

# Exciting new spinning technologies

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Australian Wool Innovation



# New/different product needs

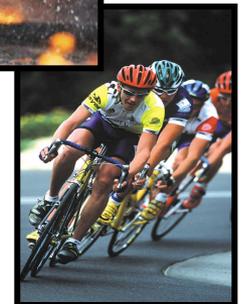
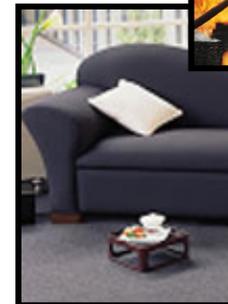
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- Innovative thinking
- New/different processes
- Adoption

# New/different products created by:

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- fibre
- blends
- physical and chemical modification
- yarn formation differences
- adoption of non-conventional methods
- versatility in finishing
- fabric geometry and design.



# Fibre crimp

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Effects of fibre crimp:

- shrinkage
- fabric weight
- pilling
- thickness
- air permeability.

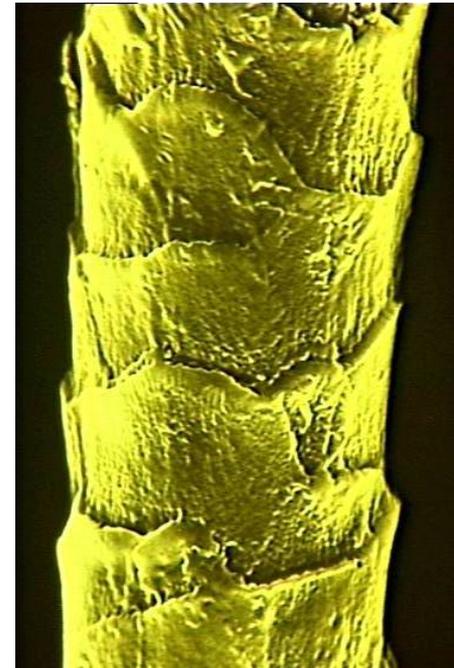


# Fibre length

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Effects of longer fibre length:

- reduced breaks in spinning
- improved yarn properties
- pilling.



# Changes in yarn formation – what they mean for wool products

- Reference is ring spun.
- Potential new products for wool.
- Fabric appearance critical.
- Conservative industry, WE.

# Yarn requirements

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- Constant mass
- Cm to cm / km to km
- Robust
- Minimum weak places
- Good appearance
- Function
- Appeal



## Processes:

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- Combing

- Drawing

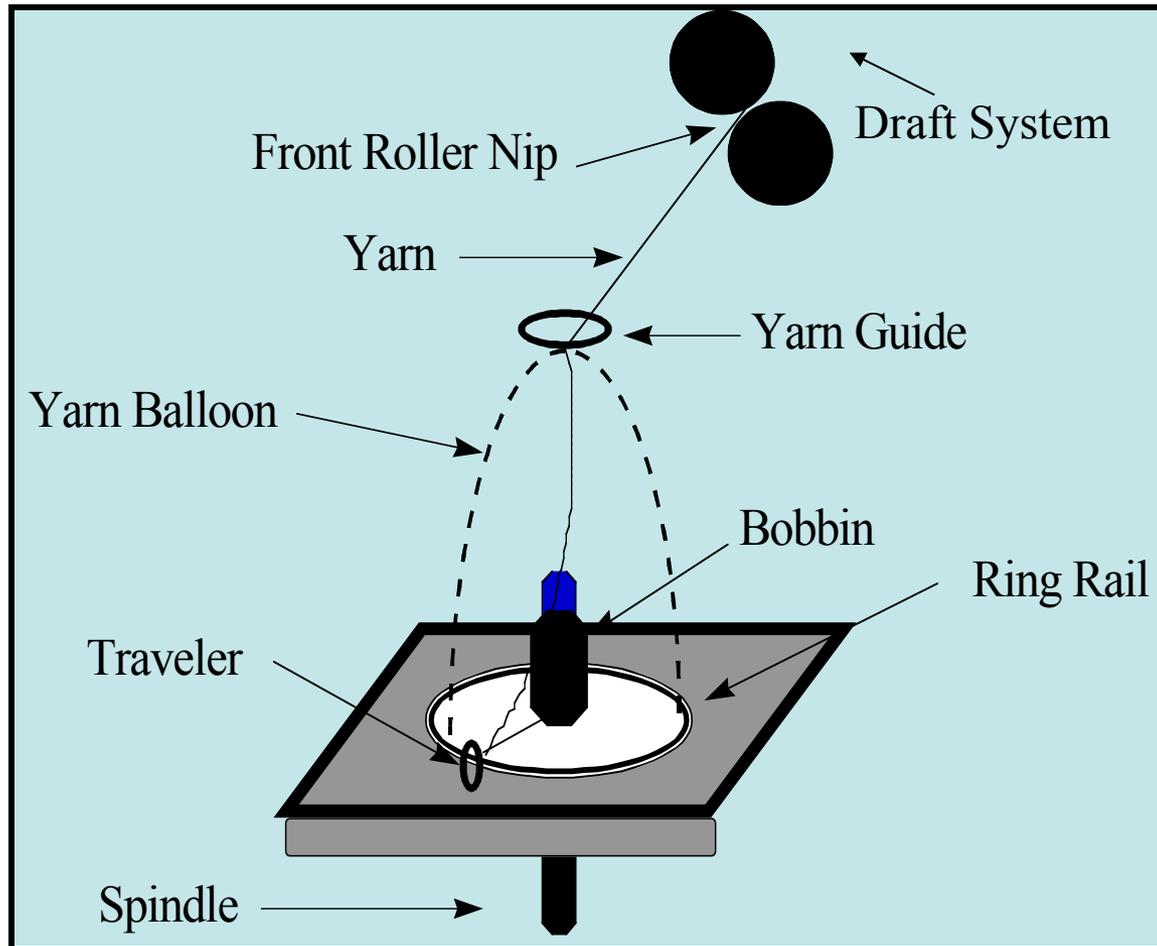
- Spinning

- Wind/clear faults

- Twofold

- Fabricate

# Spinning



## Limits: spinning production (m/min)

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SPEED, rpm	10K	30K
Wool (700 TPM)	14.3	na
Cotton (840 TPM)	11.6	35.4

# Limits: fibre diameter

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	Wool		Cotton
Fibre DIAMETER (Micron)	18	22	12
Yarn count, Nm (@ 40 fibres)	78	52	114
Min. fabric weight gsm			
-plain	160	205	75
-gab	190	240	90

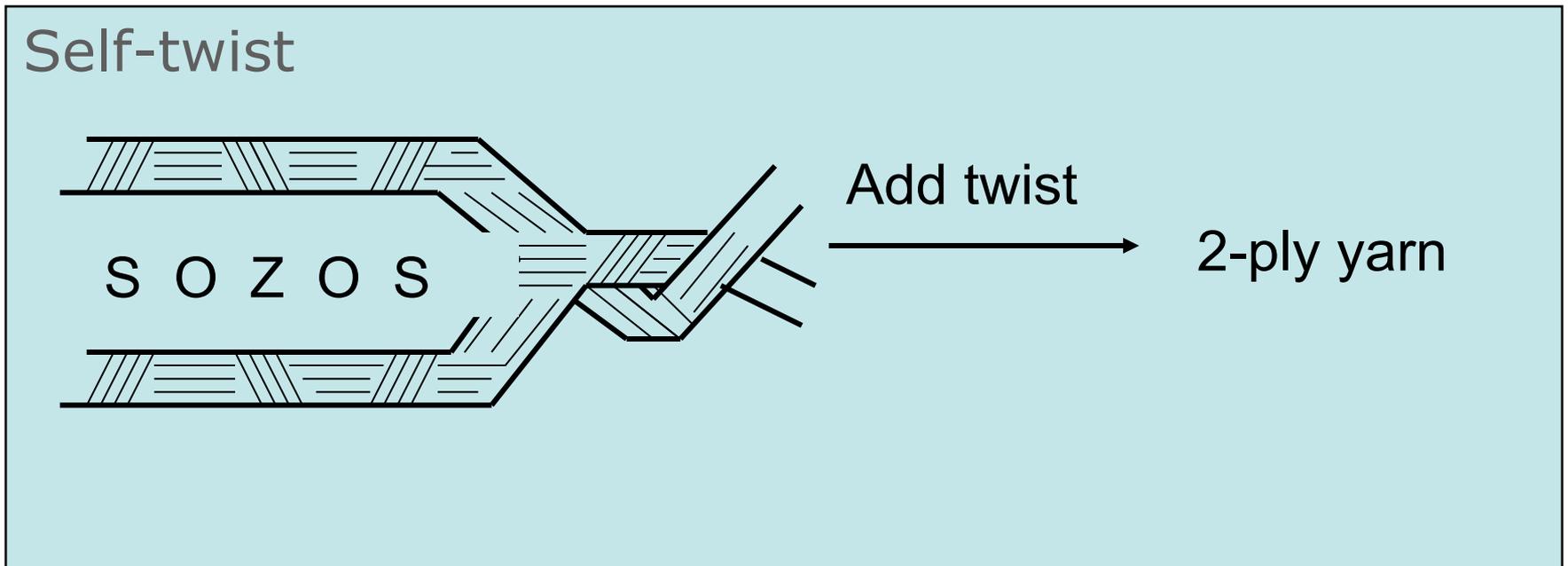
# Costings

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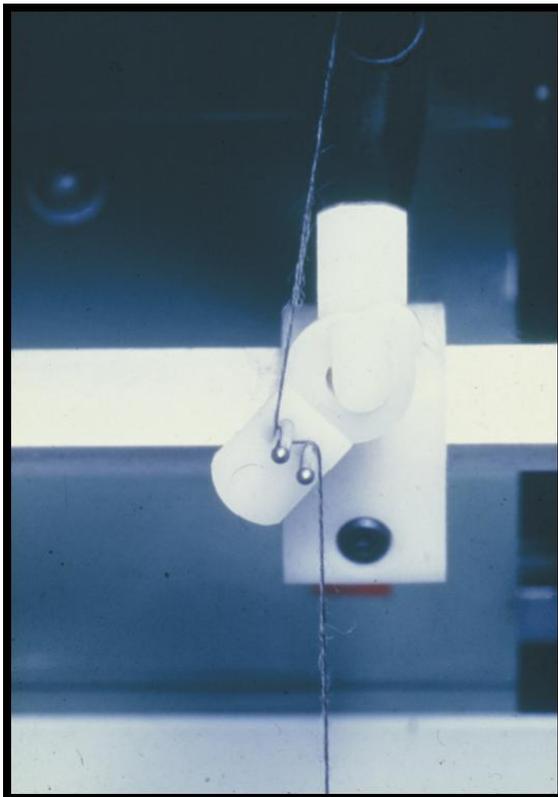
Yarn count and fibre diameter	Yarn price AUD/Kg	Est. conversion cost AUD/kg	Comments
24 <sup>s</sup> Nm 22 micron	17.00	6.00	
56 <sup>s</sup> Nm 18.5 micron	23.50	11.5	Compares with combed cotton ring spun conversion cost of \$3.50/kg i.e. ratios of 3.2 to 4.3
72 <sup>s</sup> Nm 18.5 micron	27.70	16.70	

# Self-twist

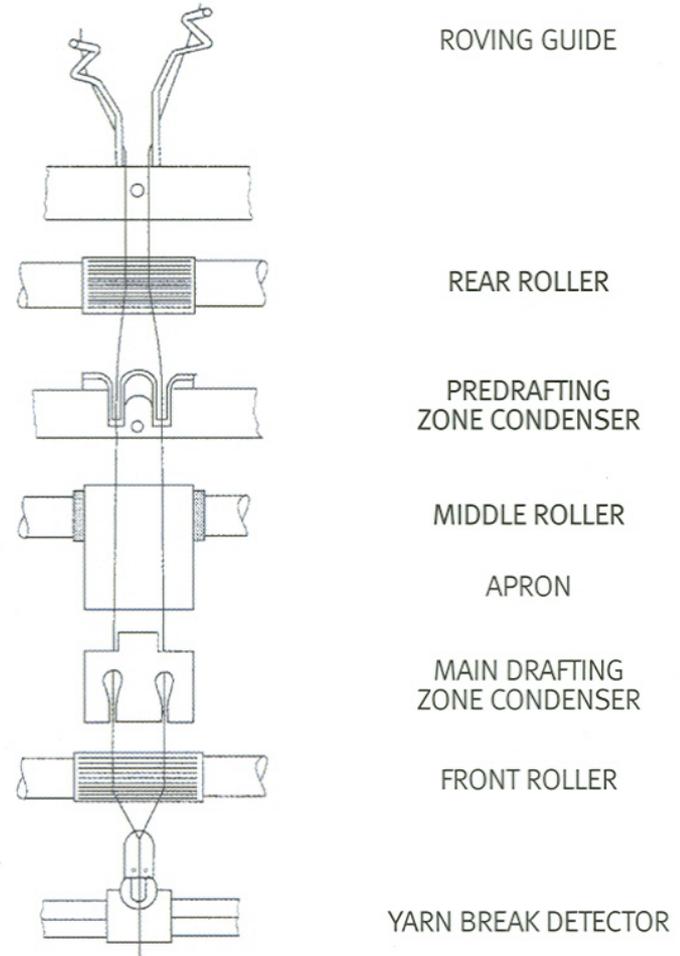
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# Sirospun



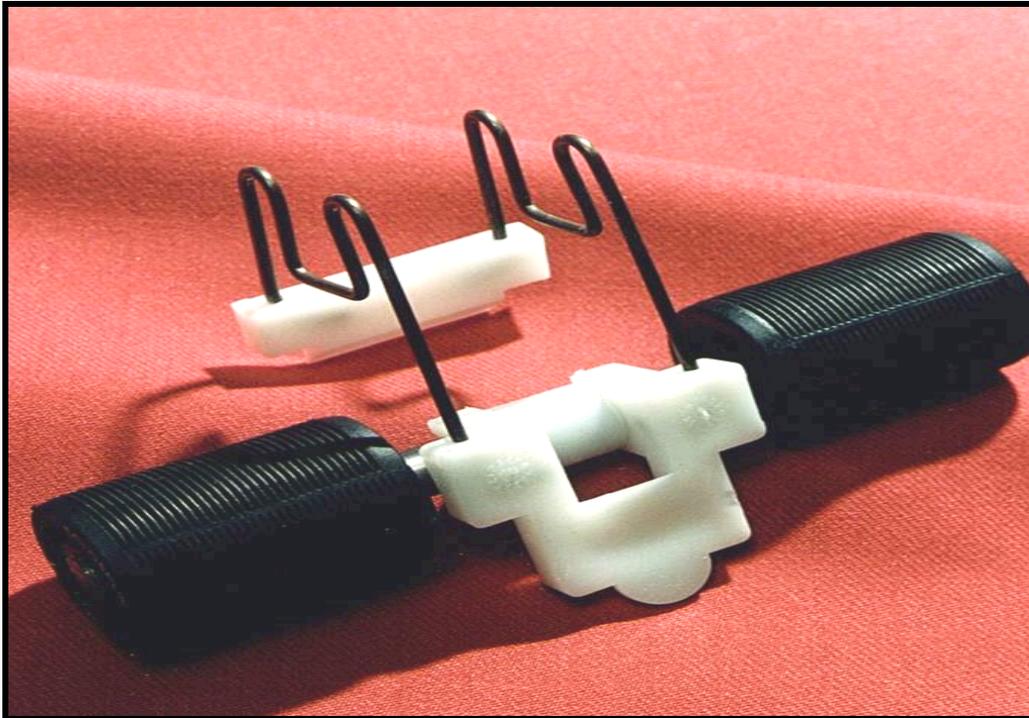
## THE SIROSPUN™ PROCESS



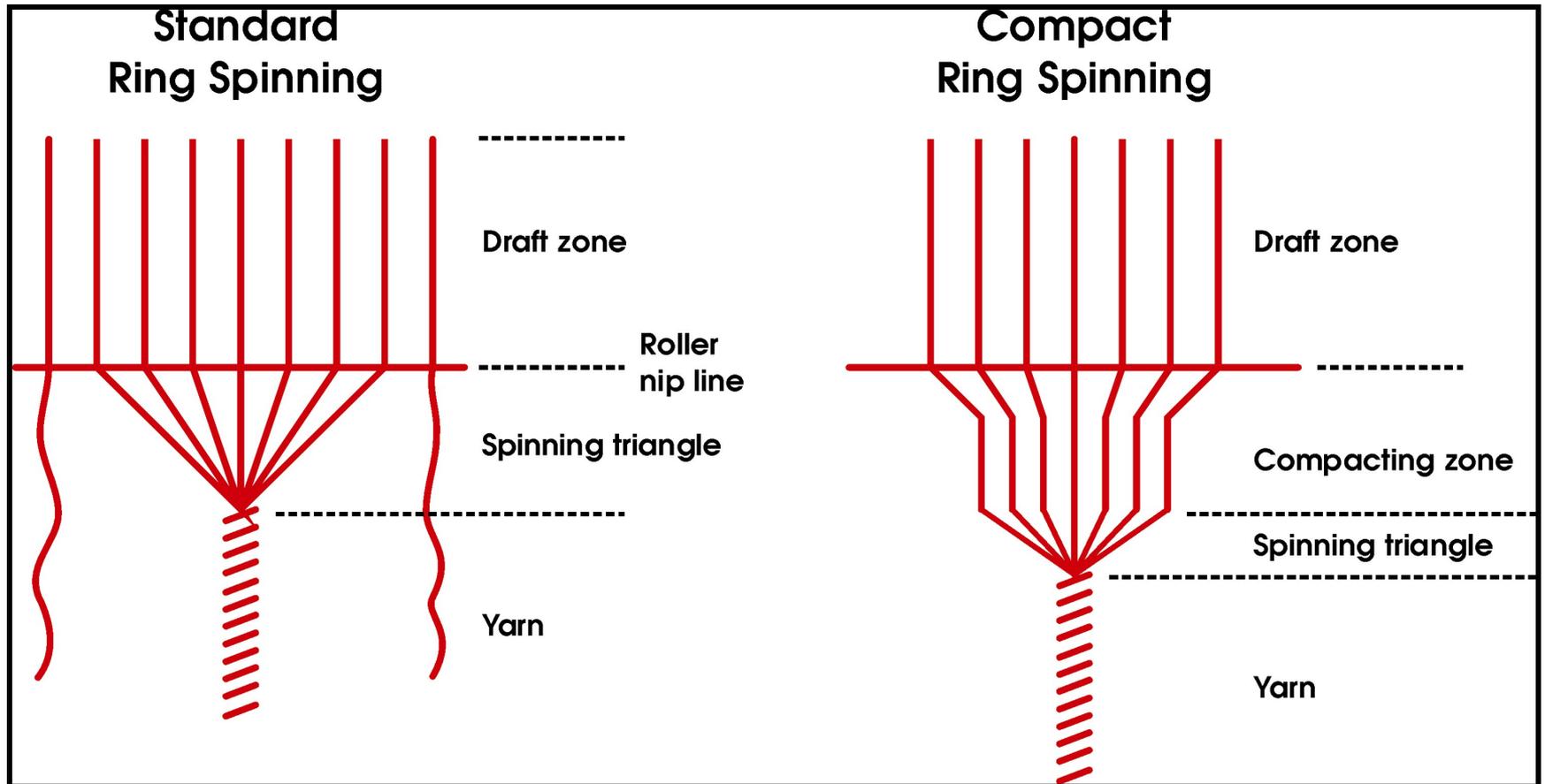
WORSTED RING SPINNING MACHINE

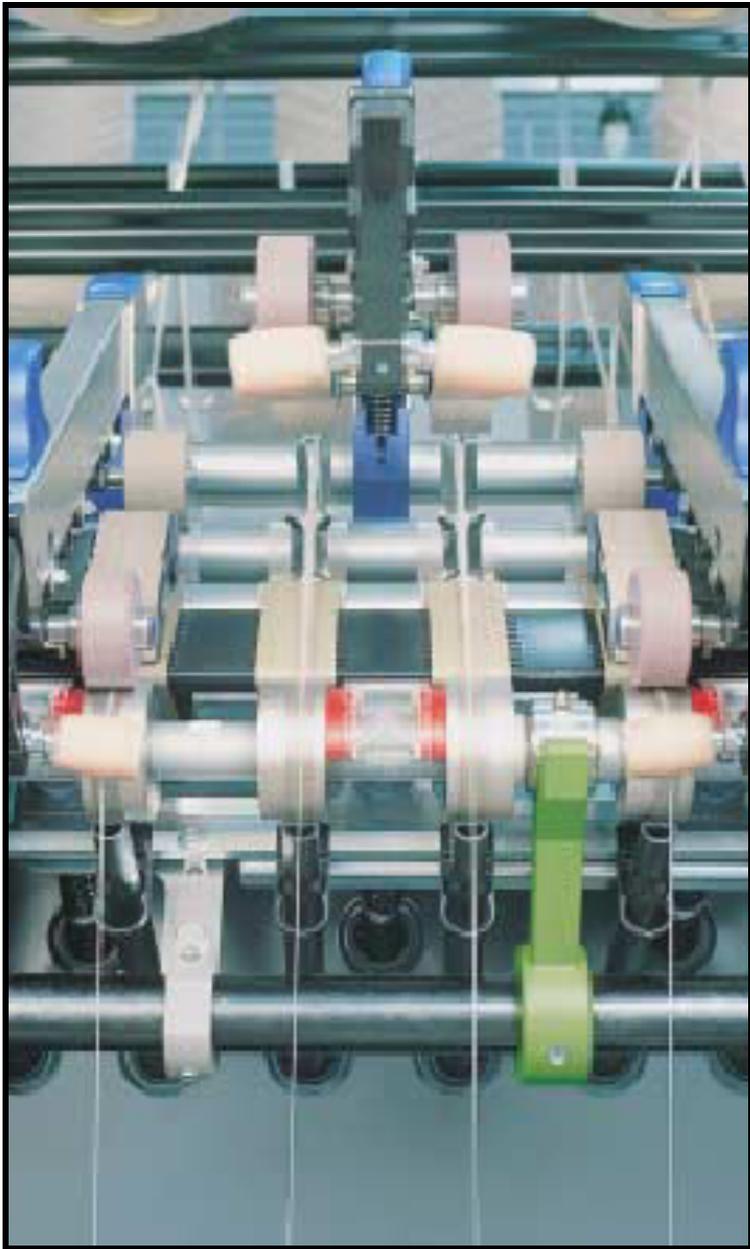
# Solospun

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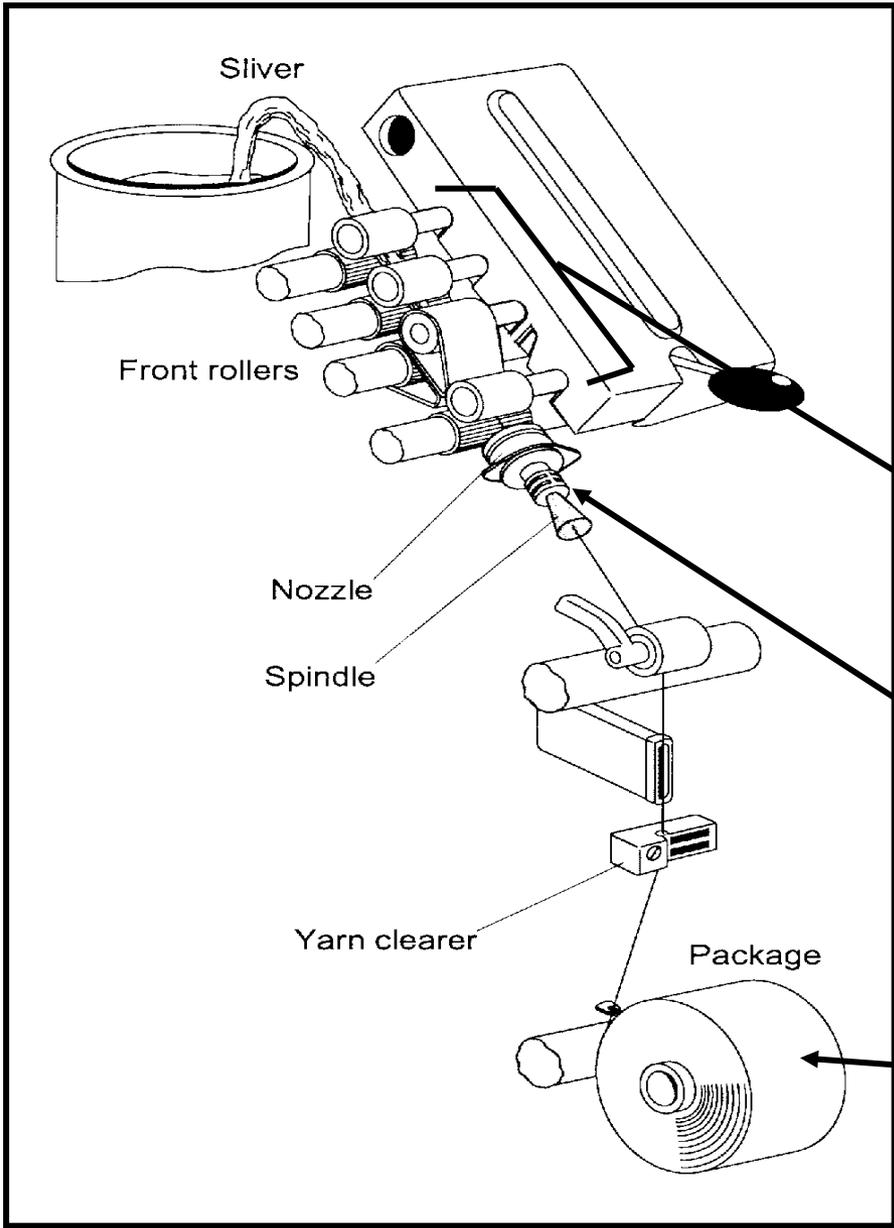
# Air-condensed spinning





## Compact spinning system

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# Murata Vortex spinning system

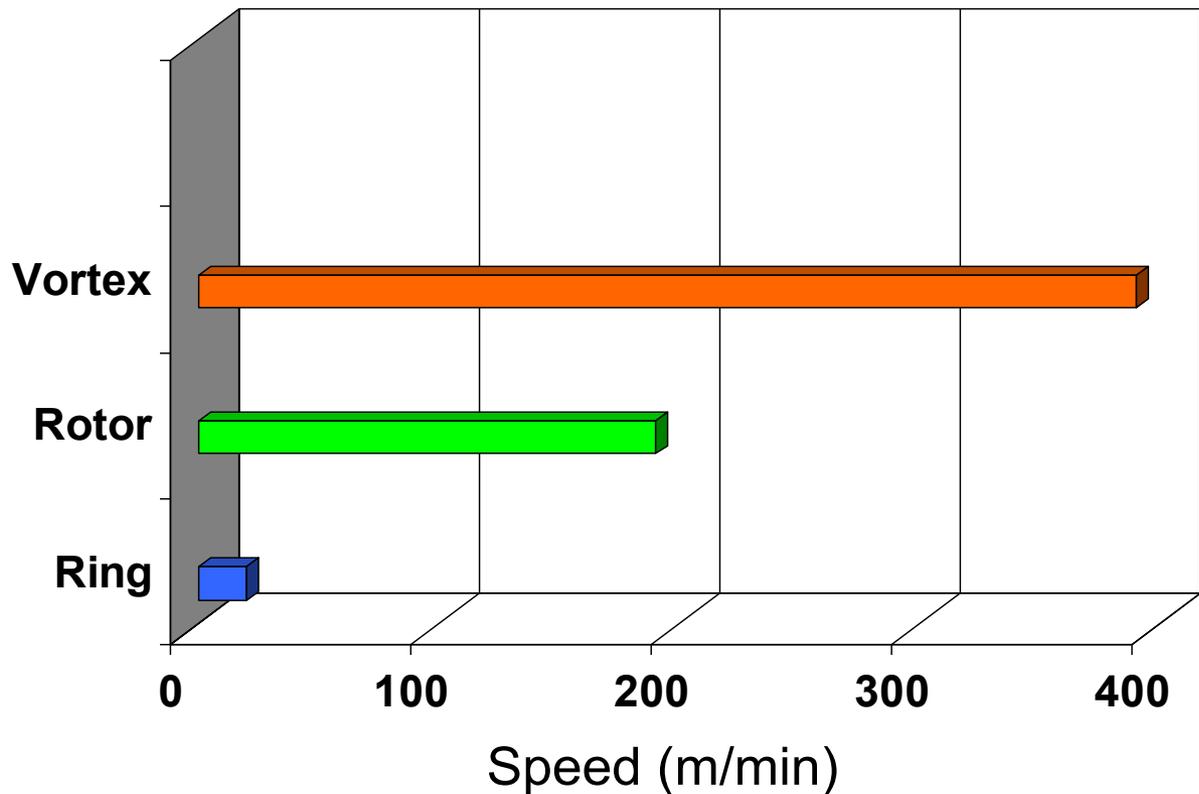
Drafting part

Spinning part

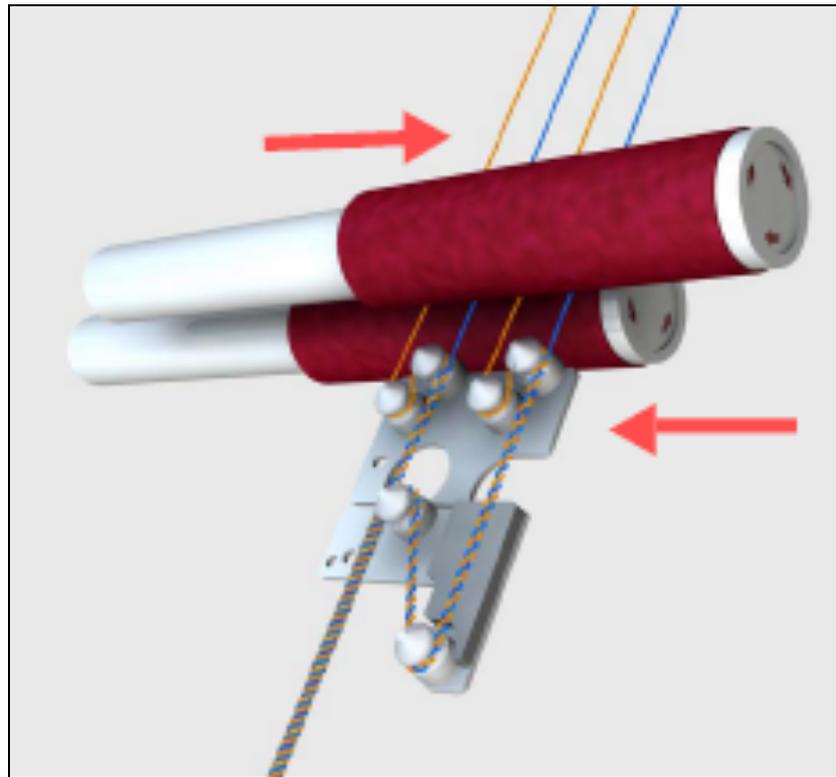
Winding part



# Short-staple spinning systems

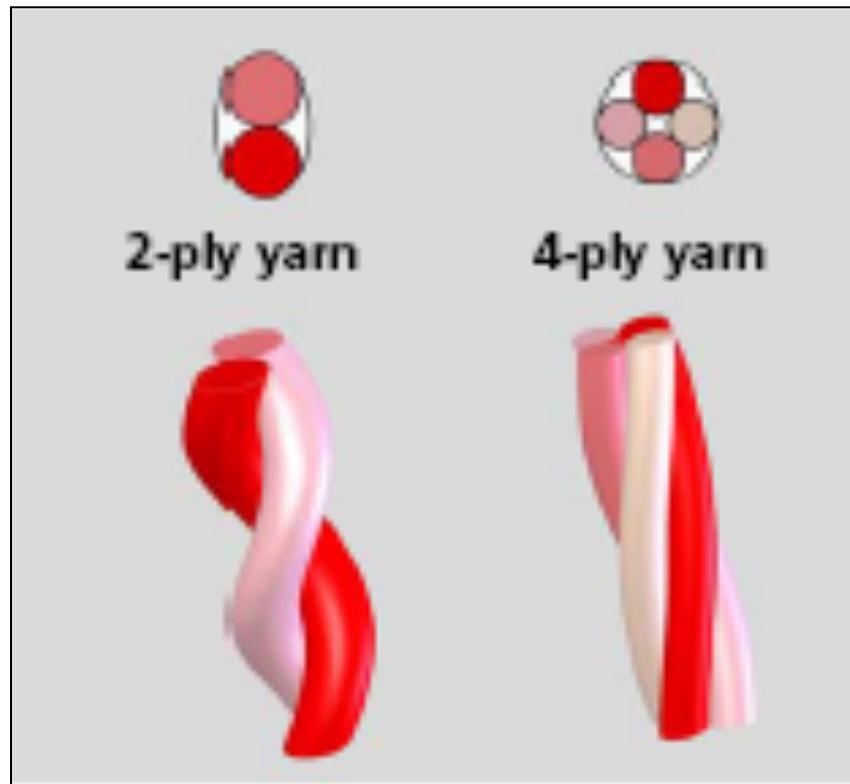


# Saurer Winpro XT- 4



# Saurer Winpro XT - 4

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# Comparisons

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	Ring	Compact	Vortex	Solospun
<b>Cost</b>	Hi	Hi	Attractive	Reduced
<b>Robust</b>	Av	Av	Acceptable	Reduced
<b>Flexibility</b>	Good	Reduced	Limited	Different
<b>Quality</b>	Hi	Hi	Reduced	Questions
<b>Appearance</b>	Hi	Hi	Reduced	Questions
<b>Distribution</b>	Hi	Limited	Small	Questions
<b>Market</b>	Reducing	Stagnant	New-limited	Stagnant
<b>Fibre needs</b>	Reference	Ring/Long H	SS	Ring/Long H