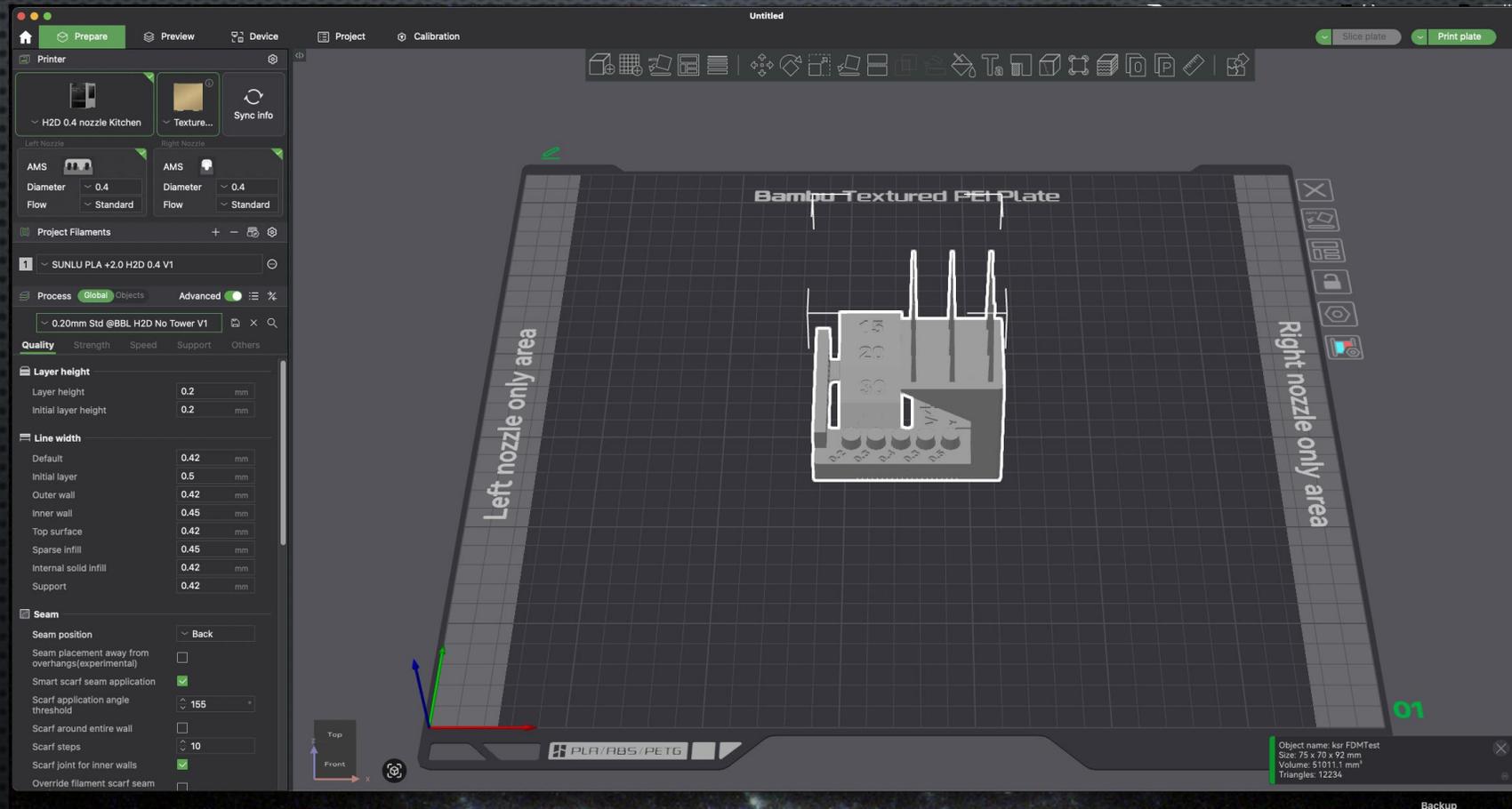
- ✓ EASY TO PRINT
- ✓ BEAUTIFUL FINISH AND FINE DETAIL
- ✓ GREAT FOR POST-PROCESSING
- ✓ ECO-FRIENDLY
- ❑ BRITTLE AND LESS DURABLE
- ❑ POOR HEAT AND UV STABILITY

PETG (POLYETHYLENE TEREPHTHALATE GLYCOL)

- ✓ ENHANCED DURABILITY
- ✓ GREAT FOR FUNCTIONAL PARTS
- ✓ STRONGER LAYER BONDING
- ✓ BETTER HEAT AND UV RESISTANCE
- ❑ PRONE TO STRINGING AND OOZING
- ❑ HARDER TO POST-PROCESS

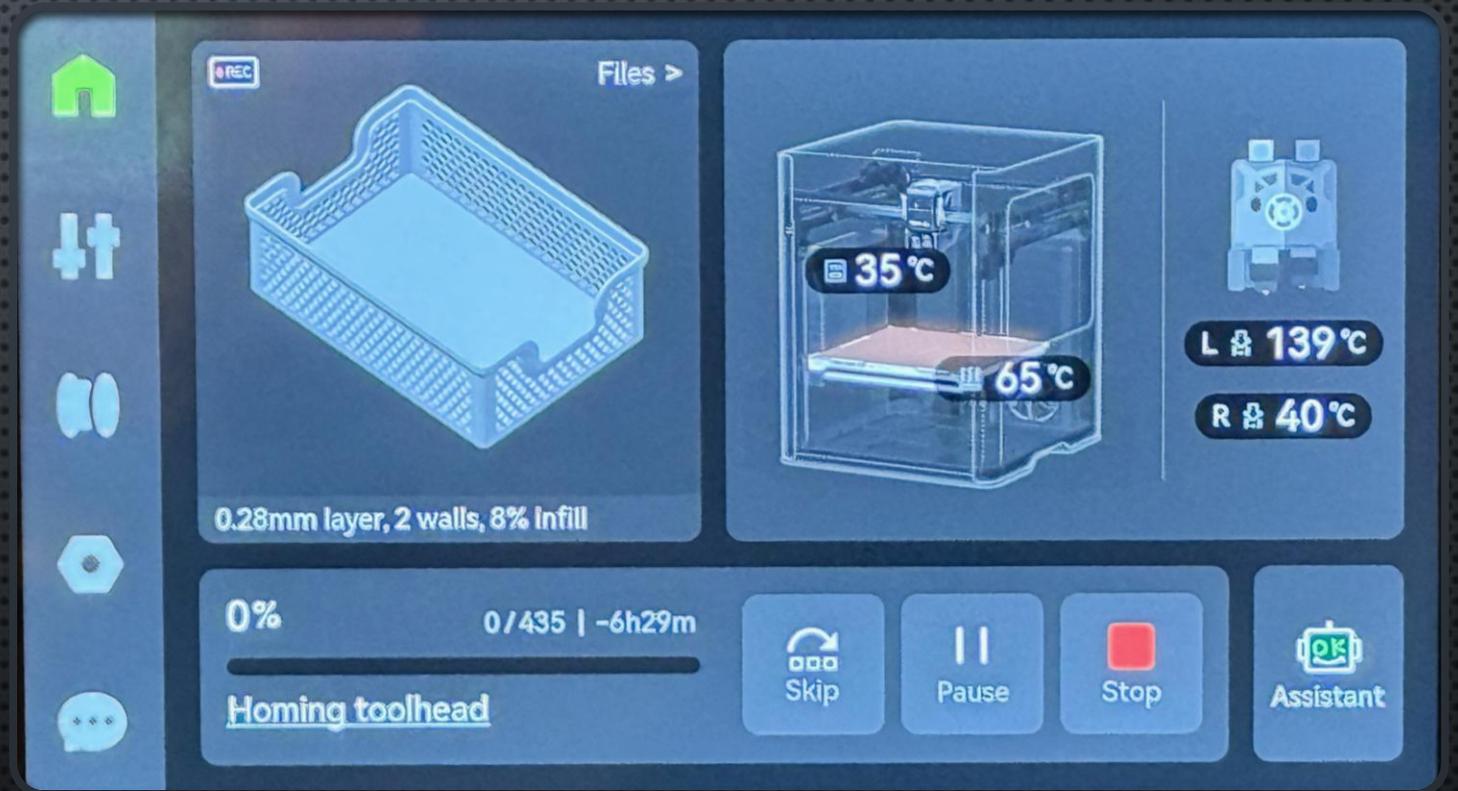
PRINT PROCESS: SLICE THE MODEL

USE THE SLICER SOFTWARE YOUR PRINTER MANUFACTURER RECOMMENDS



PRINT PROCESS: PRINT

- IF YOUR 3D PRINTER IS ON WI-FI OR ETHERNET YOU CAN SEND THE G-CODE FILE TO THE PRINTER
- OR YOU CAN COPY IT TO A USB DRIVE OR SD CARD DEPENDING ON YOUR 3D PRINTER'S HARDWARE



THE PROCESS: FINISHED PRINT





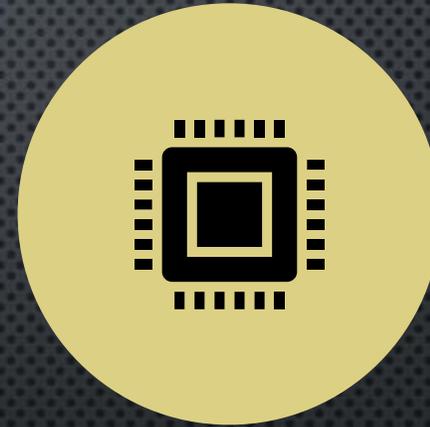
WHAT COULD GO WRONG

- BUILD PLATE RUINED - \$70
- HOTEND WRECKED - \$21
- SILICON SOCK MANGLED - \$1
- HOTEND HEATING ASSEMBLY CLOGGED - 4 DAYS FOR TECH SUPPORT TO TELL ME HOW TO FIX IT

WHAT COULD GO WRONG



YOU ARE THE ON-SITE
REPAIR TECHNICIAN



YOU ARE THE ON-SITE
SOFTWARE SUPPORT

QUESTIONS?