

INTERNATIONAL
**COTTON
CONFERENCE
BREMEN**

2024



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PRESENTATION

Session:
RECYCLING

Title:
Increasing sustainability in the spinning mill: Turning recycled material into yarn

Speaker:
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Conference Organization
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SAURER.

**Increasing sustainability in the
spinning mill- Turning recycled
material into yarn**

Silke Huertos López

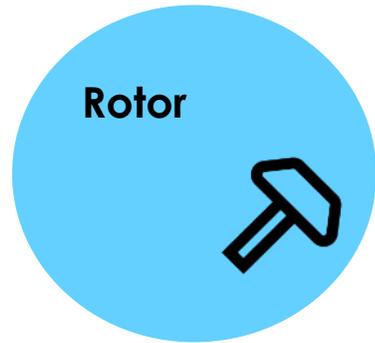
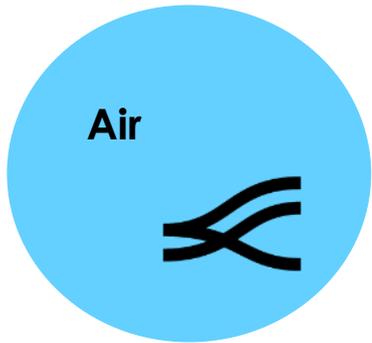
Cotton Conference, March 2024



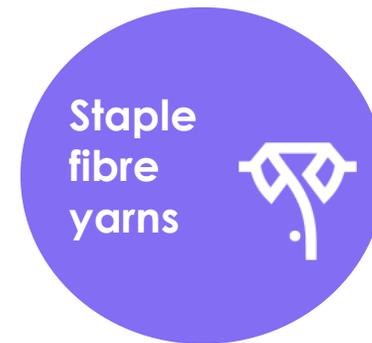
The Saurer Group

We are experts in Spinning and Twisting.

Saurer offers five spinning applications:



Saurer offers twisting solution for five different applications:



The textile industry's role in stopping the climate change



Saurer offers a large portfolio of machines already prepared for the production and processing of sustainable yarns

Pre-Spinning



Rotor: BD Series



Rotor: Autocoro



Air: Autoairo



Ring: ZI 72XL



Twisting: CompactTwister:



Recycling has a long history in spinning mills

Mill waste

e.g. Card waste
e.g. Comber noils



Mechanical recycling

Pre-Consumer Waste
Post-Consumer Waste



Chemical and thermo-mechanical recycling

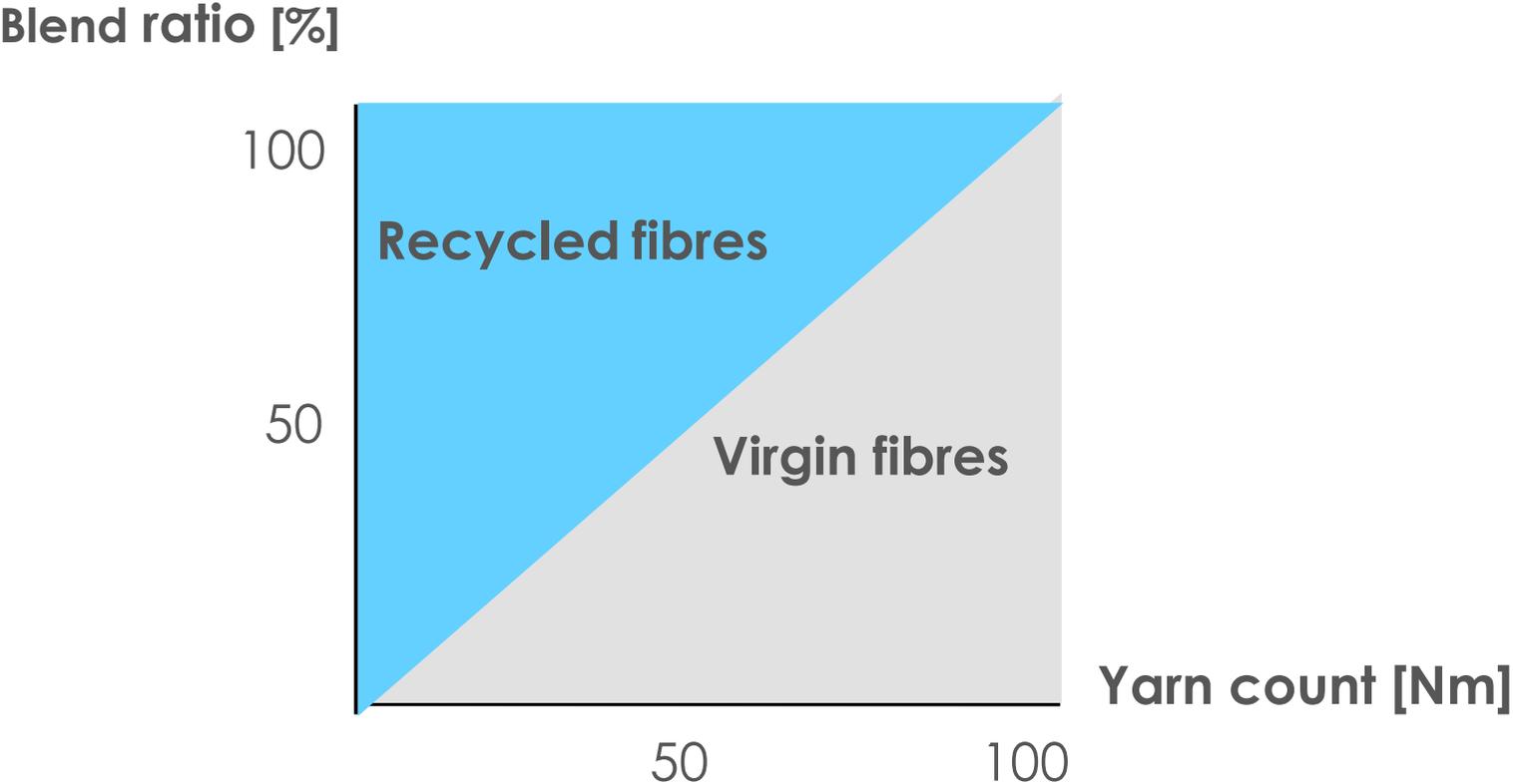
PES, PET etc.
Cellulosic fibres



Fibre Key Parameters

		Mechanical Recycling			Chemical Recycling / Thermo mechanical Recycling	
	Virgin Fibre	Pre Consumer Waste		Post Consumer Waste		
	100% CO				100% CV	100 % PES
		recycled millwaste	recycled woven scraps	recycled T-shirtscraps	recycled	recycled
ML (mm)	23,4	18,2	14,8	13,9	34,6	33,0
UQL (mm)	30,8	27,5	22,0	20,1	41,9	40,1
Sfc (%)	13,4	22,2	34,2	40,0	4,4	5,1
L1 (mm)	33,2	29,5	23,4	21,8	44,4	41,2
UI	82,6	76,4	73,6	73,2	95,3	92,3
Tested on Fibrotext by Textechno						

Main correlations in spinning recycled fibres



Spinning Recycling Yarns on Saurer Rotor-spinning machines



Spinning Recycling Yarns on Autocoro 11



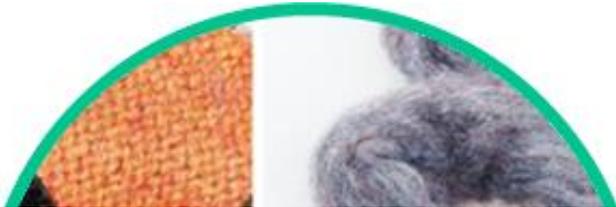
Self Cleaning Systems



3 Chamber System



Dirt Channel Cleaning



rX Recycling Xtreme.



Spinning Recycling Yarns on Autocoro 11 Challenges

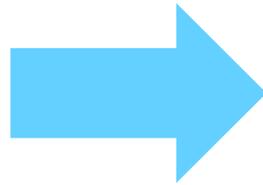


Spinning Recycling Yarns on Autocoro 11 Challenges

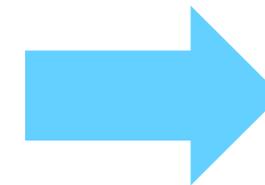
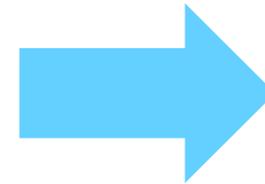


Spinning Recycling Yarns on Autocoro 11 Textile Laboratory

Recycled fibre sample



MDTA 4 by Textechno

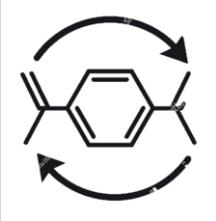
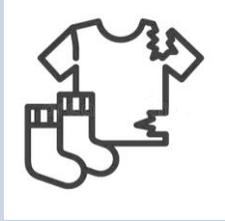
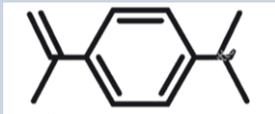


Yarn scraps

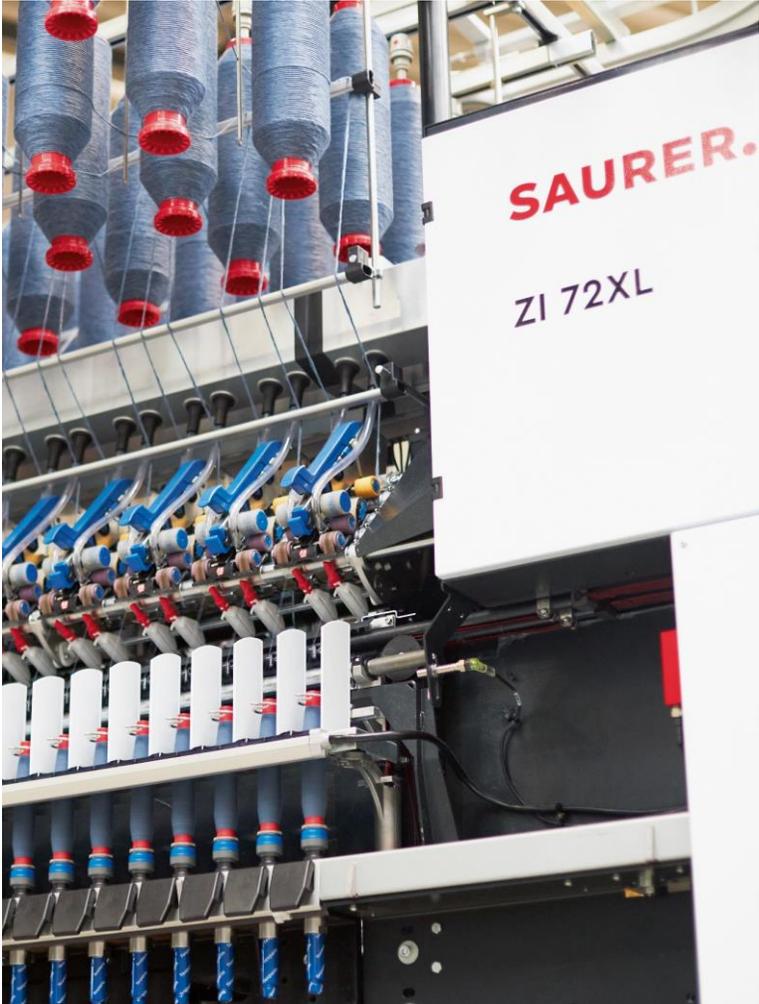


Proper fibres

Customer project examples – Rotor Spinning – Autocoro 11

Topic	Blend		Yarn Count	Tenacity
High Ratio of recycled fibres	<p>Regenerated Polyester</p>  <p>50%</p>	<p>Recycled Cotton</p>  <p>50%</p>	Ne 21	9,5 cN/tex
Fine Yarn Counts	<p>Virgin Cotton</p>  <p>50%</p>	<p>Recycled Cotton</p>  <p>50%</p>	Ne 30	10,5 cN/tex
High Amount of Trash	<p>Polyester</p>  <p>50%</p>	<p>Mill Waste</p>  <p>50%</p>	Ne 10	13,6 cN/tex

Spinning Recycled Fibres on Saurer Autospeed and Compact-Spinning Machine ZI 72XL



Spinning Recycled Fibres on Saurer Autospeed and Compact-Spinning Machine ZI 72XL



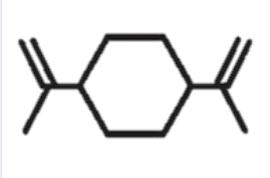
Impact FX pro with multihole apron instead of mesh apron

Spinning Recycled Fibres on Saurer Autospeed and Compact-Spinning Machine ZI 72XL

Challenges



Customer project examples - Ring Spinning - ZI 72XL

Topic	Blend		Yarn Count	Tenacity
High Ratio of Pre- Consumer Waste	Virgin Cotton  40%	Pre-Consumer Cotton  60%	Ne 24	16 cN/tex
High Ratio of Post- Consumer Waste	Polyester  35%	Post- Consumer Cotton  65%	Ne 24	9,5 cN/tex
Fine Yarn counts	Lyocell  50%	Post- Consumer Cotton  50%	Ne 30	18 cN/tex

The challenge is to master spinning of recycled fibres on ring spinning machines – in ITA Recycling Atelier we work on this as a team.

A joint project with



Hochschule Augsburg University of Applied Sciences

Technology partner



Premium partner



Spinning Recycling Yarns on Saurer Air-Spinning Machine Autoairo



For sustainable and regenerated fibres - up to 500 m/min


The distinguished yarn

Customer project examples – Air Spinning - Autoairo

Brand	Fibre	Yarn Count	Yarn Quality	Production Speed
 CIRCULOSE [®]	pulp out of 100% textile waste with high cellulose content (e.g. denim jeans) Our Trial: 30% Circulose / 70% Viscose	Ne 30	Yarn quality and running behaviour satisfactory	500 m/min
 LENZING [™] EcoVero [™]	from sustainable wood with reduced water and CO ₂ impact certified by EU Ecolabel for textile production	Ne 30	Yarn quality and running behaviour satisfactory	460 m/min
 ECOCCELL	from sustainable wood with reduced water impact and more than 99% solvent recovery	Ne 30	Yarn quality and running behaviour satisfactory	460 m/min
 REFIBRA [™] technology	Regenerated cotton and wood pulp with reduced water, CO ₂ impact and more than 99% solvent recovery Fibers can be identified in the supply chain	Ne 30	Yarn quality and running behaviour satisfactory	500 m/min

Recycling Yarns on Saurer Twisting machines for staple fibre yarns

Compact Twister

The Two-for-One twisting process is a process to significantly enhance the yarn quality.



Saurer is the ideal partner to develop and optimise staple fibres.

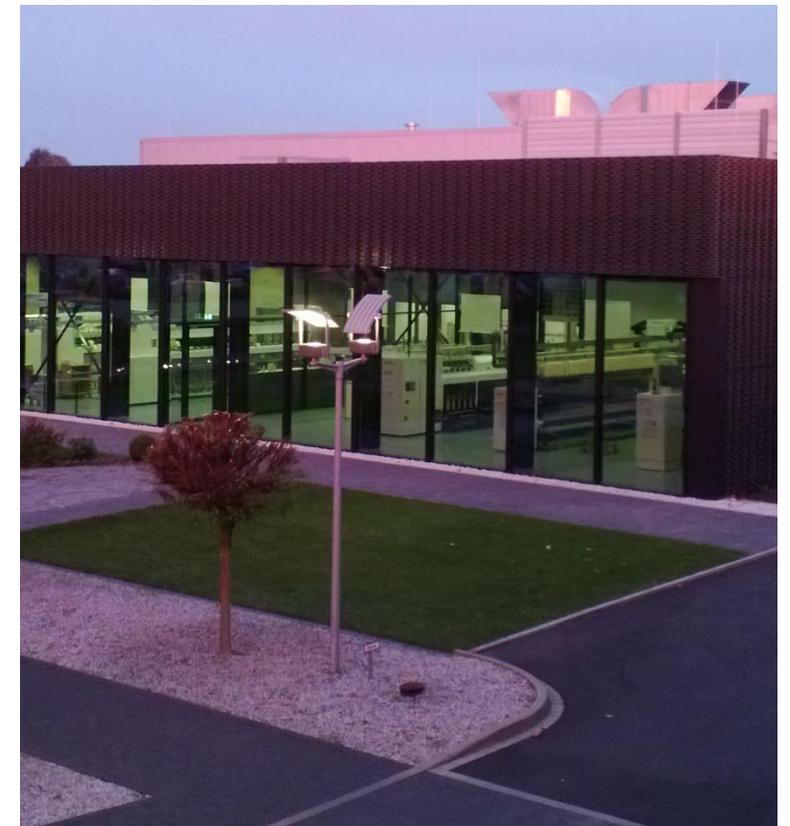
Saurer is leading in spinning recycled fibres



Our textile technology laboratory is supporting to improve spinning processes



The spinning technology competence centre is based in Übach-Palenberg in Germany



Thank you.

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