

Sensors avoid material and energy wastage

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Sensors and actuators directly address the 3 dimensions of sustainability

Dimensions of sustainability

- Social/people
- Environmental/planet
- Economic/profit

Purposes of sensors & actuators

- Safety
- Process control
- Quality assurance

Loepfe sensors & actuators

- WeftMaster® FALCON-i
- WeftMaster® SFB
- YarnMaster® PRISMA

Applications

- Zero-defect in airbags and safety belts
- Optimum weft thread tension
- Controlled yarn quality

Technology unleashes customer benefits to drive sustainable decisions

4-sensor technology

- Optical infrared
- Capacitive mass
- Optical RGB
- Triboelectric

Real-time analysis

Full yarn monitoring

- Yarn properties/defects
- Yarn contamination
- Yarn throughput

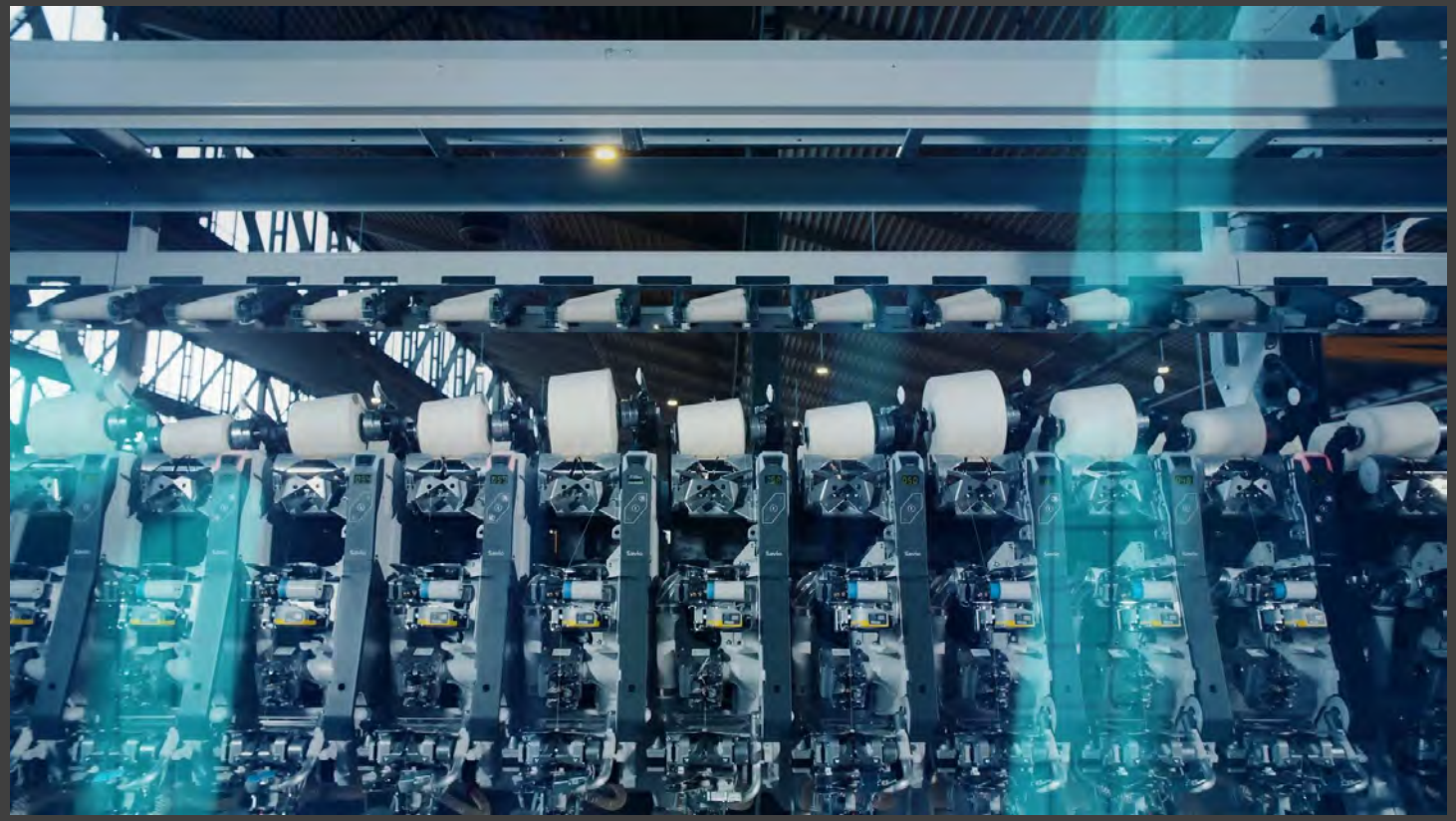
Deliberate settings

Customer benefits

- Flexibility: end product quality
- Profitability: yarn and energy wastage
- Productivity: cuts per km

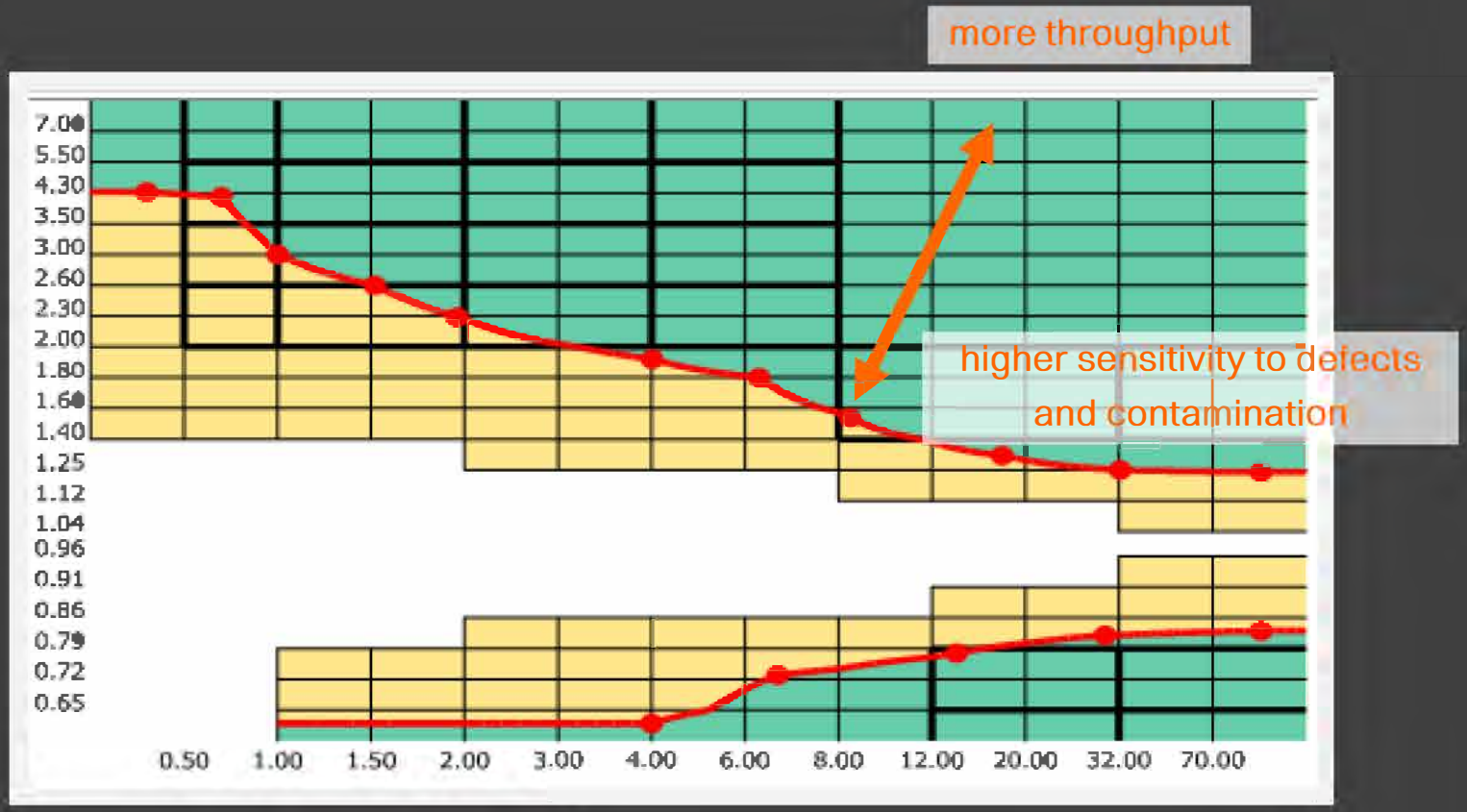


Cutting-edge technology for highest demands

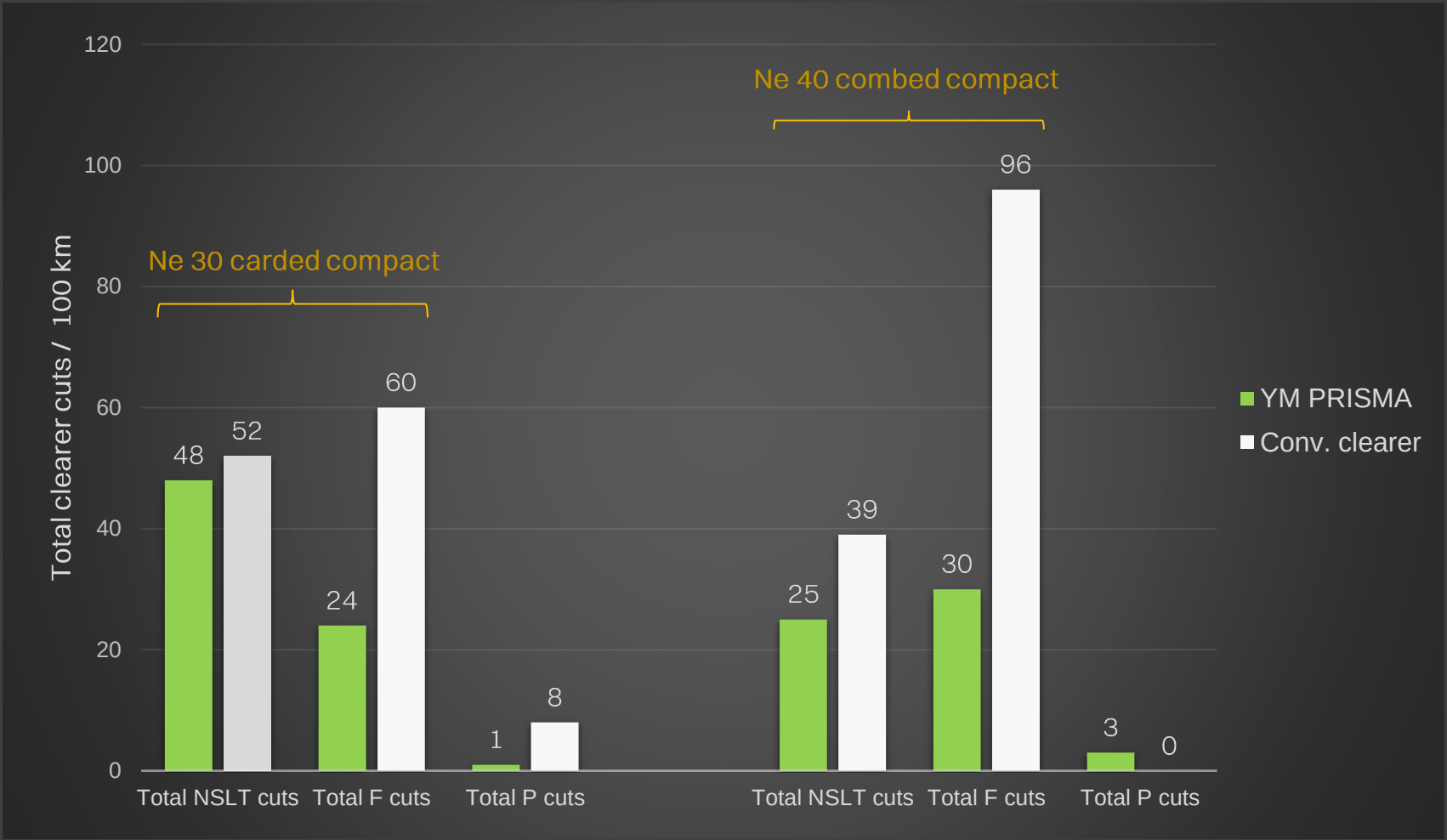


- 2000 m/sec = 120 km/h
- Sampling rate of 2 mm
- For all short and long staple yarns, core yarns, mélange yarns, dyed yarns, and fancy yarns
- Yarn count: Ne 2.4 – 320, Nm 4.1 – 540

Practically, technology is controlled through «classification matrices»



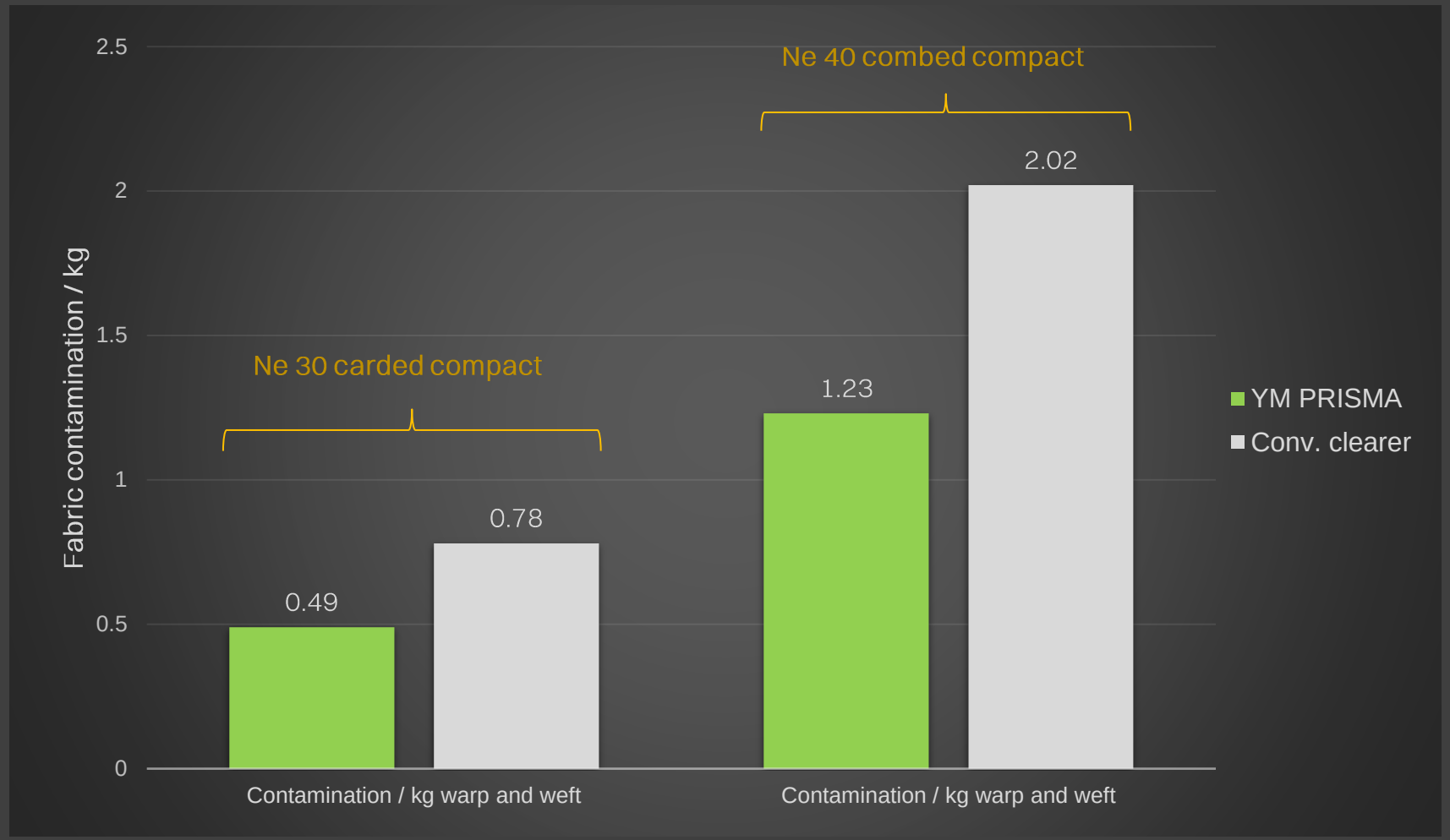
Material wastage and energy consumption are reduced ...



Results

- NSLT:
  up to 36 % fewer cuts
- Foreign fibers:
  up to 69 % fewer cuts
- Total cuts of YarnMaster PRISMA are 64 % lower in Ne 30 and 132 % lower in Ne 40

… AND better yarn quality is achieved through 4-sensor monitoring and deliberate clearing settings



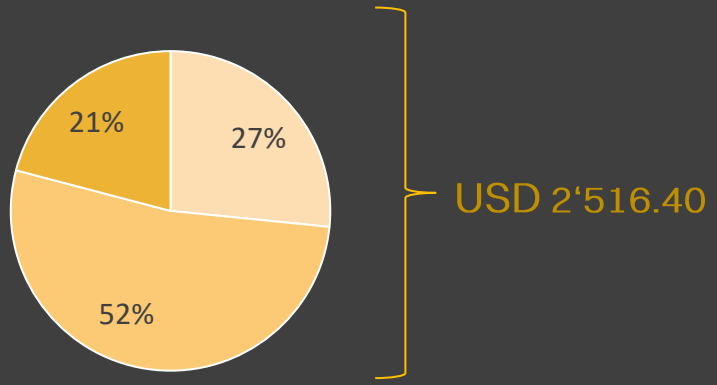
Results

- YarnMaster PRISMA can achieve 39 % less contamination per kg in the fabric
- Fewer cuts and better quality in the fabric with YarnMaster PRISMA cleared yarn

Wastage and energy consumption are reduced

Quality per year for a mill with 1000 winding positions, savings amount to over USD 65'000 (economic), and both material wastage and energy consumption are reduced (environmental)

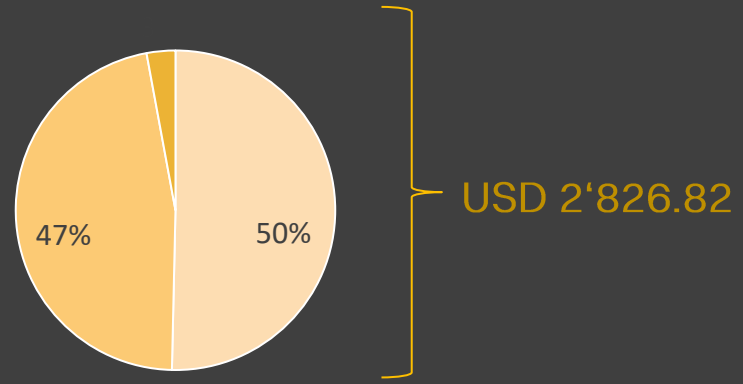
Savings Ne 30
[USD/year/winding machine]



- Waste savings / year / winding machine
- Energy & air saving / year / winding machine
- Savings through higher productivity / year / winding machine

Basis for calculation:
- Hard waste/wmch/d: 0.87%
- Winding speed: 1300 m/min
- No. of spindles: 30
- Machine eff.: 64.6%
- Clearer cuts YarnMaster PRISMA total: 73/100km
- Power costs: 7.5 INR
- Costs air: 0.16 INR

Savings Ne 40
[USD/year/winding machine]



- Waste savings / year / winding machine
- Energy & air saving / year/ winding machine
- Savings through higher productivity / year / winding machine

Basis for calculation:
- Hard waste/wmch/d: 0.43%
- Winding speed: 1100 m/min
- No. Of spindles: 38
- Machine eff.: 78.7%
- Clearer cuts YarnMaster PRISMA total: 58/100km
- Power costs: 7.5 INR
- Costs air: 0.16 INR

Takeaways



Sensors well-placed in the production process have a direct impact on social, economic and environmental dimensions.



Loepfe's clearers utilize the latest complementary sensor technologies to monitor yarn.



Mill and quality managers have full flexibility in balancing targeted yarn quality vs. contingent productivity losses.



Through deliberate settings of the market leading YarnMaster® PRISMA clearer, savings of multiple 10'000s of USD can be achieved per year and mill while simultaneously improving the mill's environmental footprint.



Loepfe Brothers Ltd. develop sensors and actuators to support machine manufacturers and production mills in their routine challenges. New sensors such as presented by Loepfe at ITMA 2019 and ITMA 2023 set new benchmarks.