

Improving the durability of denim jeans



As part of its commitment to continual improvement, F&F is taking positive steps to reduce the environmental impact of its sourcing and buying decisions. The retailer has made a conscious decision to be more sustainable, integrating durability into its working practices, from product design to its end of life. WRAP has been working with F&F to help make clothes look as good as new, for longer. F&F worked on two separate projects 'Advance Denim process on BCI cotton' and 'Stay Black technology'.

- Developing sustainable cotton denim with their suppliers allowed F&F to make significant savings in water and energy.
- After feedback from colleagues and customers, Stay Black fabric was developed for F&F womenswear jeans so they stay black, even after 20 washes.
- Feedback from the wearer trial of the Stay Black jeans was very positive, and this has been reflected in sales figures.

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Moving to BCI cotton

In 2015-16 F&F worked with a denim mill called Kipas with the aim of using 100% Better Cotton Initiative (BCI) cotton on a project to reduce the use of water, chemicals and energy required to make its denim clothing.

In some countries, producing 1kg of cotton can require 20,000L of water. In comparison, BCI cotton can produce the same weight of cotton and use half the volume of water.

F&F and Kipas worked with Archroma using their “Advance Denim Dye” technology to see how it performed. The trial showed that significant savings could be made in water and energy usage, and that there was a reduction in the number of processes and in the time taken for dyeing across the denim category.

	Dyeing process	Total steps	Total water usage (L/min)	Water savings (%)
Conventional	PAD-STEAM	13	490	n/a
Advanced Denim	DEMIM-OX	5	180	63%

The table shows how the trial with Advanced Denim Dye technology provided 63% savings on water usage

Comparing performance

Confident from the successful results of the trial, F&F progressed to bulk production and worked with Archroma to develop a range of colours and appearances for denim, in line with what F&F customers would want to buy.

With the original aim of reducing water, energy, and chemical impacts, F&F recorded the results from the bulk production and compared the performance of the Advanced Denim Dye with the conventional dyeing process, which showed significant savings in water and energy.

PROCESS	TOTAL DYEING STEPS	Total Fabric VOLUME (m)	TOTAL WATER USAGE (L)	TOTAL ENERGY USAGE (kW)	Water savings (%)	Energy savings (%)
Conventional	13	170k	3,749,826	5,225	n/a	n/a
Advanced Denim	5	170k	1,614,426	2940	56%	43%

Table shows how bulk production with Advanced Denim Dye technology provides 56% water savings and 43% energy savings

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F&F identified a further opportunity to improve the durability of its denim range. Feedback from colleagues and customers on its womenswear black jean range showed that there was a desire for the colour to last for more washes.

F&F took this feedback on board and worked with Kipas and Huntsman to develop a black denim fabric which stays black. With the help of Huntsman's special black dye, they successfully developed such fabric, staying black even after 20 home laundry washes with a shade change grade of 4. In addition to this product improvement, the price point has remained at £20.

Wearer trials

To test the performance of the Stay Black jeans, the internal F&F wearer trial team wore the jeans.

Feedback from these wearer trials included:

"I loved nearly everything about these jeans. The material is soft and washes well. I liked the fit and the rise is perfect for me. They are so comfortable to wear"

"The jeans did have added comfort and they had an amazing fit that lasts wash after wash, wear after wear."

"I have found in the past that black jeans lose their colour very quickly. These however retained their colour despite frequent washing."

Since going to market, the sales of the Stay Black jeans have been very positive and have been recognised as a particularly good result for F&F ladies denim department.

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Next steps

Working closely with suppliers to improve product performance has enhanced relationships, and F&F is continuing to look at opportunities to reduce their environmental impacts, whilst also improving the durability of their clothing.



F&F's Fabric Technical Manager Shaun Ghori receiving an award in September 2016 from the Istanbul Textile and Apparel Exporters' Association (ITKIB) for working closely with Kipas on water and energy savings by using Advanced Denim and Stay Black.

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WRAP's vision is a world where resources are used sustainably. It works in partnership with governments, businesses, trade bodies, local authorities, communities and individuals looking for practical advice to improve resource efficiency that delivers both economic and environmental benefits.

This case study was developed as part of the [Sustainable Clothing Action Plan \(SCAP\)](#). This is part of a series of [industry trials](#) focussed on extending clothing life, based on improvement actions identified in the [Sustainable Clothing Guide](#). The guide highlights how interventions can be made in design and throughout the supply chain, to make clothing last longer.

Our mission is to accelerate the move to a sustainable resource-efficient economy through:

- **re-inventing** how we design, produce and sell products;
- **re-thinking** how we use and consume products; and
- **re-defining** what is possible through recycling and re-use.