

## Summary

**Insect species:**  
Black soldier fly (BSF)

**Scope:**  
To assess treatment efficiencies of BSF larvae across different waste streams.

**Study leader:**  
Roegan Vetro, Assistant Scientific Projects Manager,  
Arctech Innovation

**Client:**  
Scottish water



## Background

Black Soldier Fly (BSF) technology represents a promising frontier in wastewater treatment and management, offering substantial benefits in the context of Circular Economy for businesses looking to enhance sustainability and drive innovation.

BSF larvae are highly efficient at converting organic waste into valuable by-products such as animal feed and biofertilisers, making this technology a powerful tool for companies to reduce their environmental impact while unlocking new revenue streams.

## Case study

In collaboration with our client, Scottish Water, who recognise the potential transformative approach of BSF in turning waste into a resource, collaborated with Arctech on a laboratory study to establish baseline treatment efficiencies of BSF larvae across different waste streams.

Drawing on our expertise in insect rearing and handling, experimental study design, and biohazard safety protocols, Arctech designed a robust trial that generated proof-of-concept data in a controlled environment to inform decision-making by Scottish Water on the opportunities for this technology.

Given the biological sensitivity of BSF larvae, the specific characteristics of each waste stream, such as sewage bioresources, were carefully evaluated. Key parameters including moisture content, temperature, and feeding ratios were assessed in the trial to ensure compatibility with BSF larvae. The study also assessed the capacity of BSF to digest, and therefore reduce solids volume, and reduce PFAS concentrations in waste.

This trial highlighted the growing role of insect-based technologies in environmental health and sustainable waste management, and demonstrated how Arctech can design and deliver rigorous experimental programmes that support the responsible adoption of innovative solutions.

“ Scottish Water enjoyed working closely with Arctech Innovation on this forward-thinking Circular Economy project. Bioresources are a natural output from wastewater treatment, so it was a valuable research opportunity to better understand if we can reuse this valuable resource and reduce our impact on the environment.



Ruairidh McNulty  
Specialist Graduate  
Water Strategy, Scottish Water

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