



Anteneh Engineering

COMPANY INFORMATION

Applicant name

Anteneh Gashaw

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Location of the company

Addis Ababa, Ethiopia

Company website or video

Insert Link to website or video

<https://solve.mit.edu/challenges/circular-economy/solutions/8926>

When was the company founded?

2018

How did you hear about this program?

YouNoodle

If other, please specify

N/A

PRODUCT / INNOVATION DESCRIPTION

Describe your business model / product innovation / idea

Give us a more detailed description of what you're building and what problem you are solving, in less than 350 words.

Most of us wear synthetic fabrics like polyester every day. Our dress shirts, yoga pants, fleeces, and even underwear are all increasingly made of synthetic materials plastic, in fact. But these synthetic fabrics, from which 60% of all clothing on earth is made, have a big hidden problem: when they're washed, they release tiny plastic bits called microfibers that flow down our drains, through water treatment plants, and out into our rivers, lakes and oceans by the billions. Filtration of microfiber from the wastewater can be achieved by integrating heater with washing machine. After enduser washes cloth there will be wastewater containing microfiber. The wastewater will be directed to heating chamber. When the heater is activated the water will evaporate and the microfiber will remain in the chamber since microfiber doesn't evaporate. The evaporated water will be directed into a small tank for condensation which is used for reuse. Then after some interval, the microfiber can be collected to be sold to clothing manufacturing companies to be recycled and percentage of this lint can be used to make plastic lumber.

TRL

3) Analytical and experimental critical function and / or characteristic proof-of-concept

Have you tested your solution? If so, in what context? What were the results?

Filtration or separation of microfiber from the wastewater can be achieved by integrating a heater with a washing machine. After the end-user washes the cloth there will be wastewater containing microfiber. The wastewater will be directed to a heating chamber. When the heater is activated the

water will evaporate and the microfiber will remain in the chamber since microfiber does not evaporate. Meaning water boils at 100°C and the temperature must reach from 570 up to 600°C before wool will be affected; while polyester melts at 252–292°C and nylon at 160–260°C, wool never melts so it can't stick to the container. The evaporated water will be directed into a small tank for condensation. Condensation occurs when the water vapor in the container is cooled, changing from a gas to a liquid. This process can take place at various temperatures between 0 and 100°C. This water will be used for reuse since the condensed water is clean. Then after some interval, the microfiber can be collected to be sold to clothing manufacturing companies to be recycled and reused. The percentage of this lint can also be used to make plastic lumber. Currently the mechanism has been tested and showed successful results I have tested the mechanism by mixing micro fibers with water and boiling up the water with home stove and home tools, the water evaporated and the micro fibers remain in the container. This confirms that my design works 100 percent. You can see it via <https://youtu.be/Jrc4Xnigg78>

Within which RFP technical area does your solution fit best?

Plastics

COMMERCIALIZATION STRATEGY

Explain how your unique solution will help to create circularity in the value chain.

The market will be global because it impacts on improvement of aquatic food safety all over the world, assist in recycling of micro fibers which the world has not done much progress on, add value to washing machine end users on gaining benefit when washing their cloth, increase the standard of washing machines towards green technology for washing machine manufacturers and percentage of this lint can be used to make plastic lumber. Just over 100 million tonnes of fish are eaten worldwide each year, providing two and a half billion people with at least 20 percent of their average per capita animal protein intake. This is very large numbers and that means all those people are in the risk of health caused by consuming micro fibers in their systems. So, this project has strong market potential. The end users are owners of washing machine device all over the world. The end customers could be household, hotels, clothing manufacturing companies, cloth laundry business and so on that use washer to clean clothes.

What is the market pain you believe your solution could address?

Approx. 2 out of 7 people in the world have access to washing machines. This means if we can manage to install this mechanism in every washing machine we can save a massive amount of microfiber entering into the oceans. This is a very big amount of microfiber because there will be at least more than 700,000 microscopic fibres could be released into wastewater during each use of a domestic washing machine, with many of them likely to pass through sewage treatment and into the environment, according to new research. So, imagine the total. This will assist in making our oceans clean of microfiber.

What is your competitive advantage to other solutions?

This device follows existing principle of property of water and clothing fabrics. So far no one has thought of combining heating mechanism with washing machines to tackle the microfiber problem of the world. This existing mechanism will increase the reliability of the mechanism. There is no one who has similar product to mine so this is new innovation to the world. There is a technology called Cora ball but it is not as effective as this mechanism capturing all the microfibers in a single wash because as you know there can be minimum of 700,000 tiny microfibres in a single wash. This mechanism can sort microfiber 100%.

What is the biggest challenge you face in commercializing your solution?

My primary design problem which is how to meet different models and specifications in different companies and countries. Well, the way I see it, I have two options. 1. Make some kind of arrangement with major washing machine manufacturers and make the device assembled in every product that will be sold in the future. 2. Build different model based on the different output of wastewater which contains the micro fibers. That is why I am working to get the attention of washer manufacturing companies by publishing the innovation in different sites like <https://contest.techbriefs.com/2019/entries/electronics-sensors-iot/9471> or <https://contest.techbriefs.com/profile?user=89682>

KEY NEXT MILESTONES

Technology

When the device reaches at its best technology it will have an automatic sensor that starts its system when water is being feed to it and automated disposing mechanism of the microfiber and AI to detect when to collect the microfibers when they reach some amount of volume.

Business

The end users are owners of washing machine device all over the world. The end customers could be household, hotels, clothing manufacturing companies, cloth laundry business and so on that use washer to clean clothes. When the end users purchase this product, it is not an additional cost but a means to get income when the end user washes cloth. The end users can sell the separated microfiber based on their weight to textile companies and cloth manufacturing companies and percentage of this lint can be used to make plastic lumber. And they will gain cash profit from washing their clothes. And since the separation of the microfiber and waste waster involves in converting the wastewater into water vapour, this process can act as water filtration of waste water to be used for other purposes. These two compelling arguments can be immediate benefit for the end users. The other point that will attract attention of end users is by using this product end users are preventing micro fibers enters into the oceans that will be eaten by the fishes which end up in their plate at the end. My next year plan is going to market to impact the world.

Fundraising

If get funding, the funds from the award will be used on the project 100%. The funds I get will be used to manufacture a high quality prototype and advertise the prototype and note that I already tested the mechanism and it works perfect. As said from above since I have more than 50 inventions if there is any left of the funding all the money will be used to build other inventions of mine. I would like to take training on marketing on the global stage that will help me with scaling all of my projects. (<https://contest.techbriefs.com...>) I will use the award to get access to big investors that will help on talking on the potential partnership on more than my 50 inventions. To put it in simple words, this award will change the lives of many peoples including mine.

Team Building

Beside fund rising I am very interested to build teams, since I am a one man team.

INTELLECTUAL PROPERTY

Please give a brief overview of your solution's technological advantage

Filtration or separation of microfiber from the wastewater can be achieved by integrating a heater with a washing machine. After the end-user washes the cloth there will be wastewater containing microfiber. The wastewater will be directed to a heating chamber. When the heater is activated the water will evaporate and the microfiber will remain in the chamber since microfiber does not evaporate. Meaning water boils at 100°C and the temperature must reach from 570 up to 600°C before wool will be affected; while polyester melts at 252-292°C and nylon at 160-260°C, wool never melts so it can't stick to the container. The evaporated water will be directed into a small tank for condensation. Condensation occurs when the water vapor in the container is cooled, changing from a gas to a liquid. This process can take place at various temperatures between 0 and 100°C. This water will be used for reuse since the condensed water is clean. Then after some interval, the microfiber can be collected to be sold to clothing manufacturing companies to be recycled and reused. The percentage of this lint can also be used to make plastic lumber. As seen in the above figure the red part is the heater and the green is the small tank that will hold the condensed water. There will be non-returnable valves in preheating and after heating pipes so that the water does nor return into washing chamber and heater respectively. Note that the mechanism will also sort micro plastics found on cleaning detergents or soaps. The world is pushing the idea of no micro plastic in soaps and this will assist in this green movement. Currently the mechanism has been tested and showed successful results I have tested the mechanism by mixing micro fibers with water and boiling up the water with home stove and home tools, the water evaporated and the micro fibers remain in the container. This confirms that my design works 100 percent.

Do you have any patents around this solution?

Yes

Do you have trade secrets?

No

Does your solution require that you license technology?

No

FINANCIAL

Have you raised funds to date

No

If yes... please indicate how much

N/A

If yes, what round type?

N/A

Did your startup have product/service revenue in 2018?

No

If so, how much?

N/A

COMPANY / TEAM SUMMARY

Please list your existing core team members and include their roles and experiences/background

have dedicated my life for invention and research because not only I have big dreams but also it is my only way out of poverty. We all have a talent we know or did not find out yet. Mine happens to be inventing. I discovered this talent of mine when I was in second year student during my university life. Starting from that point everything seemed not important except creating new ideas. So, until now I have invented more than 50 inventions which are new to the world and the rest are intended for Ethiopia that will change the life of many people including mine. But because of poverty, theft and many reasons I could not manage to make it. But all that matter is I will never give up. I will invent until and after I become successful. That makes me a strong entrepreneur. My skills are aided with a mechanical engineering degree on design, production and sales expertise. You can find some of my inventions via <https://contest.techbriefs.com/profile?user=89682>

Overall, how many employees does your company have?

0-5

Please describe what other skills you would need on your team to make this solution a reality

Investor is highly appreciated to join.

Do any of your team members have experience working with a large corporate organization?

No

PARTNERSHIP FIT

How do you believe BASF alone or together with program partner Stanley Black & Decker can help you achieve your goals as a company?

I want BASF to be part of the project as shareholder or partners from the development of the project to transition to marketing. I want BASF to be my mentor and advice me on transitioning from prototype to product, create connection with potential investors. Beside this project which is Smart Green Washer, I have more than 50 invention which I need partners to scale up the project (<https://contest.techbriefs.com/profile?user=89682>). I want BASF be part of my project like the project <https://contest.techbriefs.com/2019/entries/sustainable-technologies/9829> to build the prototype and propose to the current administration of the United States Of America.

What type of outcome might you be interested in post program?

Investment | Joint Development | Pilot | Licensing | Other