OptCotton
Cotton bale management system
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INTERNATIONAL COTTON CONFERENCE BREMEN 2024

BREMER BAUMWOLLBÖRSE SEIT 1872
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HOMOGENIZATION OF COTTON LAYDOWNS WITHOUT CATEGORIZING BALES IN INVENTORY USING ARTIFICIAL INTELLIGENCE

*Bale management method that abandons categorization for a smarter, AI-driven approach.*

Unlock unparalleled efficiency in the textile industry with this method – the exclusive cotton bale management that bypasses the costly and inefficient categorization process.

Harnessing the power of artificial intelligence, this methodology seamlessly manages cotton mixes, carefully considering all HVI parameters and over 16 quality factors. Many spinning mills limit themselves to just 3 to 5 quality parameters due to the human limitations in considering them all. If the spinning mill is using a restricted number of quality parameters, you're lagging behind the future of quality control. Step into the forefront of innovation with this method and optimize your yarn production by embracing a comprehensive and forward-thinking approach to cotton bale management.
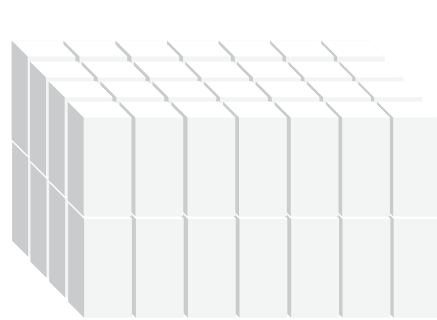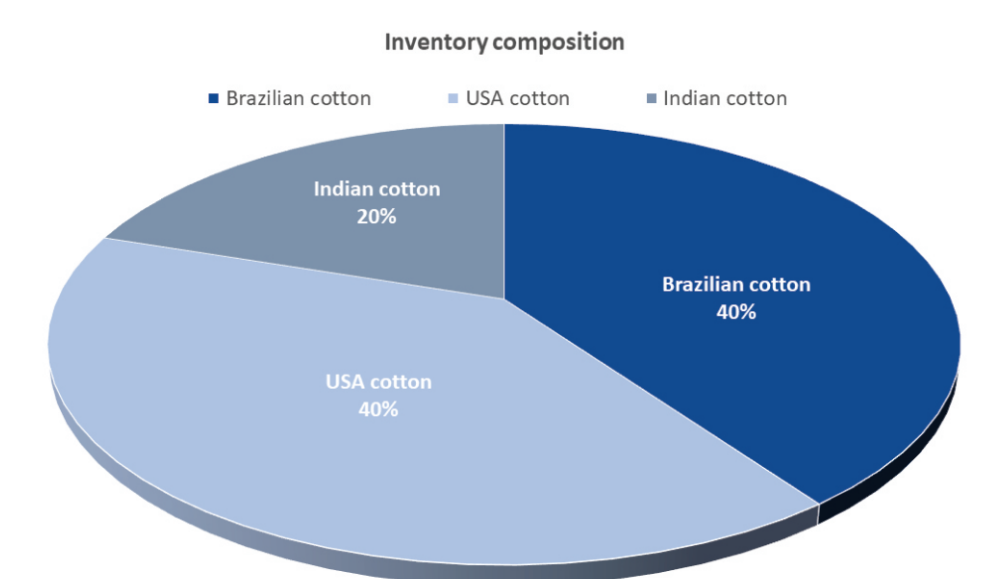
Cotton entry flow

1 Upon arrival, the bales are identified, and samples are taken for testing. The supplier's bale ID and quality can also be utilized.
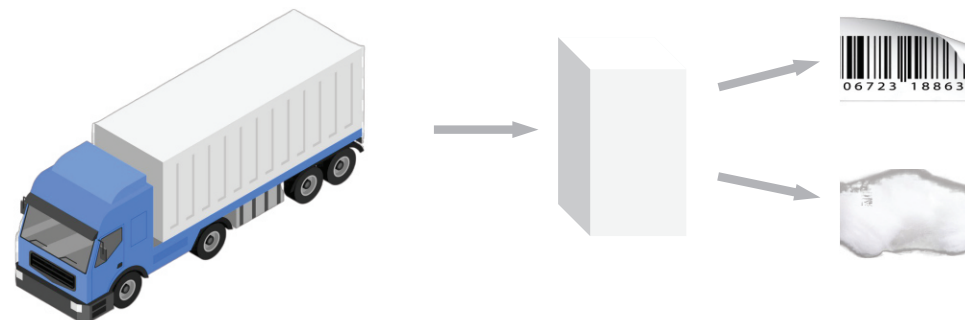
**2** Bales are then stacked at warehouse.

Available inventory is made up of lots of different origins and cotton types.

Inventory composition
- Brazilian cotton
- USA cotton
- Indian cotton

Brazilian cotton 40%
USA cotton 40%
Indian cotton 20%

Mixing process flow

1 Quality Planning: The calculation involves determining the average quality for each parameter and defining an accepted variation based on both the quality in inventory and the quality of the laydown in process.
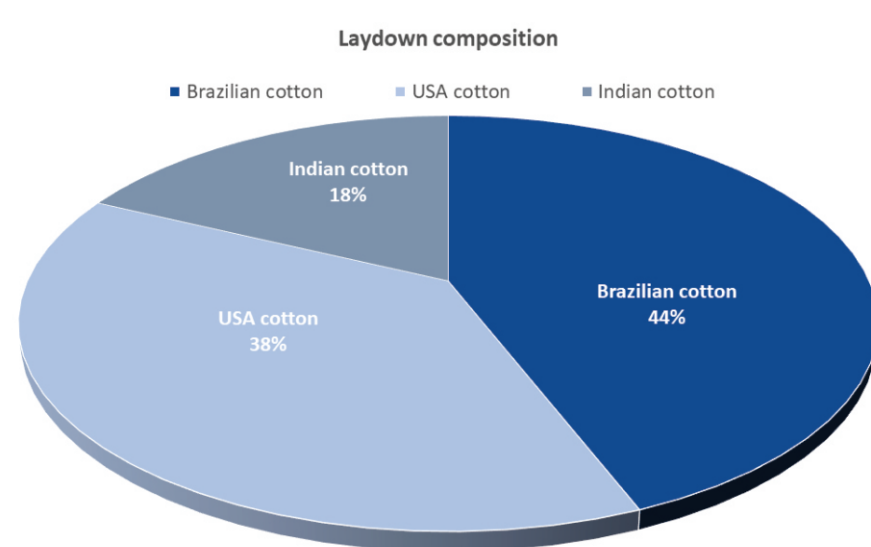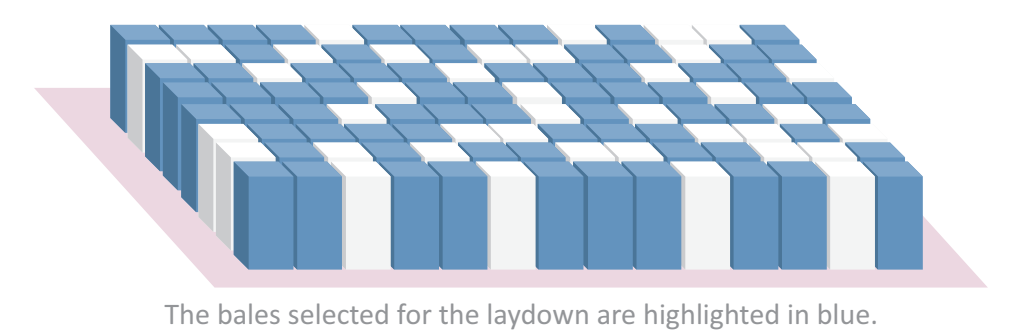

Inventory versus Planned Quality per week
Example: Micronaire
— Week — Inventory — Planned
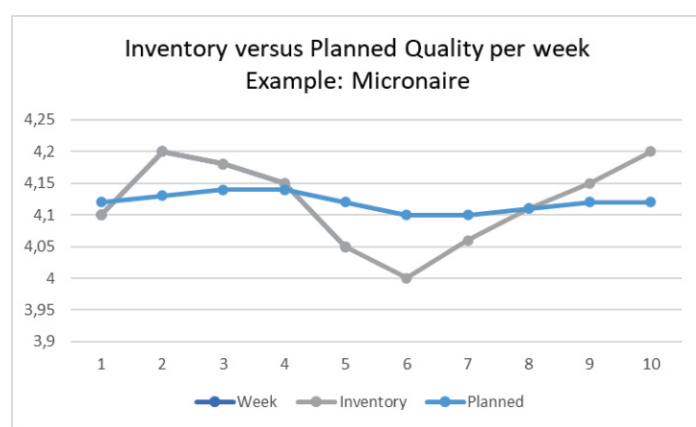
2 Pre Laydown: Establishing a pre-laydown area with 50% more bales in relation to the number of bales in the laydown. The required quantity of bales from each pile is withdrawn from inventory and placed in the pre-laydown area, incorporating both the quality of the pre-laydown and the quality of the laydown in process, along with the bales left over in the previous laydown.

Pre-laydown area

Bales remaining from last laydown
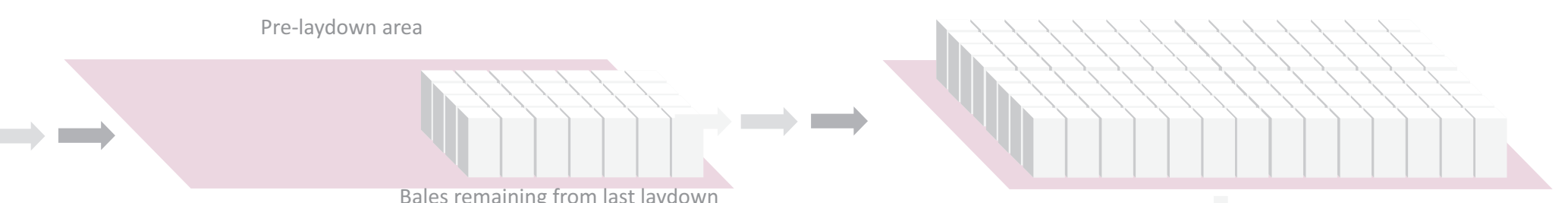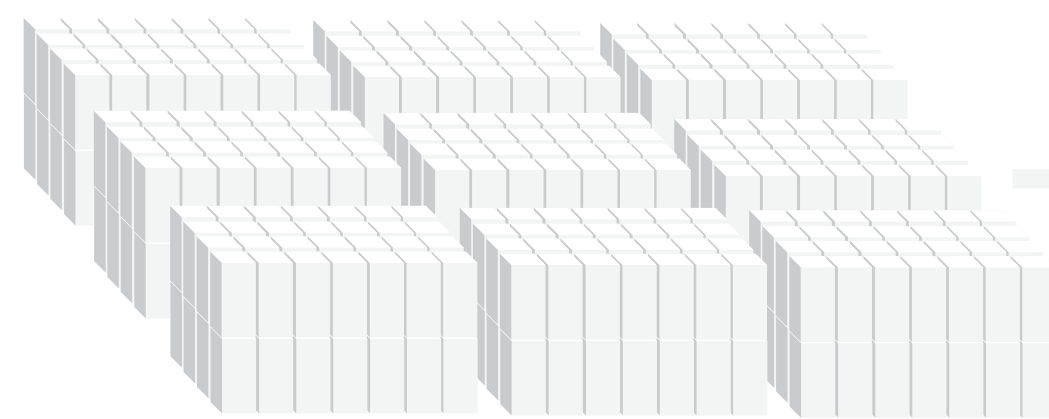
4 Layout: Bales selected for the laydown are moved to the blow room line according to the positions defined for each bale in the laydown step.
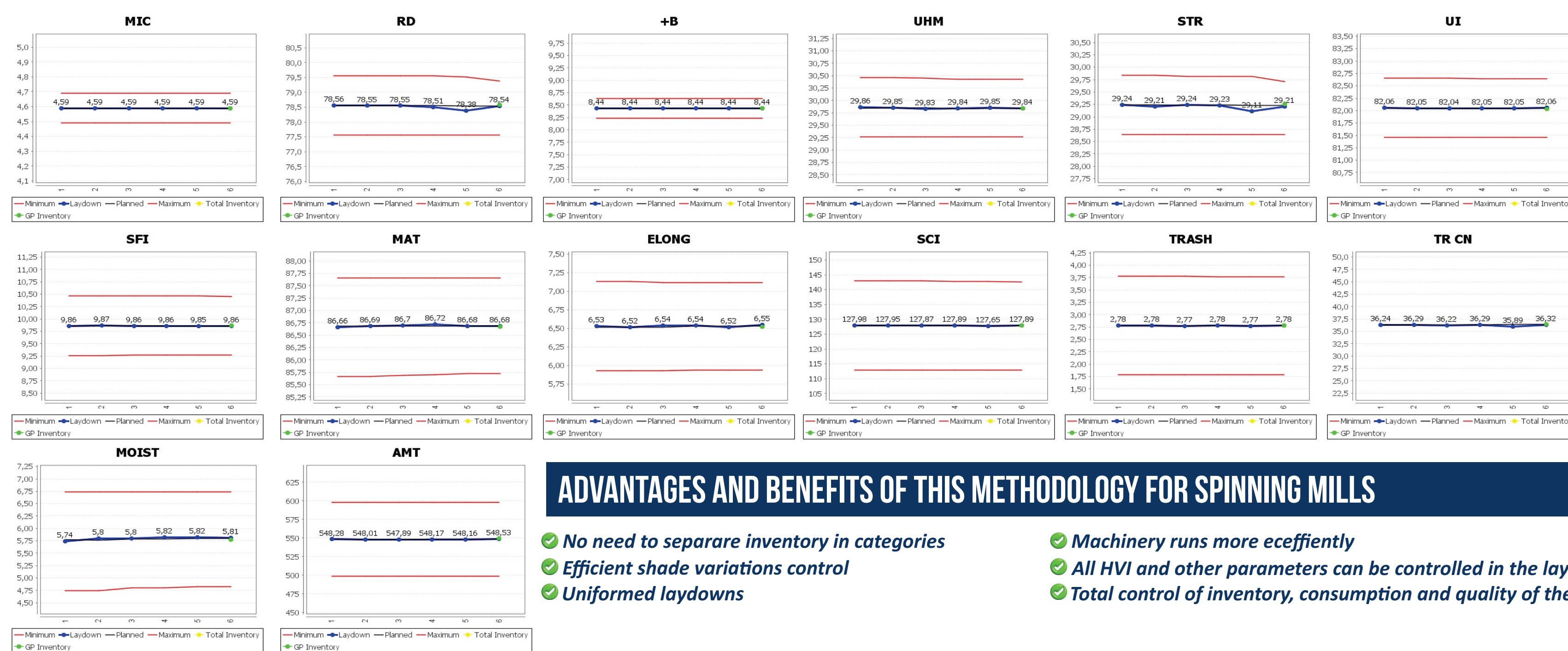
3 Laydown: Once the pre-laydown is completed, bales are selected for the laydown, ensuring that the average quality of the laydown area matches the quality defined in the planning step.

The bales selected for the laydown are highlighted in blue.

Laydown composition
- Brazilian cotton
- USA cotton
- Indian cotton

Brazilian cotton 44%
USA cotton 38%
Indian cotton 18%

RESULTS

DUE TO THE MIXING PROCESS PLANNED USING ARTIFICIAL INTELLIGENCE BASED ON INVENTORY QUALITY, ALL LAYDOWN AREAS EXHIBIT UNIFORM AND STABLE QUALITY ACROSS ALL PARAMETERS.

Legend for charts: — Minimum — Laydown — Planned — Maximum — Total Inventory — GP Inventory

MIC: 4.59, 4.59, 4.59, 4.59, 4.59, 4.59
RD: 78.56, 78.55, 78.55, 78.51, 78.39, 78.54
+B: 8.44, 8.44, 8.44, 8.44, 8.44, 8.44
UHM: 29.86, 29.85, 29.83, 29.84, 29.85, 29.84
STR: 29.24, 29.21, 29.24, 29.23, 29.11, 29.21
UI: 82.06, 82.05, 82.04, 82.05, 82.05, 82.06
SFI: 9.86, 9.87, 9.86, 9.86, 9.85, 9.86
MAT: 86.66, 86.69, 86.7, 86.72, 86.68, 86.68
ELONG: 6.53, 6.52, 6.54, 6.54, 6.52, 6.55
SCI: 127.98, 127.95, 127.87, 127.89, 127.65, 127.89
TRASH: 2.78, 2.76, 2.77, 2.77, 2.77, 2.78
TR CN: 36.24, 36.29, 36.22, 36.29, 35.89, 36.32
MOIST: 5.74, 5.8, 5.8, 5.82, 5.82, 5.81
AMT: 548.28, 548.01, 547.89, 548.17, 548.16, 548.53

ADVANTAGES AND BENEFITS OF THIS METHODOLOGY FOR SPINNING MILLS

- ✔ No need to separare inventory in categories
- ✔ Efficient shade variations control
- ✔ Uniformed laydowns
- ✔ Machinery runs more eceffiently
- ✔ All HVI and other parameters can be controlled in the laydown.
- ✔ Total control of inventory, consumption and quality of the laydowns

References
[1] Patent: US 10,815,589 B2 (Oct. 27, 2020)
[2] Patent: BR 112018006948-5 (Jul. 19, 2022)

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