

[Re]Verse Pitch Competition – 2019

re:3D Inc



Executive Summary

Manufacturer – 3D Printers – Printing from Waste

Development stage
Growth

Year founded
2013

Funding Opportunity
The prize money allows us to go beyond feasibility and directly towards tweaking our printer to print the ground-up PC Sheets from HID Global and purchasing a grinder. We will be printing and designing objects for sale (furniture, art, etc) to be printed here in Austin. We will also work with ATI and IC2 at UT as part of a pilot program on the circular economy.

PROBLEM/OPPORTUNITY

While the \$7B 3D printing market has become increasingly competitive, concentration within the industry remains low. This fragmentation implies a compelling market opportunity for new entrants such as re:3D. However, four limiting factors constrain the market potential of industrial 3D printing: cost, printer size, printing speed & access to input material. re:3D is actively addressing these limitations through pellet extrusion.

With over \$5M in sales and penetration into multiple verticals, re:3D is poised to capitalize on the industrial 3D printing segment that is growing at over 15% annually. The ability to print from pellets & recyclables promises to open new markets and double sales within one year of commercialization.

HID Global, an Austin-based company, is currently producing 900 lbs of clean PC waste per week. That waste could be put to use in our Gigabot X 3D printer for design, research, and printing in Austin.

SOLUTION/PRODUCT

Gigabot, re:3D's flagship technology is cost/scale the most affordable industrial 3D printer on the market, distinguished by a modular frame and a commitment to owners that all improvements & re-designs will be offered as retrofit kits. Loyal customers thus become accounts, continuously purchasing enhancements and consumables as the technology evolves. This platform has been modified to print from filament or pellets.

The dream has been to print from trash. Our Gigabot X (GBX) 3D printer is that dream realized. The [re]verse pitch material, polycarbonate (PC), is an amazingly robust polymer that has many different applications. We will be designing and printing from this material here in Austin, and the prize money will go towards the purchase of a grinder (to make the PC into useable pieces) as well as building a GBX printer that will live in Austin. This printer will be installed as part of a pilot program with ATI/IC2 for circular economy research at UT. The printer and grinder will also be available for the Austin community and other businesses who want to test the viability of printing from their waste-streams of plastics.

Currently re:3D is manufacturing the beta GBX units that will be going out to a select number of buyers. We have had an extremely large group of interested businesses that want to purchase the GBX once it comes onto the market. There is a secondary opportunity that we could become a materials supplier by selling the ground up PC to our GBX customers. This will be relatively small market and opportunity, because shipping trash defeats the purpose of curbing CO2 emissions and other goals associated with using local waste as a printing medium.

Product: Along with the potential to sell ground PC in small batches to local companies. We are planning to stand up a project we call Designed: by re:3D. We will be creating small-batch one-of-a-kind objects (furniture, art pieces, sculptures, etc) and putting them up on our webstore. The Designed: by re:3D aspect of our company will be based in Austin, using waste from Austin, printed in Austin, and designed in Austin.

POTENTIAL RETURN/REVENUE MODEL

The majority of the return is in the potential for robust research on printing from plastic waste, which in turn will result in more sales of our 3D printers. The market for 3D printing is massive: AT Kearney reports that globally, 3D printing is anticipated to increase manufacturing jobs by 30% in 5 years. According to Gartner 40% of manufacturers (a \$12T industry) are planning to invest in 3D printing in the next 5 years.

Our products to be sold via Designed: by re:3D we expect a minimum of a 50% profit margin to as high as 175% - as the increase in speed and decrease in feedstock costs of printing with GBX may greatly increase our ability and profitability to churn out products. Further our profit margin for PC regrind that we could sell would be a minimum of 70% but could realistically be much higher.

COMPETITION

Re:3D is focused on the large-scale but affordable 3D printing market. There are very few competitors currently vying for the pellet/trash printing market in an affordable way. The largest competitors in the general 3D printing market are 3D Systems, Stratasys, EOS, BigRep – the lowest priced printers from these direct competitors is still +300% more expensive than our GBX.

Current direct competitors with Pellet Printing 3D printers:

Feature	Gigabot X	Titan	Cosine AM1	SeeMeCNC	Fouche	Delta Wasp	Cinnctinati	DPP XLS
Machine Type	Cartesian	Cartesian	Cartesian	Delta	Cartesian	Delta	Cartesian	Cartesian
Open Source	Yes	No	No	Yes	No	No	No	No
Cost	\$15,000.00	\$52,000.00	\$72,000.00	\$49,000.00	\$12,000.00	\$28,000.00	\$250,000.00	\$49,000.00
Industrial Extruder Screw	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Unlimited Customer Support	Yes		No, One Year	Yes	No	Yes	No	No
Build Size	600mm x600mm x600mm	762mm X 762mm X 1143mm	1100mm x 850mm X 620mm	1117.6mm Diameter x 2895.6mm	1000mm x 1000mm x 1000mm	1000mm Diameter x 900mm tall	3556mm x 1651mm x 863.6mm	1200mm x 1200mm x 400mm
Advertised Print Materials	Recycled and virgin: PP, PET, ABS, PLA, PE	ABS, PLA, PETG, Nylon, TPE, Ninjaflex, adanced materials	ABS, PLA, TPU, PC-PBT, mixed materials	PLA	PLA	PLA, ABS, ASA, PETG, FLEX, TPU, PP, ABS+PC	ABS, PPS, PC, PLA, and PEI	PLA, ABS, Nylon, Ninjaflex, PVA, and HIPS
Max Print Temperature	350C	380C	400C	260C	230C	260 C	350C	350C
Can print flake	Yes	Untested	Yes	Untested	Untested	Untested	Yes	Untested
Training, Warranty, and Maintenance Services	Yes	2 day of training with purchase + 1 year warranty upon purchase.	One Year Support, Support classes for different materials	One day of training, onsite install, 90 day warantee	One day of training at facility, one month of phone calls, and year of emails	Mandatory course and onsite install	Yes	No
Extruder Sold Separately	Yes	No	No	No	No	No	No	No
Can be adapted to other printers	Yes	No	No	No	No	No	No	No

ENVIRONMENTAL IMPACT

The potential to upcycle otherwise discarded post manufacturing waste is the main environmental impact. Current global estimates show that only 9% of the world’s plastics have been recycled since the 1950s. Research on printing directly from plastic waste is still on-going, but the potential to use and re-use and re-use again waste plastics is the ultimate vision of a circular economy.

Further research and study is necessary, but re:3D envisions a world where plastics no longer have to be thrown away. To take waste and turn it into anything, sounds like magic, but it is our reality through the GBX. We also want to encourage and empower HID Global to print from their own waste stream as well (since they already 3D print), which would further reduce the amount of PC waste that they are creating.

ECONOMIC IMPACT

We believe that this product will impact the world. Specifically, for the Austin economy, there is the potential to create at least 1 additional job in the short term for the processing of the waste plastic from HID Global, but our goal is to continue to grow our presence in Austin. Impact on Austin businesses would be a distinct possibility, as our pilot program with UT would allow for research and use of our GBX 3D printer. Further – standing up a GBX printer and grinding system within Austin would allow for other businesses to validate using their own waste streams as a potential 3D printable resource. Finally, turning this post-manufacturing waste into products within the Austin community, and further reducing the landfilling of plastic wastes, will have far-reaching effects.

THE TEAM

re:3D is comprised of former NASA technicians, strategists, & engineers that have the knowledge to execute their vision and can easily customize Gigabot to support problem-solvers worldwide.

Matthew Fiedler – Co-Founder – Bachelor’s and master’s from University of Nebraska in Manufacturing Engineering Technology and Biomechanics and Biomedical Engineering. Matthew previously worked at the Biomechanics Laboratory, NASA JSC.

Samantha Snabes - Co-founder - Samantha is an active contributor to re:3D’s material and applied research activities. Previously, she served as the Social Entrepreneur-in-Residence for NASA HQ and Deputy Strategist at NASA JSC.

Jeric Bautista – Bachelor’s in Mechanical Engineering from RPI, concentrating on Design, Innovation, and Society. Previously a lead for Design for America, Jeric creates products designed with the user in mind.

Michael Strong – Master’s degree in Technology Commercialization from UT, McCombs School of Business. And a Digital Design and Fabrication certificate from the Hudson Valley Advanced Manufacturing Center at SUNY New Paltz.

EXECUTION PLAN/GO TO MARKET STRATEGY

With the receipt of this prize we will go from a feasibility study of – can we print from PC waste? To having a printer that is specifically used to print from PC waste in Austin. The planned partnership with the University of Texas ATI/IC2 institute, will provide access to facilities to pilot 3D printing from locally sources reclaimed plastic in Austin.

We estimate that specific sales from this prize money will be in the printing of furniture and design/art pieces that we will be creating in-house here in Austin. Further, we believe that our current customers would benefit immensely from clean, PC re-grind. Which means there would be further opportunity to sell ground up PC as a material supplier.

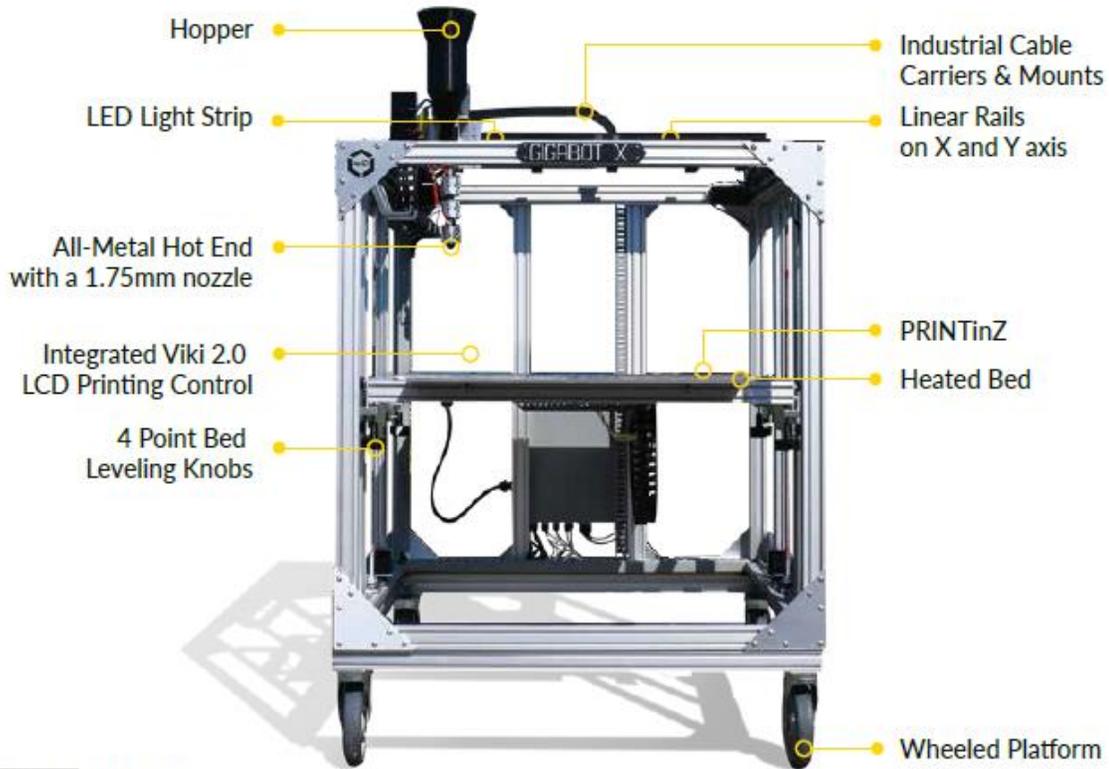
The benefit of this prize-money goes beyond just sales from re:3D’s perspective. It allows us to focus on a waste-stream, create community partnerships, and encourage more businesses to print from waste.

MEET YOUR



GIGABOT[®] X

Affordable | Quality | Industrial | Hand Crafted



PRICES \$15,000

BUILD VOLUME 590 x 600 x 600mm

3D PRINTING AT THE Human Scale

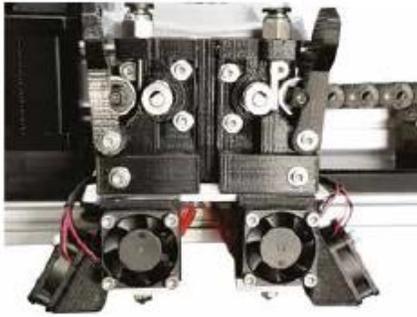
Industrial 3D printing is now affordable. The massive print volume starts at 30X larger than desktop 3D printers, at a fraction of the cost of industrial systems.

FOR HIGH-STRENGTH Materials

Print with thermoplastics that melt below 320°C, Gigabot's all-metal hot end opens the door to a wider variety of 3D printing materials, including both high-strength and heat-resistant plastic filaments.

MODULAR, LIFETIME Construction

Free from the constraints of product versioning, the Gigabot® platform enables user upgrades and customization. No machine will fall behind with new features available as add-on packages.



DESIGN & RESEARCH FOCUSED ON YOUR NEEDS

Full Service Solutions

re:3D is ready to assist you with your industrial large scale 3D printing needs.

Our team is experienced in fabricating build-to-spec modified hardware for specialized print requests and available to support material selection, design, contract printing, education and consulting needs.

Simply email info@re3d.org for a quote and to speak with an expert who can advise you on our services to take you from idea to print.

Printing Specs



All-Metal
Hot End



Supports
Any 1/8 inch cube
plastic granules



100-300 Micron
Layer Resolution



60-100 mm/sec
Printing Speed



1.75 mm
Nozzle Diameter



Robust Aluminum
Cartesian Frame



Cast Aluminum
Blanchard Ground
Flat Build Plate

Software



Micro SD or USB
File Transfer
Method



VIKI 2.0 LCD
Bot Control



Compatible with
Mac, Windows
and Linux OS



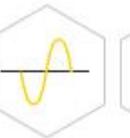
G-code (.gco)
Upload File Type



Recommended
Software:
Simplify3D



110/220 V
(975-2200 Watts)



50/60HZ



180-320°C
Extruder
Temperature



60-115°C
Build Surface
Temperature

Electrical

Other Solutions



FULLY ASSEMBLED
GIGABOT®

590 x 600 x 600mm

GIGABOT® \$11,950
Enclosure \$2,950



FULLY ASSEMBLED
GIGABOT® XL

590 x 760 x 600mm

GIGABOT® XL \$13,950
Enclosure XL \$3,250



FULLY ASSEMBLED
GIGABOT® XLT

590 x 760 x 900mm

GIGABOT® XLT \$16,995
Enclosure XLT \$3,500



FULLY ASSEMBLED
TERABOT®

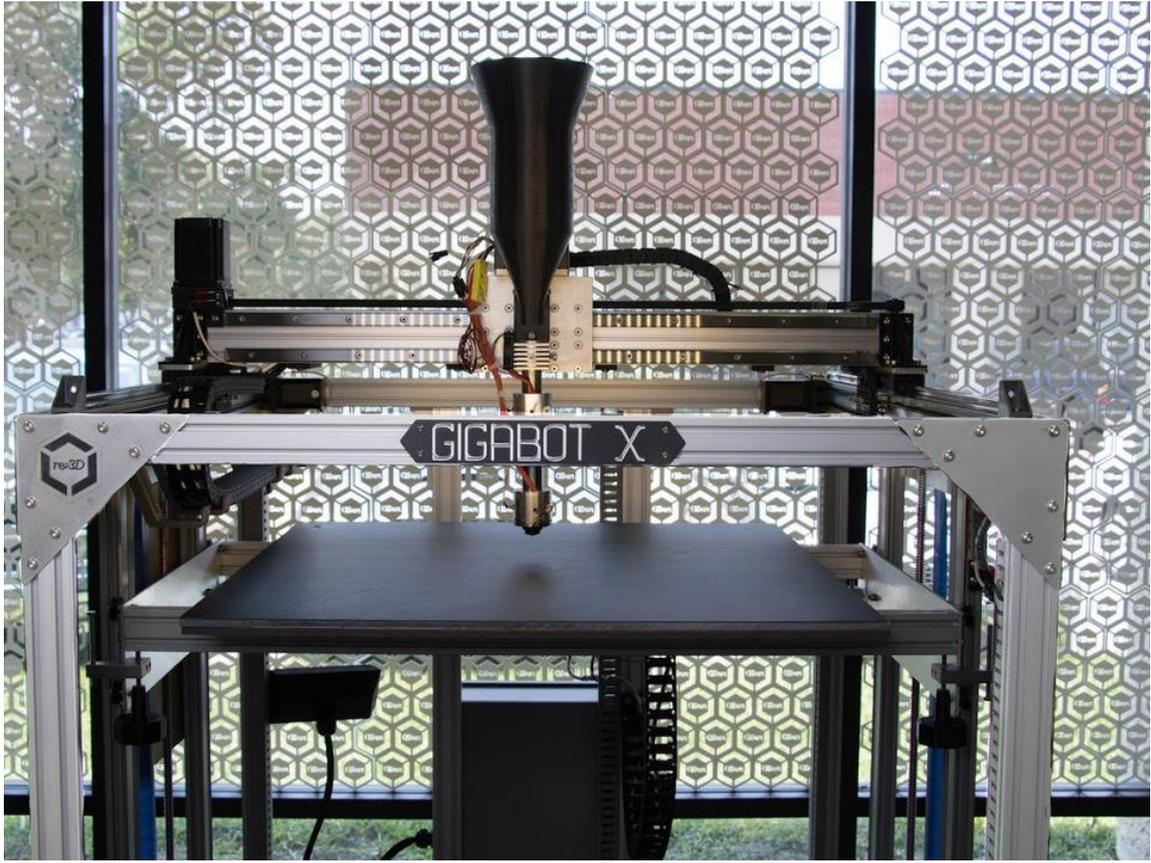
915 x 915 x 915mm

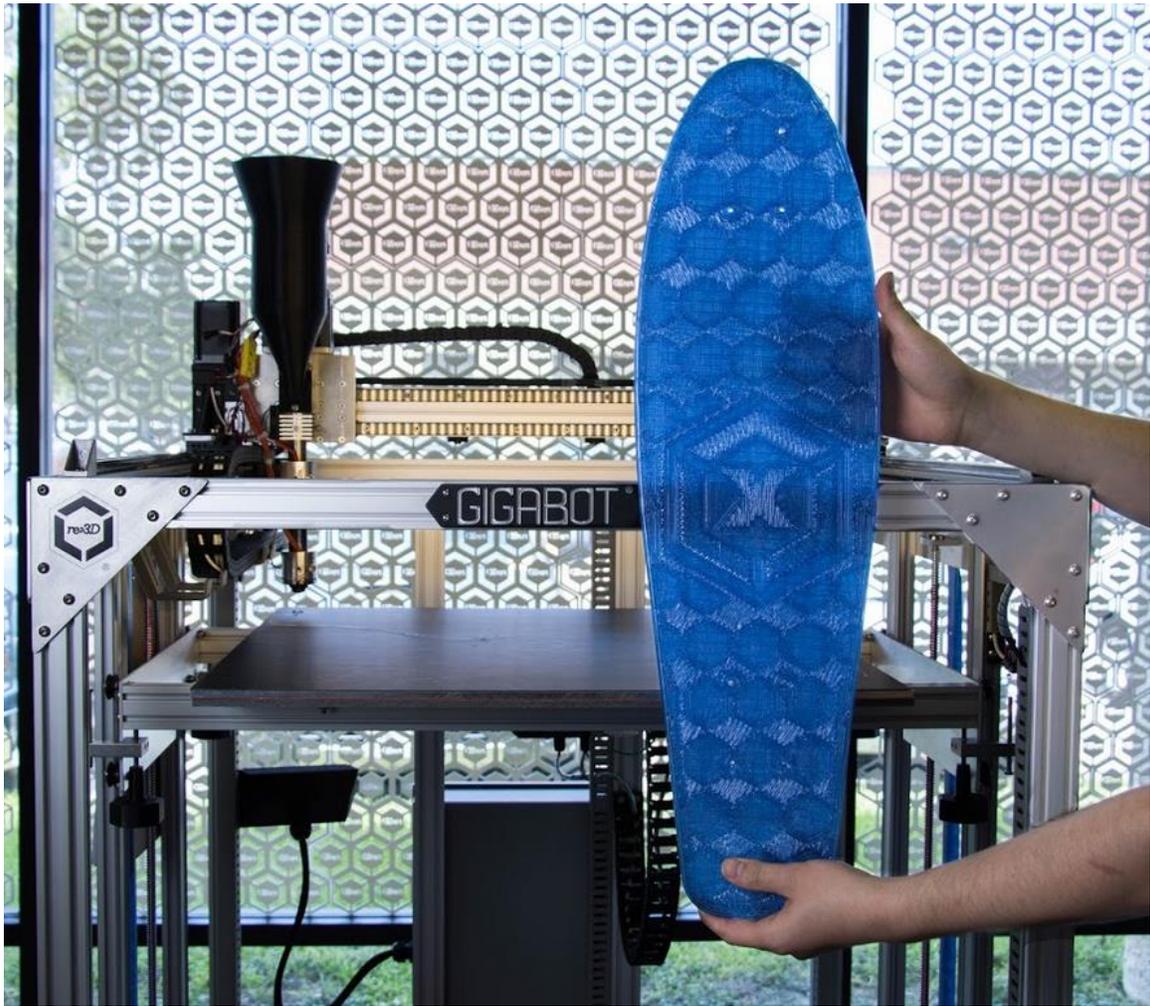
TERABOT® \$27,500
Enclosure \$6,900



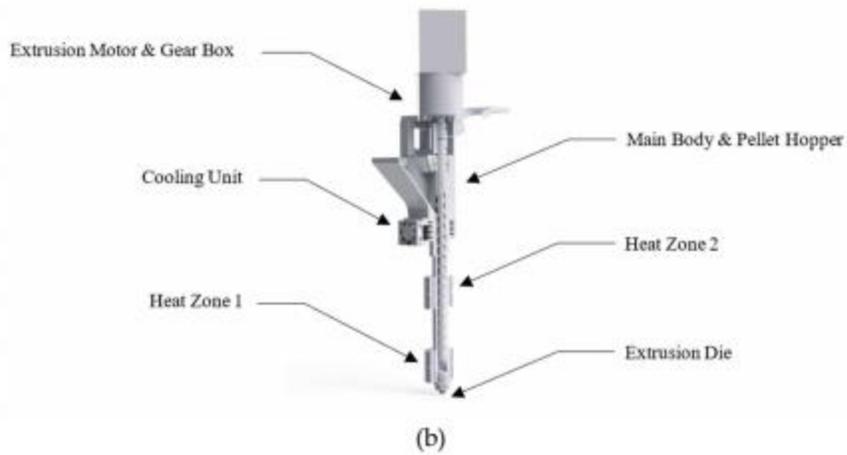
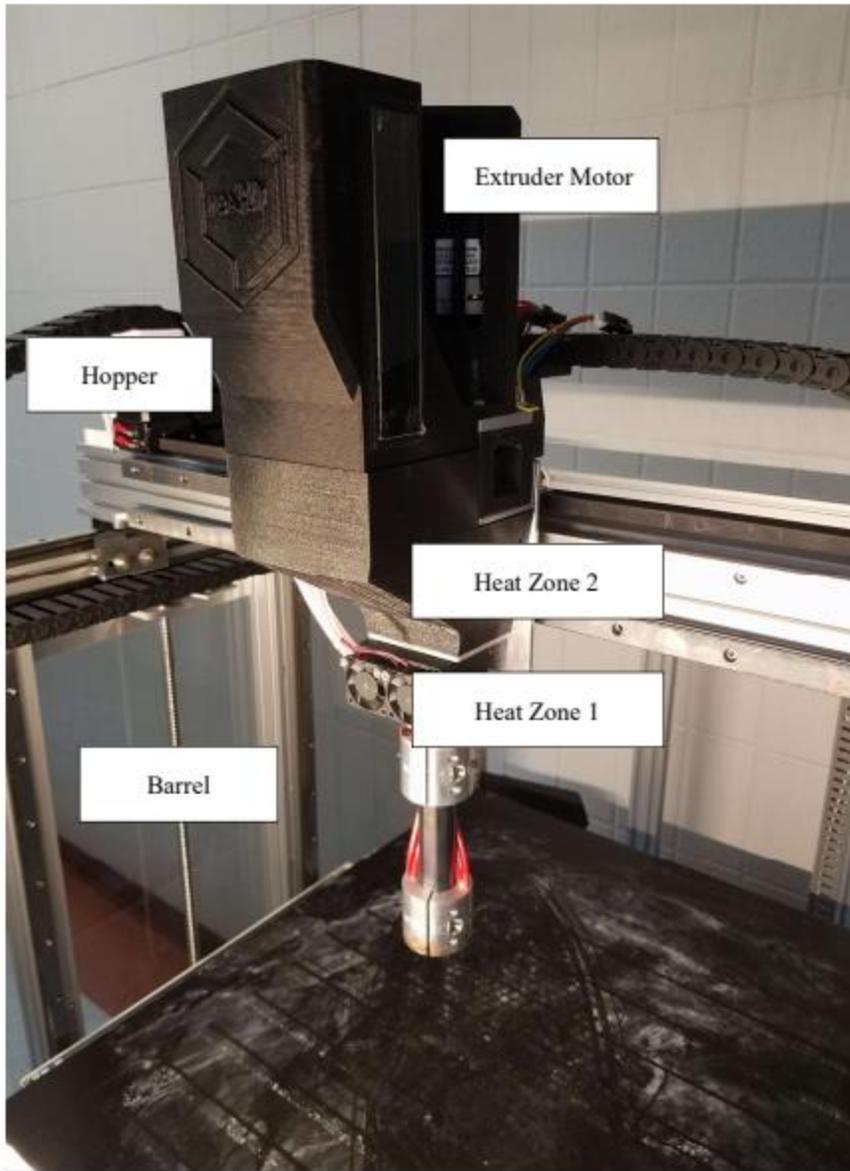
FULLY ASSEMBLED
**Custom
Solutions**

Our team of experts are available to quickly fabricate a Gigabot® that fulfills your unique size and material requirements.

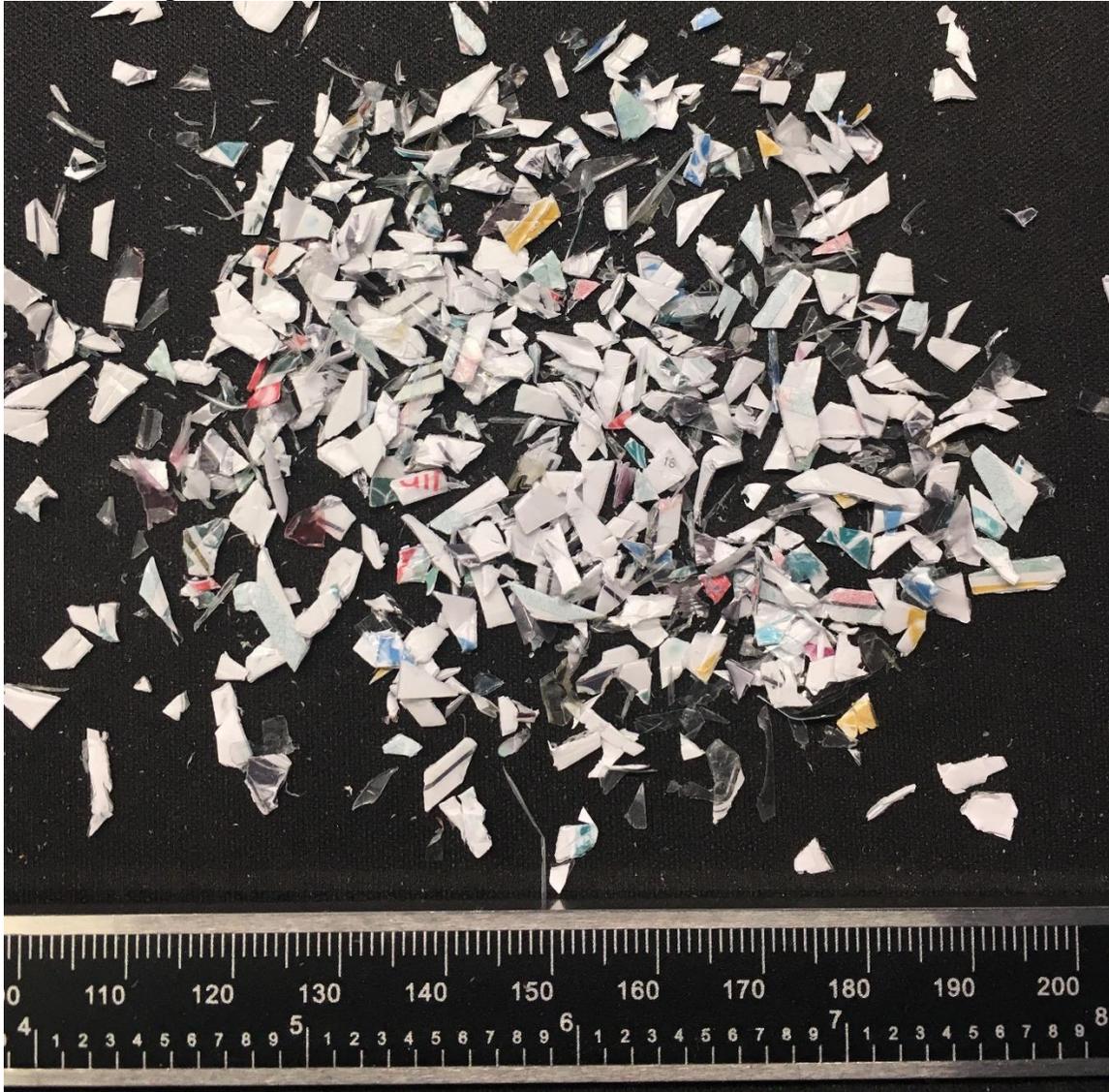




GBX Extruder



PC Ground up from HID Global sheets:



First PC Print Attempt



Designed: by re:3D – Renders and photos of furniture pieces created by Gigabot









