

Case study



Client

UNS

Project

Recycling of Decommissioned Autoclave Systems from Liquid Sampling Operations

Scope

Treatment and recycling of decommissioned autoclave components, including grit blasting and material recovery.

Volume

38,966 kg of steel recycled (including trial and full consignments).

Highlights

- + Successful trial achieving 100% recycling rate, enabling scale-up.
- + Consistently high recycling rates across all consignments (average 98.4%).
- + Efficient processing of complex and heavy industrial components.
- + High recovery of steel materials, reducing waste and supporting sustainability.

Background

This case study outlines the successful recycling of decommissioned autoclave components, including autoclaves, tilting tables, and bulkheads.

Following decommissioning, these items were classified under UNS consignments and required specialist treatment to maximise material recovery while ensuring safe and compliant handling.

Project Overview

Augean was engaged by UNS to deliver the treatment and recycling of decommissioned autoclave components, including autoclaves, tilting tables, and bulkheads.

The project began with a trial consignment to validate the treatment method. Following its success, additional consignments were processed over a three-day period, achieving consistently high recycling rates while ensuring safe and compliant operations.

Following grit blasting treatment, all items achieved a 100% recycle rate, demonstrating the effectiveness of the process. This successful outcome was shared with UNS and enabled progression to full-scale consignments.

Processing method

All items underwent grit blasting treatment, which:

- + Removed surface contamination
- + Enabled effective material segregation
- + Prepared steel for high-quality recycling

This approach proved highly effective across all components, including more complex items such as bulkheads and tilting tables.

Trial phase

An initial trial consignment was received on 09/10/2024, consisting of:

- + 1 × Autoclave
- + 1 × Tilting Table
- + 1 × Bulkhead

Total weight: 6.396 tonnes

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Results and performance

Across all consignments, including the trial phase:

- + Total steel recycled: 38,966 kg
- + Average recycle rate: 98.4%
- + Maximum recycle rate: 100%

Even for more complex components, recycling performance consistently exceeded 90%, demonstrating the reliability of the treatment process.

Key success factors

- + Effective trial validation: Early success enabled confidence in scaling operations
- + Robust treatment process: Grit blasting delivered consistently high recovery rates
- + Material quality: High-grade steel components supported strong recyclability
- + Operational coordination: Efficient scheduling and phased delivery from UNS.

Full consignment processing

Following the trial, additional items were delivered over a three-day period:

Date received	Waste type	Recycle rate
11/03/2025	UNS Metal 4 (2 × Autoclaves)	100.0%
11/03/2025	UNS Metal 5 (2 × Autoclaves)	100.0%
11/03/2025	UNS Metal 6 (1 × Autoclave)	100.0%
12/03/2025	UNS Metal 7 (3 × Autoclave Bulkheads)	98.3%
12/03/2025	UNS Metal 8 (2 × Autoclave Bulkheads)	92.9%
13/03/2025	UNS Metal 9 (3 × Tilting Tables)	99.8%
13/03/2025	UNS Metal 10 (2 × Tilting Tables)	92.6%

Conclusion

This project demonstrates a highly effective approach to the recycling of decommissioned industrial equipment. Through successful trial validation and the application of specialist treatment techniques, near-total material recovery was achieved at scale.

The results highlight the value of robust treatment processes and strong client collaboration in delivering sustainable and efficient waste management solutions.