Removal of Nicotine to Recycle Machine Wash Water

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A BETTER TOMORROW

BAT's Environmental and Social Governance

"Our corporate purpose puts ESG front and centre, with a principal focus on reducing the health impact of our global business in order to build A Better Tomorrow™."

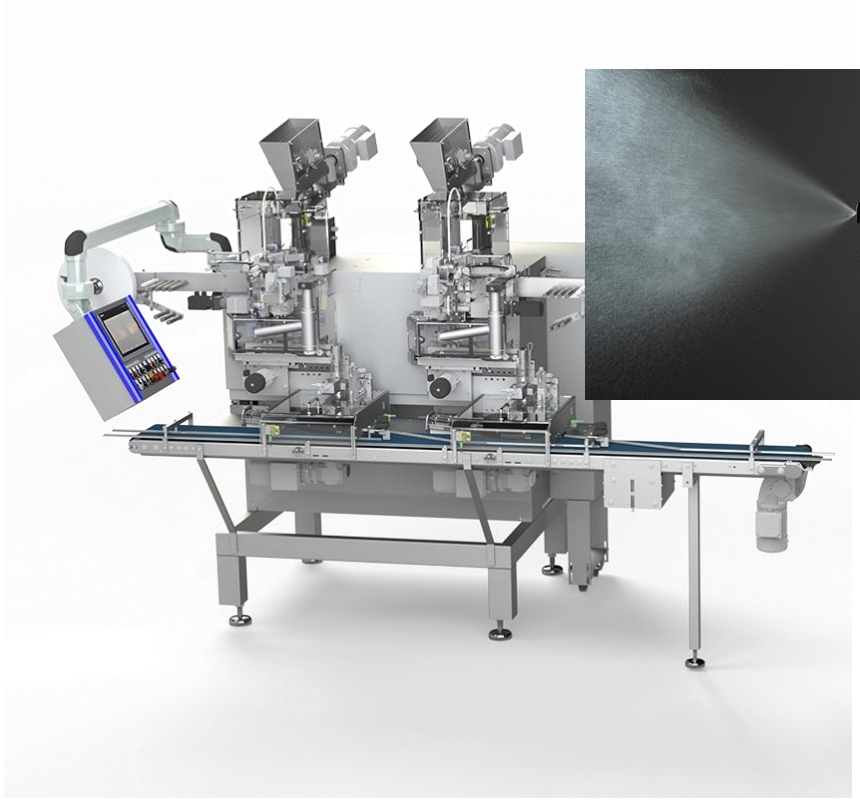
"[…] we retain a strong emphasis on other ESG priorities – including addressing climate change and excellence in environmental management."

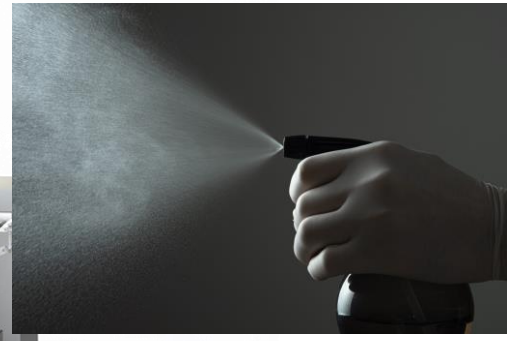
Water conservation is one of the top ESG priorities

By 2025 reduce total amount of water withdrawn by 35%

British American Tobacco - ESG (bat.com)

Main Issue: Machines after making products





Collection in container

Why Water Recycling?

Current situation:

- Manufacturing equipment requires washing after each product run.
- Water that contains higher nicotine concentration is disposed of as hazardous waste.
- Some facilities have paid to dispose of water by incineration.
- Incineration of water is energy intensive, expensive, and NOT environmentally friendly.
- Depending on local laws, water recycling is the key.

Can Decrease Carbon Footprint.

Waste disposal involving transportation increases carbon footprint especially if only specific waste sites accept large volumes of liquid waste.

Water Remediation

Lab Scale

Pump

Filter

Column

Data

	Simulated Wash Water (mg/L)		Manufacturing Wash Water (mg/L)	
	Ion Exchange Column	**Carbon Column**	**Ion Exchange Column**	**Carbon Column**
Before	16.8 ± 3.3	13.5 ± 1.0	8.63 ± 0.1	8.63 ± 0.1
After	0.05	0.05	<LOQ	0.05
% Reduction	99.6	99.6	99.5	99.6

LOQ = 0.05 mg/L

	Simulated Wash Water (pH)		Manufacturing Wash Water (pH)	
	Ion Exchange Column	**Carbon Column**	**Ion Exchange Column**	**Carbon Column**
Before	4.5	4.5	3.4	3.4
After	2.2	7.8	2.1	7.5

Idea Expansion

- There are more sources of water not just wash water.
- Choose location for implementation based on total water usage and potential for improvement.
- Decide how water is going to be used.
- Implement engineering design plans.
- Any Improvement in water recycling is a win!

Acknowledgments

Serban Moldoveanu

Logan Hartmann

Questions