



Resource Efficiency in board & paper making, Valmet approach

Improved sustainability and cost efficiency
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Resource efficiency in board & paper making

Improving energy, water, raw material efficiency, sustainability and cost efficiency



- Every process section affects mill's resource efficiency.
- Resource efficiency improvement leads to better energy, water, raw material efficiency and lower carbon footprint.
 - Improved sustainability and cost-efficiency performance.
- All major board & paper producers have their own sustainability agenda and publicly announced targets.

Energy, water and raw material costs

40...100 M€/a**

Small improvements can bring huge savings

** Depending on production process and unit price for energy, water, raw materials etc.



Resource savings are interdependent

Everything affects everything



Saving water = Saving energy

- Heating 5 kg/s of wasted process water with steam, 300 d/a, $\Delta T = 30\text{ }^{\circ}\text{C}$
- **4 525 MWh/a (steam), 181 k€/a****
- Losing 129 600 m³/a water (€/m³, pumping, wastewater treatment...)

** With 40 €/MWh for steam

Saving raw materials = Saving water (and energy)

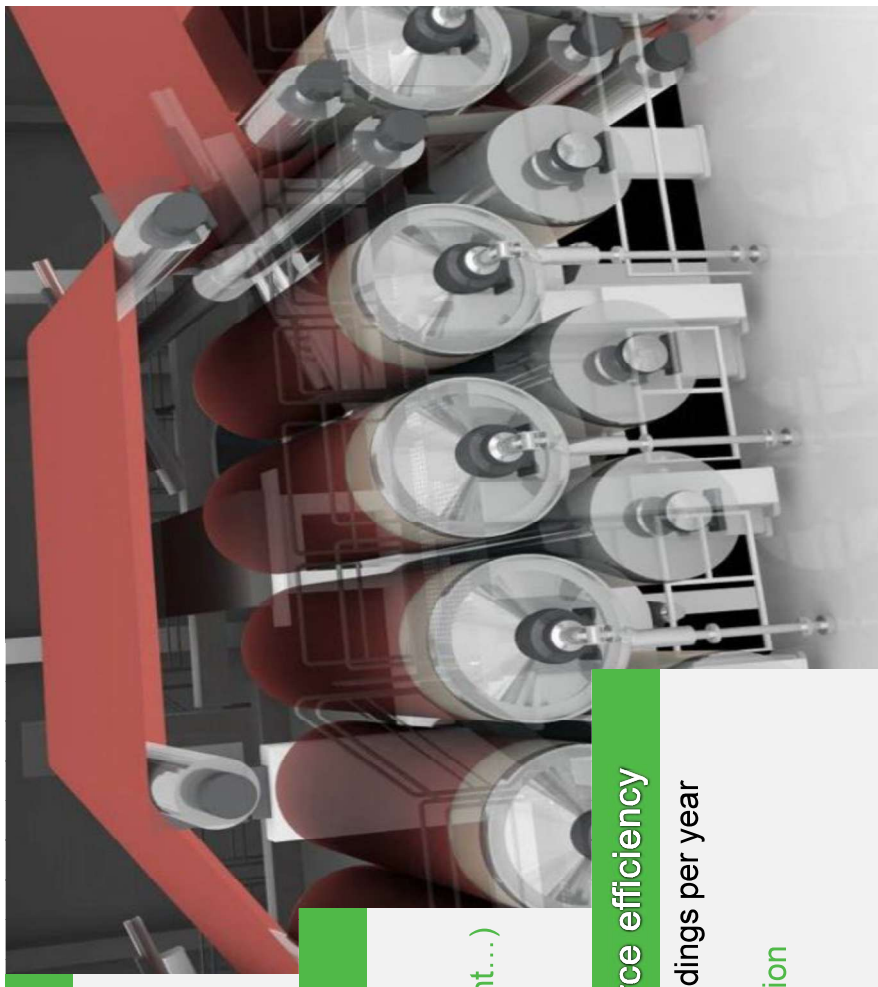
- Rejecting 3 t/d of raw material in 2 % consistency for 300 d/a
- Losing 900 t/a raw materials, **360 k€/a****
- Losing 44 100 m³/a water (€/m³, heating, pumping, wastewater treatment...)

** With 400 €/t average unit cost

Improving time and / or material efficiency = Improving resource efficiency

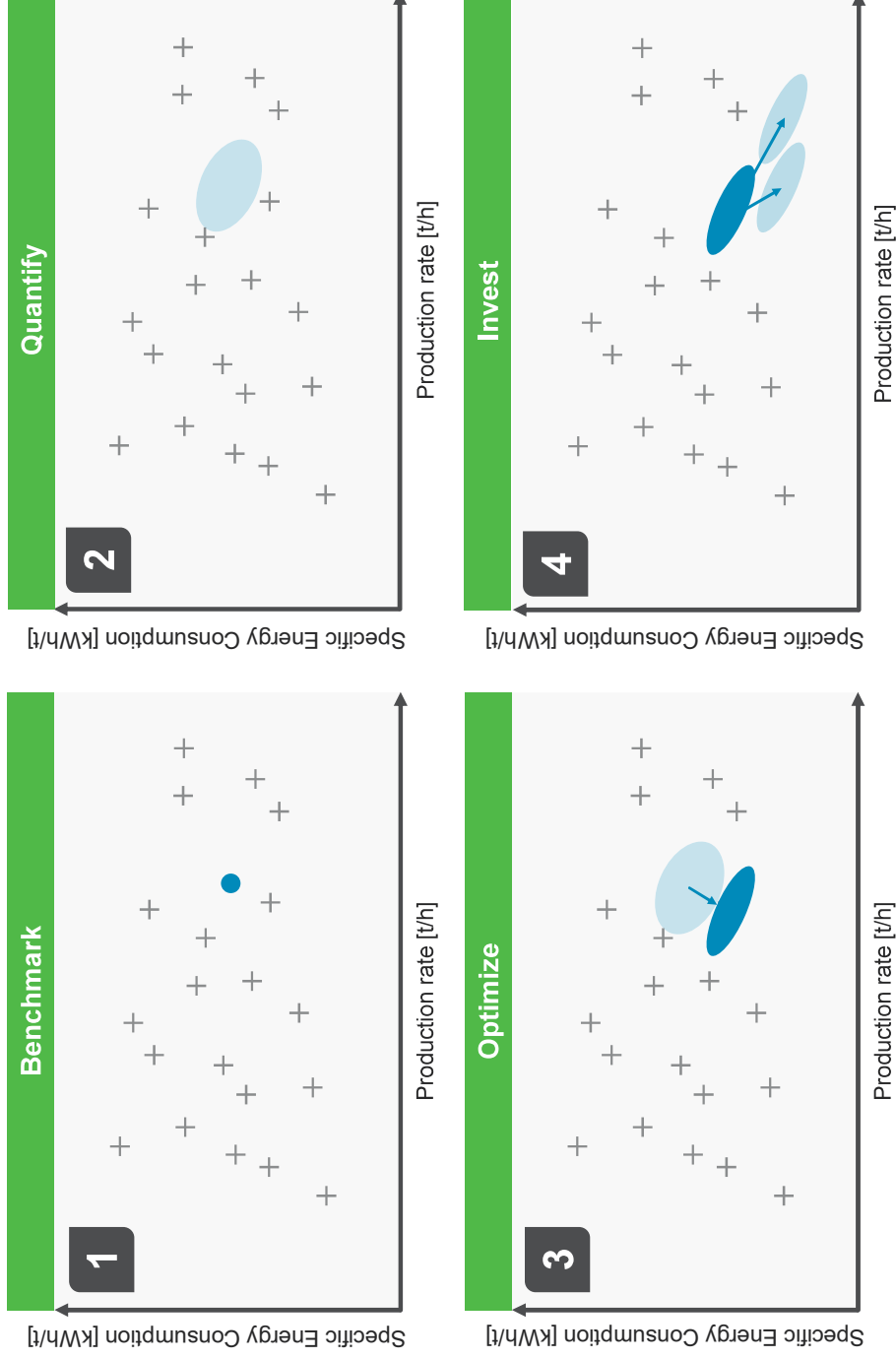
- Decreasing tail threading time 5 minutes per tail threading, 300 tail threadings per year
- **25 h** more production time per year, additional **1 000 t/a** and **200 k€/a****
- Improved material and time efficiency, lower specific resource consumption

** With 40 t/h average production and 200 €/t product margin



Valmet 4-steps for resource efficiency development

Generating and following an improvement roadmap



1. “What is your overall performance level and where we should focus?”
2. “How do the focus areas function and how can they be improved?”
3. “Optimize your current production setup.”
4. “Invest in new technologies to ensure long-term performance.”

What is Valmet Resource Efficiency Study?

Customizable solution to improve cost-efficiency and sustainability



Tailor-made to meet the Customer needs

- On-site measurements & analysis.
- Remote support, monitoring and optimization.
- Focusing on where the best improvement potential is located.

Final report with clearly explained findings and action roadmap

- ✓ “Low-hanging fruits” which can be completed immediately.
- ✓ Small / medium-sized actions needing more resources.
- ✓ Large process improvements / investments.
- ✓ Saving calculations.



Valmet Resource Efficiency Study

Customer case: Two machine lines in Asia Pacific area



Target

Identify resource efficiency improvement actions for

- Stock preparation
- Vacuum system
- Press dewatering
- Hood ventilation & heat recovery system
- Steam and condensate system.



- ✓ 6 specialists on-site
- ✓ 2 specialists remotely
- ✓ > 500 pages in the final report
- ✓ ~ 100 development recommendations
- ✓ ~ 1 M€/a of calculated savings



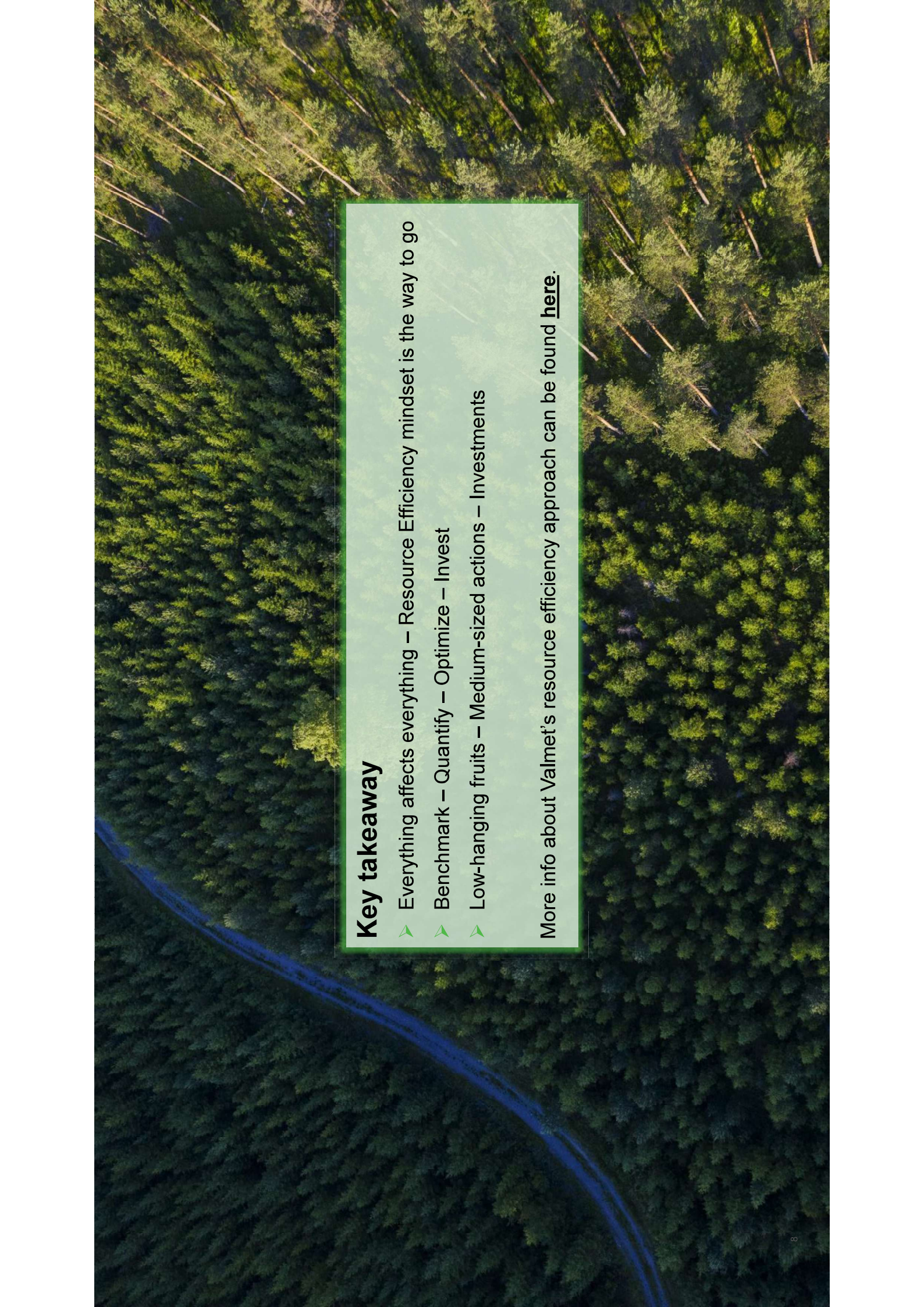
Solution

1. Benchmarking
2. On-site studies and data analysis
3. Providing recommendations
4. Implementing recommendations



Example results from one machine line

- Screening upgrade in stock preparation, raw material savings of > 3 t/d.
- Water recovery improvement actions, process water savings of > 20 l/s.
- Vacuum system finetuning, electricity savings of 3 200 MWh/a.
- Hood ventilation & heat recovery upgrade, steam savings 50 000 MWh/a.

An aerial photograph of a vast, dense forest. A river or stream winds through the lower-left portion of the image, its surface reflecting the sky. The forest is composed of many tall, thin trees, likely conifers, with a mix of green and brown tones suggesting different species or perhaps some dead trees. The lighting is bright, creating a high-contrast scene.

Key takeaway

- Everything affects everything – Resource Efficiency mindset is the way to go
- Benchmark – Quantify – Optimize – Invest
- Low-hanging fruits – Medium-sized actions – Investments

More info about Valmet's resource efficiency approach can be found [here](#).

