

Airy Bloom

Helen Sumin Koo, Konkuk University
Seoha Min, University of North Carolina at Greensboro

Contextual Review and Concept

Air pollution has been a threat to people's health, and it is becoming more serious worldwide, including in Europe, Asia, and South America (Bowatte et al., 2017; Brunekreef & Hoffmann, 2016; Feng, Gao, Liao, Zhou & Wang, 2016; Kim, Chung & Yoon, 2015). Air pollution can cause asthma and lung cancer, while clear air is one of the important requirements for healthy aging when comparing elderly groups living in different air qualities (Baccarelli et al., 2016; Brunekreef & Hoffmann, 2016). Recently, fine dust less than 2.5 μm in diameter (PM_{2.5}) became a great concern due to its small size; it can penetrate skin and other tissues, which can also affect various diseases besides pulmonary problems, including heart disease, hypertension, diabetes, birth defects, impaired immune response, brain disease, and more (Feng et al., 2016; Guo et al., 2015; Kim et al., 2015). The textile industry is one of the major industries causing air pollution, and it is important that textile manufactures, researchers, and policy makers are aware of this serious issue and endeavor harder to reduce the pollution (Hasanbeigi & Price, 2015). This garment was intended to increase awareness of the global air pollution issue and to emphasize the importance of the efforts of all people, including manufacturers, designers, consumers, researchers, and policy makers, to reduce air pollution. This dress was designed to deliver a message of hope and possibilities for how we can solve the air pollution problem if we work together. The dress will also symbolize the human air filter presenting that humans are the ones who can reduce air pollution and who need to demonstrate more actions to solve this issue. The abandoned air filters were recycled and rebirthed to create an elegant, romantic, and energetic dress.

Aesthetic Properties and Visual Impact

The Airy Bloom dress was made of recycled air filters to show the seriousness of air pollution. Although the design idea was inspired by a heavy issue, the dress was made to deliver a hopeful mood. Small pieces of air filters were connected to express the importance of our efforts and working together to make the air quality better, just like how the small, abandoned pieces were connected to create a lovely and elegant, spring-feeling dress. The dress seems to be blooming and bursting from the center of the body, which delivers a burst of blooms, representing the hope for better air quality. The sheer and lightweight air filter materials provide an aesthetic feeling of breezy air movement.

Process, Technique, and Execution

The dress was made through sustainable construction methods, including zero waste, no dye, and no ironing for CO₂ footprint minimizations. All parts of the dress were made from air filters except the fasteners, threads, hook, two snap buttons, and interfacing to minimize the use of other materials and to better deliver the message. Rather than using various materials, the focus was on using only air filters for better recycling at the end of the dress lifecycle, and the original color was maintained by forgoing the dyeing process. First, four air filters, which were layered with five thin sheets each, were deconstructed, resulting in 20 thin sheets of air filters. Second, the inner dress was made using the air filter sheets. Third, the air filter sheets were sliced one by one using a rotary knife, which took a long time to create the blooming and bursting appearance. Small pieces were applied to emphasize the importance of working together to solve the air pollution issue by showing the small pieces create one whole dress. The dress is zero waste due to slicing the air filters into small pieces and draping them onto the dress form. Any leftover scraps were added to the dress to fill spaces. Fourth,

the air filter sheets consisted of two layers: a nonwoven polyester layer and a stiff polyester net layer to hold the nonwoven polyester layer and make it more durable. The net layer was shinier than the nonwoven layer, which created different light reflections and rich textures even though only one material was used. The two layers were intentionally detached to create different curves and feelings of different resilience and weight when the wearer is moving. Clear threads were used to match the texture and color of the net layer. Fifth, the seam lines were strengthened using interfacing tape, which made the seam lines more durable, stable, and also held the threads, which could otherwise easily slip through the small holes on the nonwoven layer. Next, small pieces were layered and attached to the dress considering the body shape to create the X silhouette. Lastly, fasteners including a hook, snap buttons, and clear thread strings were weaved by hand were attached on the back side to hold the top part of the dress. These methods were selected because the air filter material was not suitable for using zippers.

Cohesion

This dress was created to emphasize the importance of air pollution awareness and the cooperation of people to better the air quality, expressed through hopeful insights. Just like combining people's hopes and efforts one by one, the small pieces were connected to create a hopeful, blooming dress. Air filters were the main material, which makes the statement that people need to use air purifiers. The interesting texture of the air filters encompasses the airy, lightweight dress, and the abandoned air filters were rebirthed to create elegant, lovely feelings, delivering a warmth that encourages people and shows a hopeful transition in the air pollution issue. The dress was made through sustainable construction methods such as zero wastes.

Design Contribution and Innovation

This design explored a new material, air filters, recreated into interesting textures. A special construction method was utilized to make the garment using the new material by sewing on the interfaced hemlines to hold the threads, preventing them from penetrating through the nonwoven layer holes. Hopefully this dress can bring people's attention to the air pollution issue and the importance of collaboration to better the air quality worldwide.

Reference

- Baccarelli, A. A., Hales, N., Burnett, R. T., Jerrett, M., Mix, C., Dockery, D. W., & Pope III, C. A. (2016). Particulate air pollution, exceptional aging, and rates of centenarians: A nationwide analysis of the United States, 1980–2010. *Environmental Health Perspectives*, 124(11), 1744-1750.
- Bowatte, G., Lodge, C. J., Knibbs, L. D., Lowe, A. J., Erbas, B., Dennekamp, M., ... & Thomas, P. S. (2017). Traffic-related air pollution exposure is associated with allergic sensitization, asthma, and poor lung function in middle age. *Journal of Allergy and Clinical Immunology*, 139(1), 122-129.
- Brunekreef, B., & Hoffmann, B. (2016). Air pollution and heart disease. *The Lancet*, 388(10045), 640-642.
- Feng, S., Gao, D., Liao, F., Zhou, F., & Wang, X. (2016). The health effects of ambient PM 2.5 and potential mechanisms. *Ecotoxicology and Environmental Safety*, 128(2016), 67-74.
- Guo, Y., Zeng, H., Zheng, R., Li, S., Barnett, A. G., Zhang, S., ... & Williams, G. (2016). The association between lung cancer incidence and ambient air pollution in China: a spatiotemporal analysis. *Environmental Research*, 144(2016), 60-65.
- Hasanbeigi, A., & Price, L. (2015). A technical review of emerging technologies for energy and water efficiency and pollution reduction in the textile industry. *Journal of Cleaner Production*, 95(2015), 30-44.
- Kim, H. S., Chung, Y. S., & Yoon, M. B. (2016). An analysis on the impact of large-scale transports of dust pollution on air quality in East Asia as observed in central Korea in 2014. *Air Quality, Atmosphere & Health*, 9(1), 83-93.



Image A: Front



Image C: Side



Image B: Back

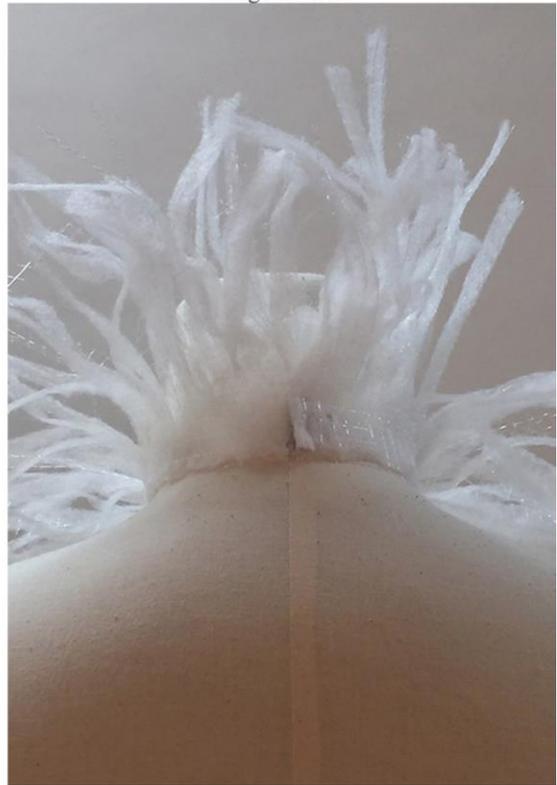


Image D: Detail