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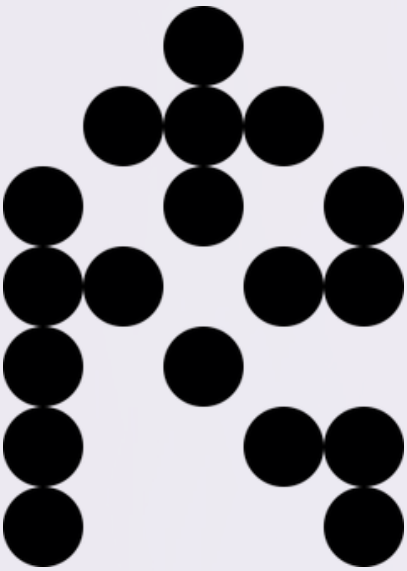
EIC INNOVATION PROCUREMENT PROGRAMME

Smart Stitch™ & Smart Disassembly™ case study



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ITURRI

Your safety matters

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PILOT: Regeneration BV (Resortecs) & ITURRI

Smart Stitch™ & Smart Disassembly™ | Circular Economy, Textile Recycling, and Workwear Manufacturing

100%	3 OUT OF 4	0 SECONDS	100% BRAND
DISASSEMBLY EFFICIENCY	**GARMENT CLASSES PASSED**	**ZERO MANUAL CUTTING TIME**	**IP PROTECTION SECURED**
Complete seam separation under controlled heat during thermal recycling treatment	Full mechanical seam durability verified across standard corporate workwear	Dissolves seams automatically in industrial ovens without manual labor	Prevents unauthorized re-use or resale of branded corporate uniforms

PILOT PROFILE

EIC Awardee: Regeneration BV (Resortecs)

Solution: Smart Stitch™ & Smart Disassembly™

Partner: ITURRI (Industrial Workwear and Protective Garment Manufacturer, Spain)

Testing Ground: External textile research and certification testing centre evaluating industrial workwear (polo shirts, jackets, and trousers)

Sector & Challenge Focus: Circular Economy, Textile Recycling, and Workwear Manufacturing

The Challenge

Heavy-duty corporate workwear and protective uniforms are made from tough, blended fabrics with metal zippers, buttons, and brand logos. When these garments reach the end of their useful life, taking them apart by hand so the fabric can be recycled is far too slow and expensive. As a result, millions of corporate uniforms are thrown into landfills or burned every year, wasting valuable textile fibres and harming the environment.

The Solution

Resortecs developed Smart Stitch™, a range of special sewing threads that hold garments together strongly during everyday wearing and washing, but automatically dissolve when exposed to high heat in a thermal oven (Smart Disassembly™). This allows entire garments to fall apart cleanly into separate fabric panels and metal trims in seconds, enabling fast, low-cost textile recycling.

Objectives

The trial aimed to test whether Smart Stitch™ sewing threads meet strict industrial durability standards for workwear and evaluate how easily uniforms disassemble inside thermal ovens. ITURRI wanted to determine if the technology can help them offer circular, recyclable workwear to corporate clients.

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Constrains

Industrial workwear must endure repeated high-temperature washing and heavy daily wear without falling apart prematurely. The testing team also evaluated specific safety categories (such as electric arc protective gear) to define exact thread temperature limits.

Performance

The pilot confirmed that Smart Stitch™ threads passed all mechanical strength tests for standard polo shirts, jackets, and trousers. Under thermal oven treatment, 100% of the seams dissolved cleanly, allowing zero-waste fabric separation. The project also proved that the system protects corporate brand ownership (Intellectual Property) by destroying branded uniforms automatically during recycling.

Partner Operational Improvements

Improved end-of-life recyclability rate for corporate workwear, protection against unauthorized uniform re-use, and progress toward zero-waste sustainability targets.

SUCCESSFUL PILOT VALIDATION

ITURRI is introducing Smart Stitch™ threads into selected corporate workwear product lines that do not require high-heat electrical arc protection, offering circular uniform recycling options to their enterprise clients.

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