# ReMake Value Retention Centre (RVRC): Unlocking circularity in high-integrity sectors

## Introduction

Manufactured goods account for nearly half of all global $CO_2$ emissions. While energy transition technologies can mitigate 55% of these emissions, the remaining 45% stem from the materials we extract, process, and manufacture -most of which are used once and discarded. In sectors like aerospace, energy, and transport, where components are built to endure, this presents a unique challenge and an unparalleled opportunity.

The ReMake Value Retention Centre (RVRC), a £10.2 million initiative backed by UKRI and industry, exists to seize this opportunity by transforming how we design, make, use, and reuse high-value products.

## Why now?

Circularity is no longer optional. With only 8% of materials recycled and a meagre 2% going through value retention processes such as remanufacture and reuse, the UK risks falling behind economically and environmentally. Legacy systems in high-integrity sectors are resource intensive, slow to adapt, and historically linear in approach.

Yet global and national policies are shifting. Scotland's Circular Economy Act, passed in 2024, and the creation of the UK Circular Economy Task Force signal a turning point. The RVRC builds on this momentum, aiming to bridge innovation, policy, and market readiness.

We are, as one speaker at the RVRC launch event put it, "at a tipping point"- and the RVRC is designed to catalyse action.

## The opportunity

Through value retention processes, studies have shown:
- 98% raw material savings
- 99% reduction in embodied energy emissions
- Dramatically reduced lead times and costs compared to traditional manufacturing routes

This isn't just about carbon, it's about competitiveness, resilience, and unlocking new revenue streams. For instance, industry case studies shared at the RVRC launch from

Howden’s compressor remanufacture to Renewable Parts Ltd’s turbine refurbishment demonstrated the potential for millions in value through circular aftermarket models, digital product passports, and additive repair technologies.

## RVRC vision

The RVRC is pioneering a systems-level, transdisciplinary approach to circularity in high-integrity sectors. Our goal is simple but ambitious: retain the value of what we make for as long as possible. This means designing for reuse, enabling intelligent repair, reducing waste, and embedding circular thinking from concept through to end-of-life.

At its heart, the RVRC is built around five integrated platforms:

### 1. Manufacturing, materials and design

Led by the NMIS team, this platform tackles advanced remanufacturing challenges—including additive repair, cold spray, and design for disassembly, using real industry components and live demonstrators.

### 2. Risk-informed valuation and standards

Led by the University of Strathclyde Business School, this platform equips businesses with decision-making tools to manage risk, quantify value, and build trust in new circular approaches.

### 3. Circular business models and supply chains

Led by the University of Exeter, this research explores which models truly work for high-integrity sectors and how to operationalise them. This includes sector-specific archetypes, data visualisation tools, and AI-powered insights.

### 4. Policy, skills and culture

This platform focuses on workforce transformation and regulatory alignment, ensuring the right people, skills, and frameworks are in place to accelerate adoption.

### 5. Commercialisation and ecosystems

The RVRC doesn’t stop at research. Through collaboration with NMIS, Strathclyde Inspire, and other partners, we’re building robust commercialisation pathways, connecting SMEs, OEMs, and investors to circular innovation.

## Real-world demonstrators

Demonstrator projects are central to RVRC’s delivery. From fast-forged aerospace components to end-of-life composite recycling, these projects bring together design, technology, standards, and policy in one place. Each demonstrator will be:

- Industry-driven
- Cross-sector by design
- Technically and commercially grounded

Examples include:
- Digital Product Passports (DPPs) developed in open frameworks for aerospace and renewables
- Closed-loop recycling of high-value metals and composites
- Remanufacture of industrial compressors with additive technologies
- Circular service models for wind turbine components

## Circularity in action: the business case

Remanufacture is no longer fringe, it's fast becoming a necessity. The RVRC is helping companies respond to rising material prices, regulatory pressures, and customer demand.

Key drivers include:
- Operational resilience: fewer delays, more secure supply chains
- Lower costs: faster turnaround times and reduced waste
- Carbon compliance: proactive alignment with incoming regulations such as ESPR
- Market growth: tapping into high-margin aftermarket and service opportunities

As one industry leader at the RVRC noted, "What used to be waste is now gold dust."

## Looking ahead

The RVRC's ambition is to be the UK's flagship programme for circular manufacturing in high-integrity sectors. By focusing on real-world needs, sector-specific challenges, and joined-up solutions, we aim to:
- Influence national and international standards
- Deliver scalable technologies and business models
- Create a circular knowledge hub for the UK's advanced industries

We invite companies, researchers, and policymakers to collaborate, shaping the direction of this vital programme and building a circular future together.

## Contact

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