



# Future Market & Requirements for Recovery Boilers

Kari Liukko



# THE BIG QUESTION

“Surprises do not come out of nowhere. They are driven by longer-term changes, which are known as megatrends. Understanding these changes also helps us build insight into more unexpected developments and the opportunities created by them. If there is one thing we can say about the future, it is that there will be more surprises,” says future expert ***Mikko Dufva*** from ***Sitra, The Finnish Innovation Fund***.



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FINNISH RECOVERY BOILER COMMITTEE

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June 5-7, 2024

60th Anniversary International Recovery Boiler Conference



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# S Safe

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**PREVENTION  
OF SMELT-WATER  
EXPLOSION RISK**

**OPERATOR-FREE  
SPOUTDECK  
&  
LIQUOR GUN AREA**

**INDUSTRY STANDARD**

**EMPLOYEE  
SAFETY  
SATISFACTION  
PERFORMANCE**



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# Intelligent

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## EASY & PROACTIVE OPERATION AND MAINTENANCE

Pulp & Paper Industry is a slow follower

**Big Data & AI**

**VR/AR**

**Remote**



**Simulators**

**Digital Twin**

**Autonomous**



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# X Capacity

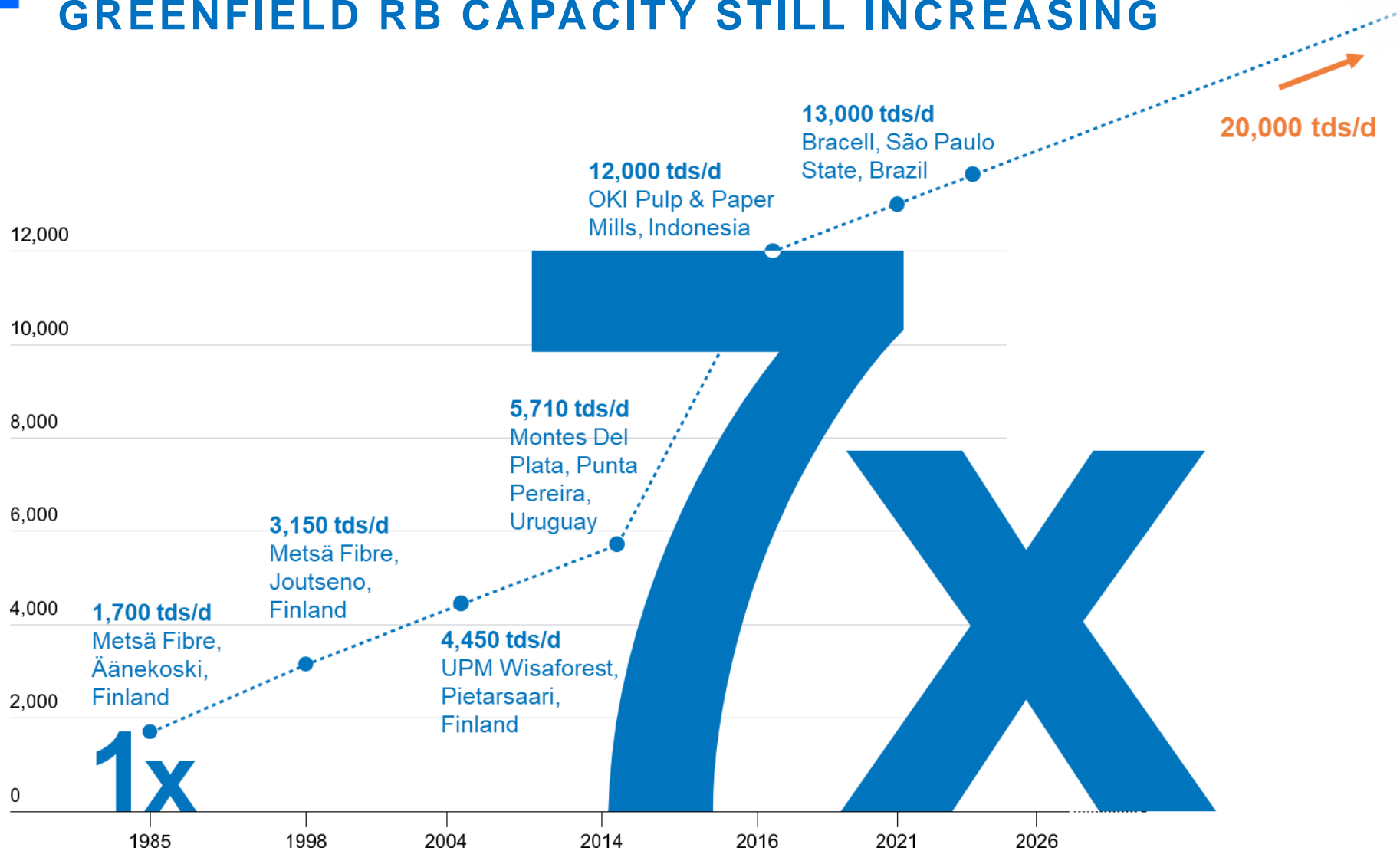
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## GREENFIELD RB CAPACITY STILL INCREASING





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# T Technology

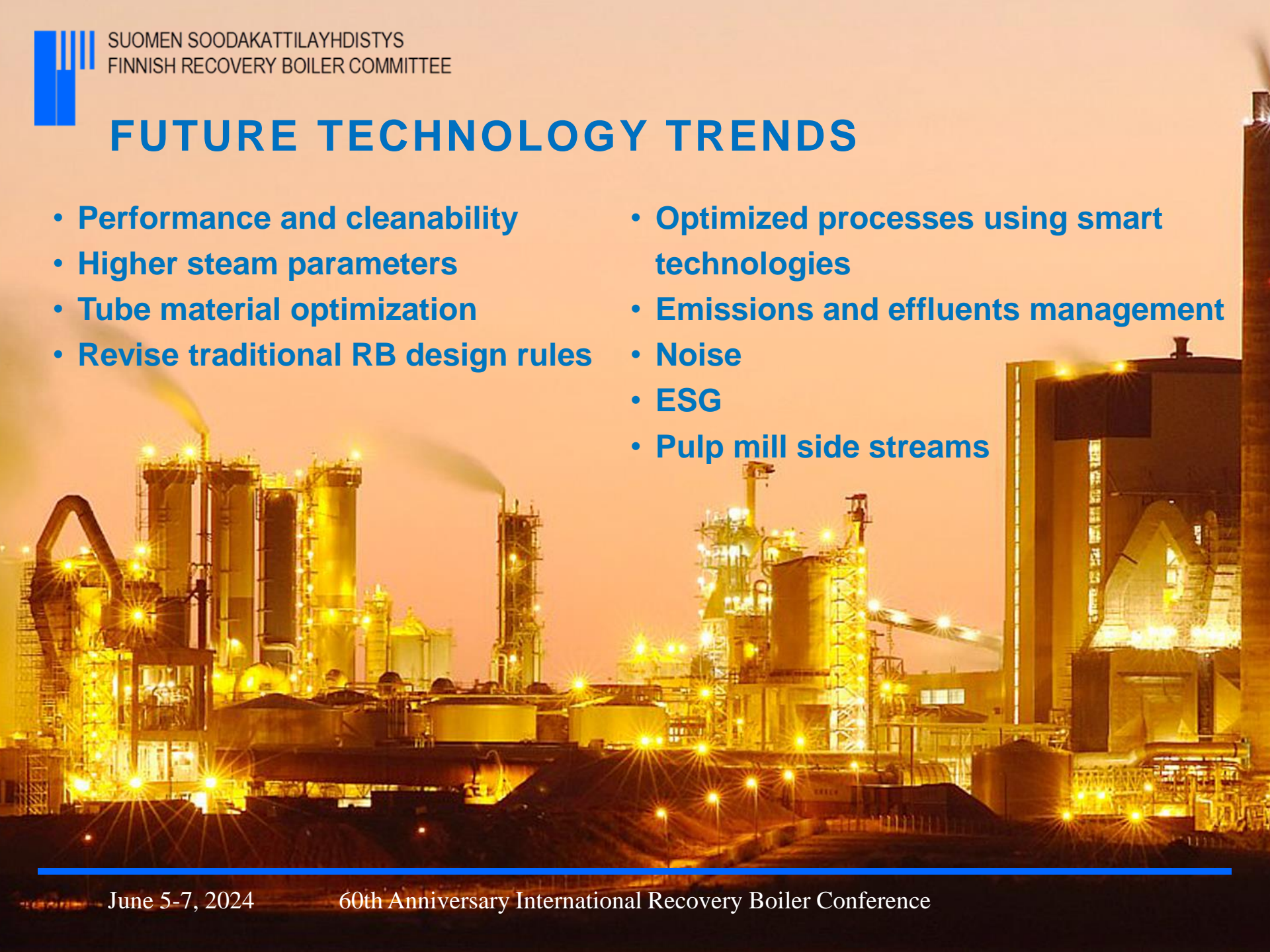
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# FUTURE TECHNOLOGY TRENDS

- Performance and cleanability
- Higher steam parameters
- Tube material optimization
- Revise traditional RB design rules
- Optimized processes using smart technologies
- Emissions and effluents management
- Noise
- ESG
- Pulp mill side streams







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CONNECTION  
ANALYSIS  
DATA  
SEARCHING  
VERIFICATION  
CODING  
SENDING

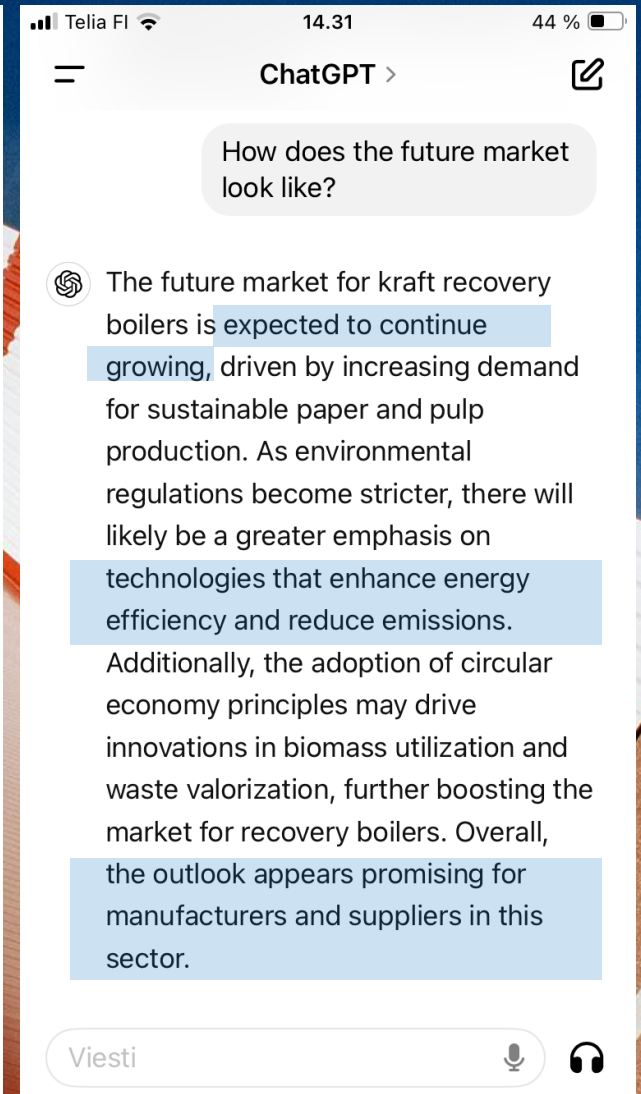
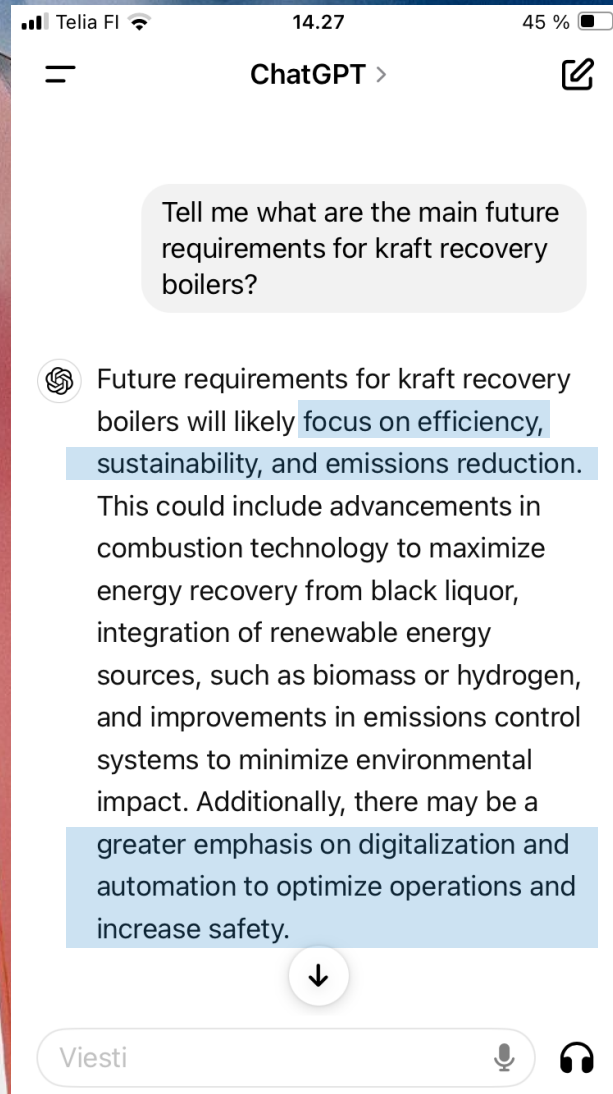
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# SUMMARY



**You:** Tell me what are the main future requirements for kraft recovery boilers?

**Copilot:**

Certainly! The development of kraft recovery boilers has been influenced by various trends and demands over the years. Here are the **three main topics** that have significantly impacted the development of these boilers:

- **Economy of Scale:** As kraft mills have grown in size, there has been a push for larger recovery boilers. The concept of economy of scale drives the need for increasingly larger furnaces, which allows for more efficient recovery of cooking chemicals and better overall process economics.
- **Power Production:** The desire to generate power from recovery boilers has been a driving force. Modern kraft recovery boilers now resemble power boilers, with features that enable efficient power generation alongside chemical recovery. The capacity and steam production of these boilers have increased significantly over the years.
- **Reduction of Nitrogen Oxide (NOx) Emissions:** Environmental concerns have led to a focus on reducing NOx emissions. Advances in combustion technology, burner design, and operational practices have contributed to lower emissions from kraft recovery boilers.

In summary, the future requirements for kraft recovery boilers involve achieving **greater efficiency, higher power generation, and reduced environmental impact**. These developments continue to shape the evolution of recovery boiler technology<sup>1</sup>. If you'd like more detailed information, I recommend referring to resources such as the Kraft Recovery Boilers, Third Edition published by TAPPI Press<sup>2</sup>. 🌿🔥🏭