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Contemporary TFA

## **FINAL ASSIGNMENT**

Sustainability has become one of the most important element in business practices. Even those businesses which are least concerned about the planet are incorporating sustainability into their business practice as this will add value to their business. Many businesses are working on new methods of producing goods and services sustainably by using recycled material. Every other business is in a race to come up with unique idea of producing things in a sustainable way.

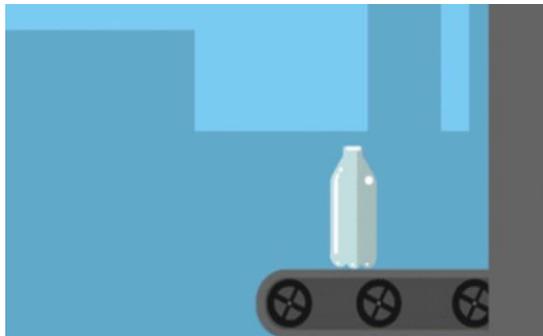
Plastic water bottles have a lot of negative impact on the environment. They are being consumed in large amount. On an average, 1500 plastic water bottles are being consumed in every second in US alone. This way, it makes US, the biggest bottled water market in the market where multinationals such as Coke, Pepsi, nestle are making huge amount of profits and environment has to pay the cost. Production of water bottles requires almost 17 million barrels of oil each year, this much fuel has the ability to maintain up to one million cars fueled for an entire year. Moreover, while comparing the energy needed to manufacture a bottle of water and energy needed for the tap water. Almost 2000 times more energy is required for the manufacturing of bottles. This way it has polluted our environment the most.

Plastic bottles always end up in landfills, floating on oceans which is very hazardous for our environment. This plastic is killing animals, leaking chemicals and disrupting ecosystem.

Unifi company which is based in Greensboro, North Carolina, produces 300 million polyester and nylon annually. They decided to become innovative and socially responsible at the same time. So they introduced Unifi's Repreve recycling center which is 50,000 square foot facility in Yadkinville, North Carolina, where plastic bottles, fiber waste and fabric scraps get deposited. This company collects clear plastic bottles from processors around the country who first shredded them into plastic flakes.

Sorting of plastic bottles is very important. Most of the plastic bottles are marked with number "1 to 8" inside of triangular symbol along with PET below on it according to the quality, grades, color etc. Sorting is done both manually and automatic. The sorted plastics are crushes, separated and dried by

shredding the material into small fragments. After drying the flakes, they are passed through electrostatic separator thus it could become free from metal flakes. Then it is send for production.



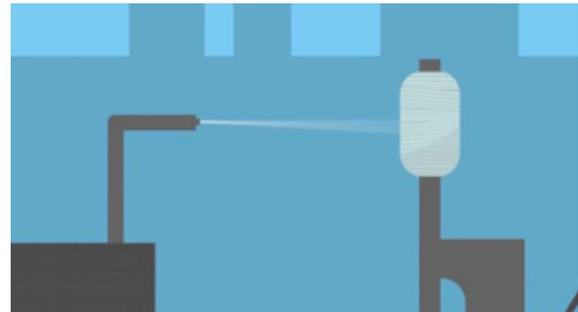
Plastic bottle is passed through the machine and converted into small plastic flakes



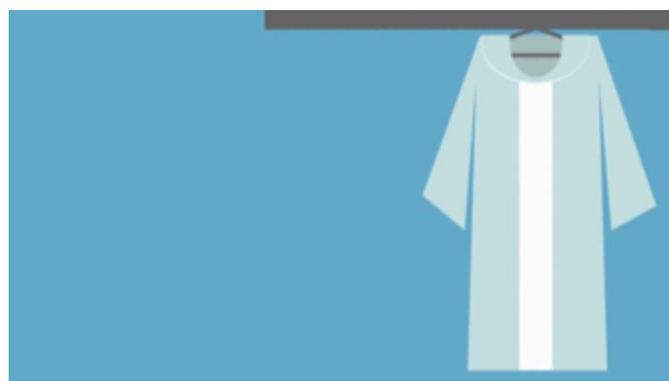
After converting the bottle into small flakes, then they are converted into pellets.



Pellets are then melted and Extruded.



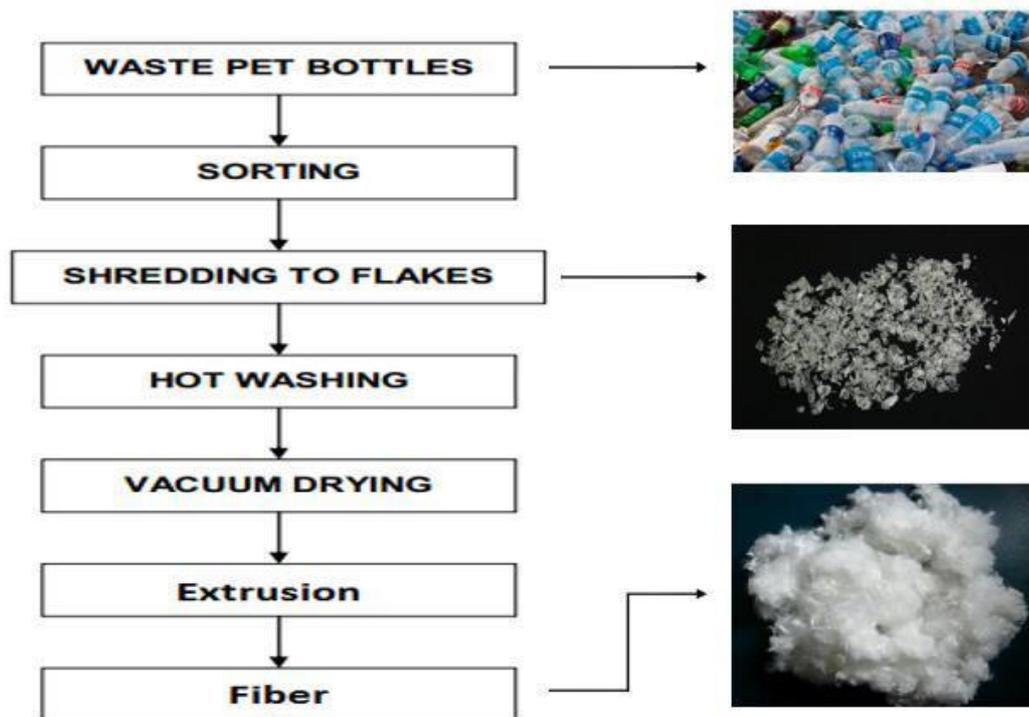
Later on, it is spun into polyester Yarn.



This yarn is later on used to make graduation Gowns, jackets, t-shirts, dress pants, car upholstery etc.

As generally plastic bottles are just used and thrown away which needs to be taken care off. Repreve makes three types of recycled yarns which includes 100% from plastic bottles, a hybrid of plastic bottles and fiber waste and a hybrid of plastic bottles and used fabric. All three types of yarns have their unique properties and are used to make recycled products.

Quality of finished products depends on the grade of plastic bottles and processing of raw material. Newer technology applications during manufacturing would be a great innovation in recycled bottles.



Repreve yarn is used to make everything like t shirts, dress pants, car upholstery etc. Many famous brands such as Patagonia, Adidas, Nike and ford purchase yarn from this company and later on convert that yarn into beautiful products.

Another customer is Oak Cap and gown which produce graduation gowns from 100% plastic bottle yarn. It takes 27 used bottles in order to make one gown.



According to the company, 1250 schools are using Repreve based graduation gowns. Universities such as Brown University, Michigan State, Yale, Notre Dame and University of North Carolina at Chapel Hill. Schools want their campuses to embrace sustainability in terms of waste management, energy conservation and environmental protection so by using these gowns made with recycled yarns helps them to promote their message.

The recycling of plastic bottles is being increased every year. Recycling center is currently producing 72 million pounds of Repreve fiber every year. And the owner 'Hertwig' is trying to increase the production by 100 million pounds by next year.

Unifi has turned almost 4 billion used plastic bottles into yarn in past 7 years. This company is also working to recycle other plastic items such as plastic disposable cutlery, food container. They are working day and night to improve their quality and produce very quality oriented products. They have worked really hard in past many years and played a major role in improving environment. They are not only trying to improve the environment but also trying to educate the customers that high quality products can also be produced by recycled material.

Company has faced a lot of challenges which includes that the larger proportion of the plastic waste stream can recycle if the post-consumer collection is set accurately. Moreover, sorting of plastic bottles needs high quality machines are required to separate all the impurity's. Material handling is also difficult due to rigid nature of packaging.

To conclude, it is estimated that approximately 165 million tons of plastics into the ocean which could be more the weight of fisheries by 2050. So its very necessary to recycle plastic bottle and to use them in a better way. Due to this

great initiative, 12 tons of used plastic material is spared to enter the landfills. Waste has been reduced a lot because of this and it has played an important part in improving the overall environment. Many basic resources are saved because of this.

Still a lot of plastic waste goes into landfills and this recycling process must be increased in passing years in order to save our environment.

Reference:

<https://money.cnn.com/2016/05/16/technology/plastic-bottles-fabric-repreve/index.html>

<http://textilefocus.com/manufacturing-fabric-recycling-plastic-bottles-ecological-approach-part-2-manufacturing-process/>

<http://www.gogreen.org/blog/impacts-of-plastic-water-bottles>

<https://m.youtube.com/watch/Yhx7-DB-y4>