

Low Carbon Paper Production

EU ETS Innovation Fund Implementation

Timo Kalefe | 2019-06-18 | public



Low Carbon Papermaking

Focus areas

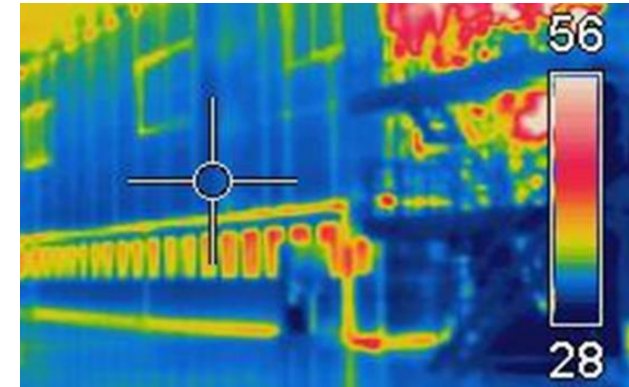
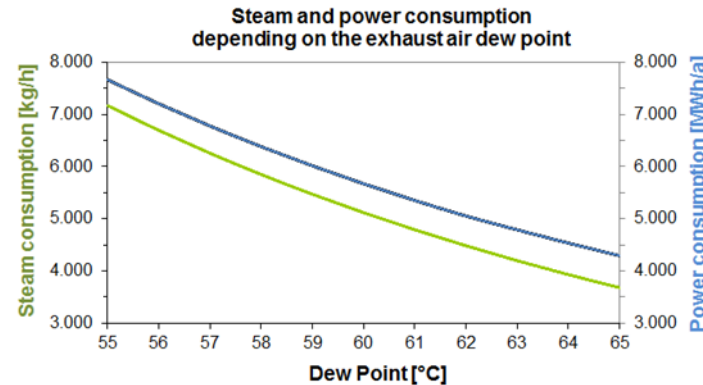
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Advanced Process Efficiency

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Decreased CO₂ emissions by High Dew Point Hood (65°C)



CO₂ / Energy Savings*



> 25% (from 62°C to 65°C)
> 40% (from 55°C to 65°C)

Other Benefits



Production increase with same air system

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New product with first references

Investments



500 – 1800 T€

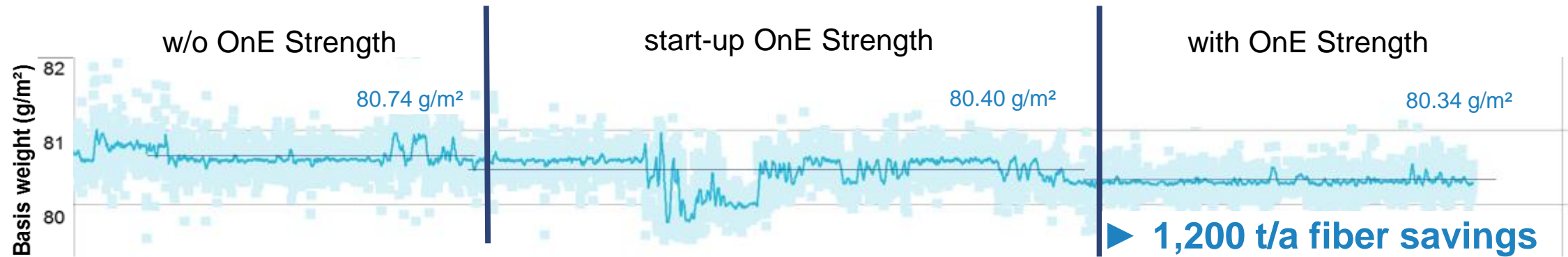
Key Challenges

- Shutdown time for dismantling & installation 12-15 days: needs to fit in production schedule / profit loss
- Acceptance of operators: Higher humidity in hood results in more harsh inside condition

Advanced Process Control (APC)

OnEfficiency: significant fiber and energy savings

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 CO₂ / Energy Savings* Current: 1 - 2% Future: 5 - 10%	 Other Benefits Fiber & cost savings	 TRL APC portfolio with first solutions	 Investments 350,000 - 1 Mio €
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Key Challenges

- Acceptance for digital solutions
- Additional efforts are required for the adoption to different processes

New Process Technologies

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New pulping concept to decrease energy consumption



CO₂ / Energy Savings*
10 - 20%



Other Benefits
Recycling of multi-component materials



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Market Test



Investments
2 - 6 Mio €



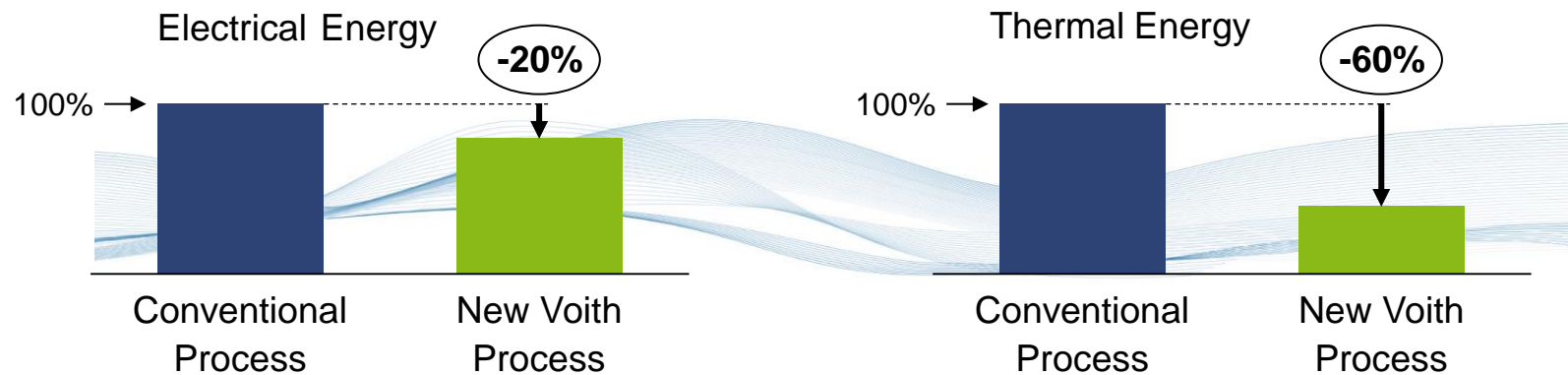
Key Challenges

- ▶ New process technologies have to compete with existing optimized and cost efficient processes
- ▶ Technical and technological challenges in continuous operation not fully known yet

Breakthrough Papermaking Technologies

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New process concept for lowest possible GHG emissions



 CO₂ / Energy Savings* > 50%	 Other Benefits Differentiation, low complexity	 TRL Feasibility, Development	 Investments > 25 Mio. €
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Key Challenges

- ▶ High CAPEX investments
- ▶ High efforts for development with uncertainties

Pathways to decarbonize the paper industry

Current and future potential of different action fields

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