

# Fibre to fibre recycling of textiles

## Blycolin



Rijkswaterstaat  
Ministry of Infrastructure and the  
Environment



**Company:** Blycolin

**Product or service:** Linen service in the hospitality industry

**Pilot:** Reborn – Linen for linen

### Key facts:

- Development of new bed linen to be made from fibres of recycled linen
- The material of the new linen is cotton /polyester in a ratio of 70/30 %
- Composition of the yarn and fabric: 15% post-consumer cotton from collected bed linen, 35% industrial textile waste (cotton), 20% virgin cotton and 30% PES
- The recycling of raw materials in this pilot achieved positive environmental impact. An indication of this impact is:

water savings :	3,889	m <sup>3</sup>
energy savings:	7,053	kWh
CO2 reduction:	1.7	Tonnes

- In the period between 2017 and mid-2018, and estimated 560 kg of discarded waste were saved from the waste mountain

### Key findings:

- Material from discarded bedlinen can be used as material for new bedlinen
- Close cooperation with the right partners is essential
- The use of textile by hotel guests and staff is crucial for the lifespan
- Communication and cooperation in the chain between all stakeholders in the field of sustainability is key.

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## Overview of the company

### Intro

Blycolin started in 1972 as a service company for linen in the hospitality industry. Nowadays, the company employs 270 employees and is active in the Netherlands, Belgium, Luxembourg, Germany, Switzerland, Austria and Poland. Blycolin supplies linen for hotels, restaurants and wellness centres and provides full service in cooperation with a network of 150 laundries by taking care of investment, a tailor-made range, laundry services, logistics and inventory management. Sustainability is a key value.

### Mission and vision

Blycolin is a leading international specialist and partner in linen service for the hospitality industry. The employees have a heart for quality and endorse the CSR policy. The company offers inspiring, efficient and sustainable solutions that contribute to the quality experience of the guests of our customers.

### Cooperation with suppliers and other stakeholders

Blycolin generally cooperates with suppliers, laundries and the customers. Cooperation and quality are crucial for success. Blycolin generally has long-term relationships with its partners, in some cases more than forty years. Blycolin operates according to a code of conduct, which focuses on social responsibility among other aspects. All suppliers and laundries comply with this code of conduct.

Blycolin worked with Blue Loop Solutions in the ECAP pilot, which is a brand and platform for circular products and projects. A weaving company in Spain was also involved as supplier.

## Why ECAP?

ECAP – the European Clothing Action Plan, is a project part funded by the EU LIFE programme. The project aims to achieve waste prevention, a reduction in water and energy use and a reduction in CO2 emissions in the textile chain. ECAP uses F2F pilots to support businesses in their commitment to circular textiles and the reduction in the use of virgin materials. The pilots are intended to develop knowledge and insight into the use of recycled textile material in new clothing and textile. Blycolin had the ambition of making a recycled bed sheet. Within ECAP they were offered the opportunity to pioneer with the production and procurement of recycled linen.

### Recycling of hotel bed linen

In the pilot, Blycolin produced bed sheets made of post-consumer cotton from bed linen from customers of the service company. The new Reborn sheet contains 50% recycled cotton – of which 15% is from used bedsheets that were collected by Blycolin. 35% is industrial waste from the textiles industry.

**"We started with recycling 10 years ago. It was our dream to make new bedlinen out of old bedlinen !"**

Jaqueline Mommer,  
Marketing &  
Communications  
Manager at Blycolin



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## What we did

Before the ECAP was launched, Blycolin was researching ways of recycling new materials. The results were launched on the market: New Atlantic; a towel that includes 10-12% of discarded towelling cloth; the Stone bath mat that consists of 20% cutting waste; and the most recent addition is the Comeback, a bed runner made of 90% recycled material from old jeans. The development of Reborn is the next milestone.

The ECAP pilot was launched at the beginning of 2017 and was completed at the beginning of 2019 with testing in hotels.

The following activities were performed:

### Selection of products

With this pilot Blycolin, challenged itself to convert discarded cotton linen products into new high-quality raw materials. The Reborn pilot was set up to make a sheet that includes at least 15% of recycled material from Blycolin, supplemented with industrial waste to make up a total of 50% recycled cotton. The first production is 2000 metres.

### Engage Supply chain partners

Because of the importance of long-term cooperation, existing suppliers were initially asked if they wanted to participate in the pilot. It turned out that they had no experience in recycling and were unable to achieve results within the duration of the pilot. Various parties in the Blue Loop network had experience in recycling, also with post-consumer material. A Spanish yarn company and a weaving mill joined the pilot.

### Engaging clients

The other assignment was to find a client who wanted to participate in the pilot test. The lifespan of a sheet and therefore the Blycolin business model depends on the quality of the sheets and the use of the sheets by hotel guests and hotel staff. In addition, frequent washing is important in the test. Blycolin therefore has to carry out extensive practical tests before a new product is launched on the market.

## The service model

The service provision by Blycolin is based on the pay per use principle. The sheets are and will remain the property of Blycolin. The latter ensures reliable delivery of sufficient sheets that meet the set requirements. We work on the basis of multi-year agreements. The clean sheets must meet high requirements. The washing, pressing and mangling / drying process is intensive, with high temperatures and high pressure. The better the quality of the fabric, the better the treatment by the user, the longer a sheet lasts and the better the system works financially for all parties. A long service life is also better for the environment.

## Communication

Textile is not the core business for customers. The communication serves to ensure that hotel staff know something about sustainability and recycling. It is even better if they can tell their guests a good story about it. In addition, it is a good thing that the hotel is able to profile itself in a sustainable and innovative way. There is a small questionnaire, with a story and a material sample (recycled fibre) and a video. Remo's QR code can be used to see what the environmental benefits are.



### Tip :

Talk to your suppliers on a regular basis, also about Product improvement and recycling

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## Challenges

- Delivering a recycled product with the same quality as the normal product (comfort and technical specification) at competitive prices
- Keeping the entire production in Europe with as few logistics kilometres as possible between chain partners
- The new supply chain – spinner, weaver and clothing – should ultimately be connected to the preferred suppliers
- Set up a sorting system for different waste qualities in laundries
- Establishing partner networks for textile waste and recycling facilities
- Further knowledge development to facilitate the creation of fibre of the right quality
- Encouraging the market to rent these items.

## Results and impact

What did we achieve?

- A spinner and a weaver were found in Spain
- We have succeeded in making sheets with 50% recycled material by mixing cotton fibres from our own discarded sheets (15%) with industrial cotton cutting waste (35%)
- The developed fabric meets technical requirements for tensile strength, shrinkage and pilling
- Practical tests are still required before the sheets with recycled content can be launched on the market. The first test will be carried out at the beginning of 2019 in the Dutch hotel WeidumerHout. A second test is being discussed with another new and large hotel
- Colleagues are enthusiastic but generally do not see the consequences due to a lack of knowledge. Meetings and presentations were organised, visual material was viewed and articles and other information material were created
- In addition, information material was created for the hotels and their customers.

Fabric composition	product	Number mtrs	Weight total kg
15% post-consumer cotton 35% industrial textiles waste (cotton) 20% virgin cotton 30% virgin polyester	Bed linen	2,000	1,116
	Total RE cotton		558

Indication of environmental savings  
(source: REMO except for the waste figure)

	Per kg	Total ECAP pilot	
Water	3,485 litres	3,889	m3
CO2	1.58 kg	1.7	tonnes
Energy	6.32 kWh	7,053	kWh
Waste	0.15	167	kg post-consumer textiles
	0.35	391	kg industrial textiles waste

## Business case

- The cost is still a problem. The cost price in Europe cannot be expected to decline much further. This is required for the business case. This issue still needs to be resolved
- Labour is cheaper in the Far East, which is especially interesting for fashion in connection with ready-made clothing, which is far less important here
- Moreover, transport has a greater environmental impact. Figures to compare the impact of the different options are not yet available
- An additional to justify the costs not an option.

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## Next steps - long-term strategy of the company

Laundries are at the heart of Blycolin's business and are of great importance as a quality filter. Linen products that do not match a certain quality level are taken out. Discarded linen is collected at all laundries and sent to Blycolin headquarters from where it is distributed to various channels. Total annual waste is 300 tonnes.

Blycolin primarily seeks a second life for its textile waste. Blycolin wants to investigate this in research into circular textile. The Reborn sheet is launched on the market following positive practical tests. The objective is to continually increase the share of sustainable and circular products.

**"You need good partners for circular textile, as well as knowledge of fibre and washing quality!"**

Jaqueline Mommer, Marketing & Communications Manager Blycolin

## Success factors

- Professional procurement; recording agreements on quality requirements and requirements for working conditions and transparency, but also for knowledge development
- Good cooperation and regular contact with partners in the chain
- Previous experience in the development and use of recycled material: towel and bath mat as well as the Comeback bed runner made from recycled denim
- Collaboration with Blue Loop, for expertise and a network of producers with experience in recycling
- Skills and technical options offered by fiberiser in Spain.
- Customer trends for sustainable hotel concepts. Both in the Netherlands, Belgium and Germany
- Passion and ambition with the company and the management board
- Focus on internal communications, with the hotels and customers of the hotels via brochures and presentations but especially by telling the story.

## Lessons learned

- Southern Europe has surprising good knowledge of and experience in textile recycling with post- and pre-consumer material
- Bulk production of yarns and fabrics with recycled content is a condition for investment by the producer
- Mechanical recycling of cotton is a difficult process
- A great deal of time is required for the development of new cloth made from recycled material. This has to be freed up
- A reduction in the metre price for cloth with recycled content does not seem to be possible in Europe
- Import regulations with regard to waste (this involves importing waste) imposed by countries can represent an obstacle. This is not a problem in Spain, but in Turkey it is
- Figures or tools for comparing the environmental impact of transport in the various options (whether or not in Europe, whether or not to use discarded material of Blycolin) for circular products are not yet available
- A focus on communication about the proper use of hotel linen besides quality is essential for the lifespan of the products
- Knowledge of sustainable textile barely exists in the hotel sector.

## Tip:

**A 100% circular model is not possible, however it is possible to begin becoming more circular.**



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ECAP is €3.6 million EU LIFE funded project which aims to reduce clothing waste across Europe and embed a circular economy approach.

## ECAP mission

Cutting the environmental impact of clothing across the supply chain. Generating value for business through collaboration, measuring and sharing best practice

### Disclaimer

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Case studies were generated as a result of pilots carried out for ECAP by the Ministry of Infrastructure and Water Management (Rijkswaterstaat) and the specified organisations from 2016 to 2018.

### SAVINGS PER 1 KG:

