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# RGE developing closed-loop textile-to-textile recycling solutions for cities

Singapore-based viscose major Royal Golden Eagle (RGE) is developing what it claims are first-of-its-kind closed-loop textile-to-textile recycling solutions to accelerate innovation in textile recycling that can be deployed in urban settings.

By Beth Wright



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Beth Wright has been a news editor with Just Style since 2016, after honing her journalism skills in the world of local news. She is always looking for a new story and particularly enjoys writing about sustainability and the circular economy.



Exhibit at RGE-NTU SusTex. 96% of Singapore's textile and leather waste ended up in Semakau Island in 2021.



RGE is developing the solutions through the newly-formed RGE-NTU Sustainable Textile Research Centre (RGE-NTU SusTex). This is a five-year research collaboration between RGE and Nanyang Technological University, Singapore (NTU). The research centre will develop new technologies to recycle textile waste into fibre and create new, next-generation eco-friendly and sustainable textiles.

The aim is to tackle what RGE calls the “immense” textile waste generated in urban environments, on the back of import bans of waste materials and address the shortcomings of current textile recycling technologies, which are unsuitable for urban settings due to the use of heavy chemicals.

RGE executive director, Perry Lim, says: “Current textile recycling technologies, which rely primarily on a bleaching and separation process using heavy chemicals, cannot be implemented due to environmental laws. At the same time, there is an urgent need to keep textiles out of the brimming landfills.

“As the world’s largest viscose producer, we aim to catalyse closed-loop, textile-to-textile recycling by developing optimal urban-fit solutions that can bring the world closer to a circular textile economy.”

RGE explains at present, most of the available textile recycling technologies are open-loop, where textile waste is typically downcycled to lower-quality products (insulating materials, cleaning cloths, etc.) or used in waste-to-heat recycling.

“Closed-loop textile-to-textile recycling processes, particularly chemical recycling, are still under development. Scaling up the technologies to industrial scale remains a challenge. A key bottleneck is that refabricating textile waste into fibre needs purity standards for feedstock. However, most of the clothes that we wear are made of a mixture of different synthetic and natural fibres, which makes separating the complex blends of materials challenging for effective recycling,” Lim adds.

“Our aim is to address this industry pain point by developing viable solutions that use less energy, fewer chemicals and produces harmless and less effluents, and then potentially scale up across our global operations.”

To tackle the key challenges in closed-loop textile recycling, RGE-NTU SusTex is looking into four key research areas, namely cleaner and more energy-efficient methods of recycling into new raw materials, automated sorting of textile waste, eco-friendly dye removal, and development of a new class of sustainable textiles that is durable for wear and, at the same time, lends itself to easier recycling.

Technologies developed by RGE-NTU SusTex will be test bedded at RGE’s pilot urban-fit textile recycling plant in Singapore, which is projected for completion by 2024. If successful, RGE has plans to replicate the plant in other urban cities within its footprint.

Late last year, [RGE struck two partnerships in Singapore to advance sustainable fashion.](#)

Poll |

As a consumer which of the following do you consider in your shopping behavior?

☐ Purchasing organically produced product

☐ Buying indigenous products

☐ Avoiding plastic use

☐ Recyclable packaging

