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Kem Talks™

Chemistry insights from leading industry experts

EPISODE 04

Balancing tissue strength and cost

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Christian Biermann

Manager, Application Excellence, Wet End
Kemira

- ☑ **20+ years experience**
- ☑ **Focus:**
  retention, drainage and strength products;
  application expertise at customers;
  introduction of new solutions to the market

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Balancing tissue strength and cost

Rising fiber and energy costs are forcing tissue producers to rethink their operations. The challenge is to find ways to reduce costs without compromising strength and product quality customers expect.

Modern strength chemistry helps strike this balance. It provides mills with the flexibility to optimize their fiber mix, refining, and basis weight, depending on their quality and cost goals.

“FennoBond™ 777E is easy to implement, delivers consistently strong results, and the potential gains for tissue mills can be enormous.”

- Christian Biermann

Dive deeper into the topic – watch the full KemTalks episode here →

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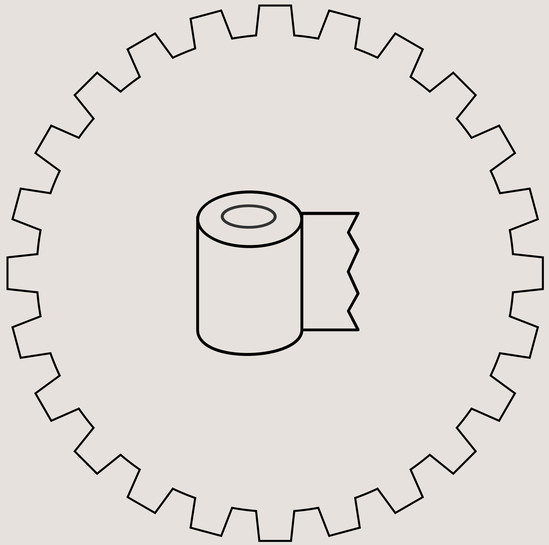
The challenge:
Balancing cost and quality in tissue production



Rising-raw material and energy costs

Overcapacity and flat demand coincide with high long-fiber and energy prices, forcing mills to cut furnish and process costs.

Long vs. short fiber trade-off

Strength requirements limit how far producers can shift toward cheaper short fibers without compromising quality.

New fiber sources and sustainability

Emerging alternative fibers increase variability in drainage, bonding, and overall wet-end runnability.

Runnability & quality risk

Strength loss, dusting, or out-of-spec reels reduce machine and converting efficiency and drive up costs.

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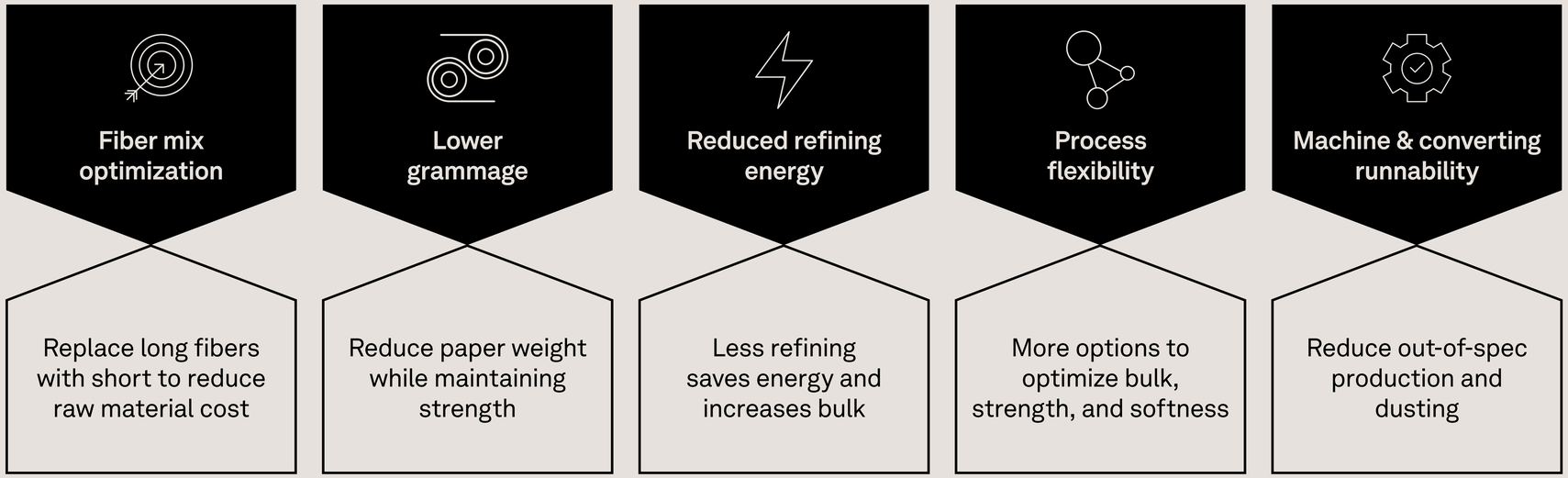
The solution: FennoBond™ 777E for cost-efficient dry strength in tissue

FennoBond™ 777E is an advanced dry strength solution designed to give mills more room to optimize their fiber mix, without compromising sheet properties or production efficiency.

FennoBond™ 777E value in tissue & towel



Together, these capabilities enable mills to lighten grammage, optimize fiber cost, and maintain stable machine and converting performance under varying process conditions.

FennoBond™ 777E product facts

- ☑ Pump-and-go application
- ☑ ~20% active content
- ☑ Regulatory status: BfR, FDA, GB 9685 compliant
- ☑ Creates a linear, fast strength response
- ☑ Performs well across a wide range of furnishes and grades
- ☑ 20–30% strength gain in virgin tissue grades

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Fiber mix optimization and energy savings

CASE 01

The challenge

A tissue mill needed to **reduce raw material cost** by lowering the use of expensive long fibers. The mill was also looking for ways to decrease energy consumption.

Twin wire tissue machine	1600 m/min

Furnish:

The result

By dosing **12 l/t of FennoBond™ 777E** at the refiner inlet, the mill was able to cut expensive long fiber use in half. Strength remained above specifications, which allowed for basis weight reduction and further fiber savings.

In addition, they managed to reduce refining energy while maintaining bulk. Together, these improvements delivered substantial annual cost savings.

With FennoBond™ 777E

50 → 75% increase in share of short fibers	**10% grammage + bulk maintained** lighter sheet without strength loss
-15 kWh/t refining energy reduction	**~4.6M€** annual net savings

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Reducing dusting and improving converting efficiency

CASE 02

The challenge

A napkin producer running a 100% virgin furnish needed to **reduce raw material cost** by lowering its use of expensive long fibers — without losing strength.

The mill also struggled with **heavy dusting in converting**, which limited converting efficiency and impacted productivity.

The result

By dosing **8 l/t of FennoBond™ 777E** at the thick stock before the mixing pump, the mill safely increased its short fiber share while maintaining strength.

Converting performance improved dramatically: the reduction in dusting allowed the mill to extend the cleaning interval from every reel to every fourth reel.

Tissue machine Crescent Former	1500 m/min
Furnish: 100% virgin	●●●●●●● Cleaning required after **every** reel

With FennoBond™ 777E

↑ Short fibers up by **100%**	→ Same strength **maintained**
↓ Dusting reduced **4x**	○○○●○○○● Cleaning required after **every four** reels

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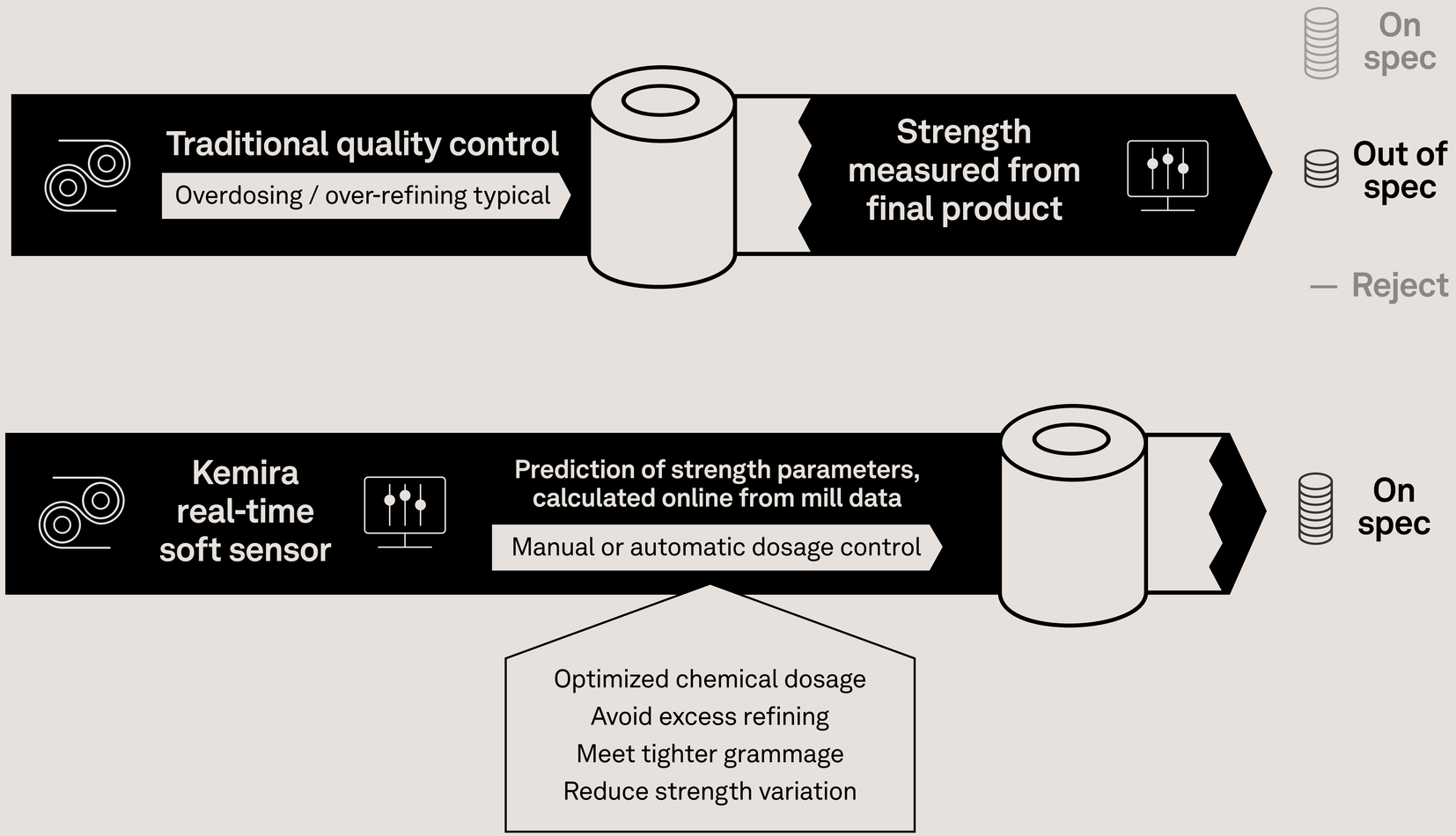
Digital tools for consistent strength

When strength properties can be measured only after production, mills often end up overdosing chemicals, over-refining, or increasing grammage as safety margins to avoid off-spec production.

Kemira's real-time soft sensor removes this uncertainty by predicting paper strength continuously during production.

The model calculates key physical properties from live process data, giving operators immediate visibility into whether the sheet will meet strength targets — and enabling them to adjust the dosage.



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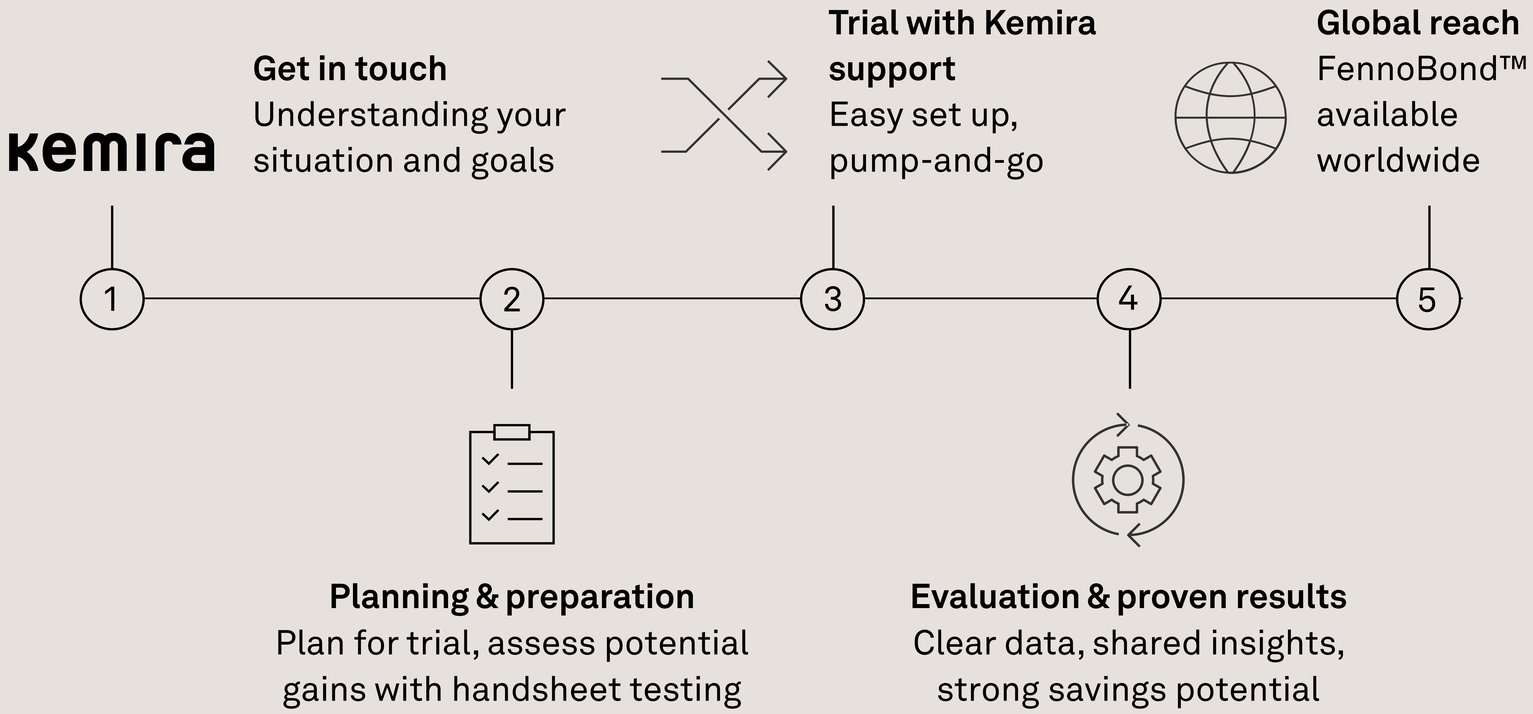
The next step:
Easy trials & proven results with FennoBond™ 777E

FennoBond™ 777E – key takeaways

Easy to apply
Simple pump-and-go solution, flexible dosing in thick stock

Extremely high success rate
Reliable trials with minimal disturbance

Low risk trial: proven performance
Tangible benefits: lower cost, reduced refining, improved fiber flexibility, less dusting



Reduce costs and increase strength – starting with an easy trial

See how much your mill could save with a low-risk FennoBond™ 777E trial.

Get in touch with our experts →

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