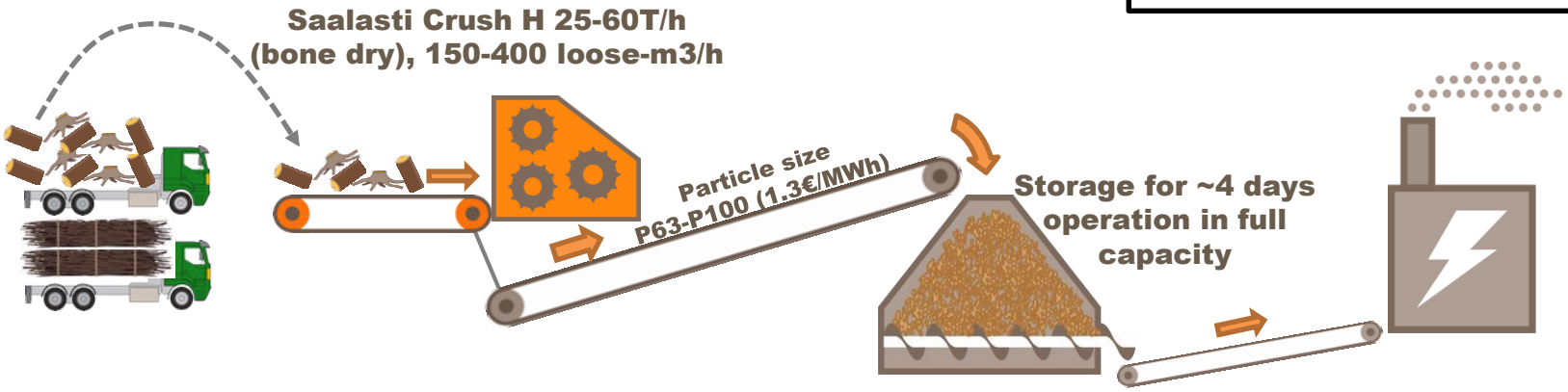
Energy Chips from Stumps with Lower Costs:

Stump Stationary Crushing

Stationary crushing cost 1.3€/MWh (6 years / 5%) According to Metsäteho (Roadside crushing 3.9€/MWh)



Saalasti Crush 1224H installation processing stumps in Kaipola, Finland

Saalasti Stationary Stump Crushing

Please check the link below

https://www.youtube.com/watch?v=l0EQQosrYto

Mobile and Stationary

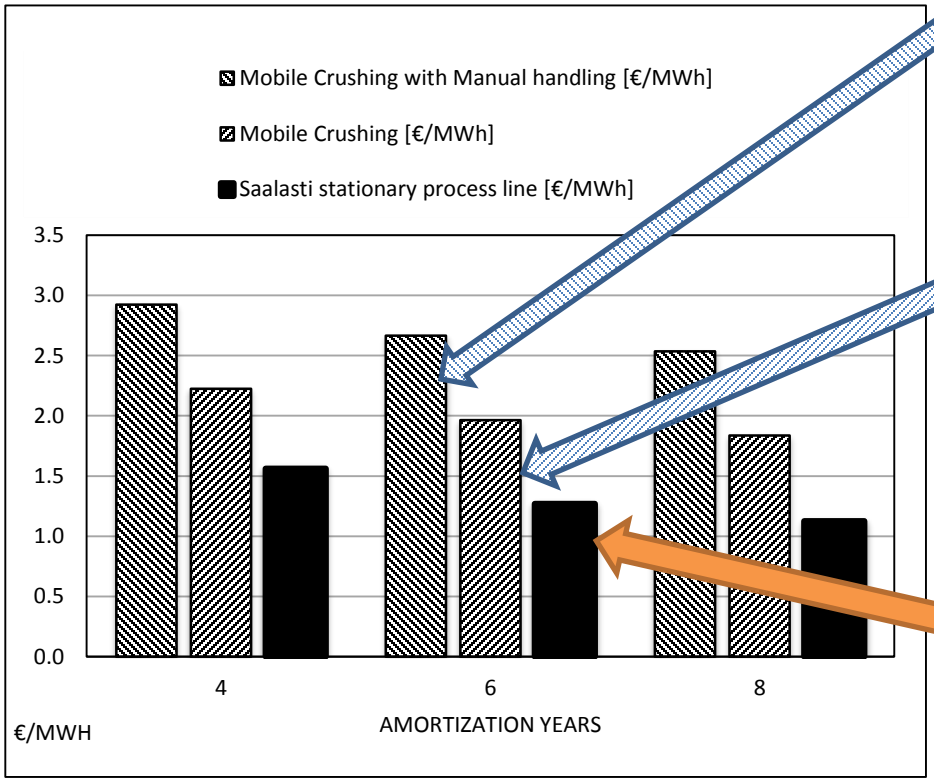
- The most cost efficient way to produce energy chips is the stationary processor which is operated in cold supply chain (e.g. inside a power plant).
- Energy chips produced in hot supply chain costs more, because of higher costs of logistics and energy.
- Most common chippers for biomass are mobile and some have been converted for stationary operation
- Saalasti makes biomass processors which have been designed to be stationary from the beginning

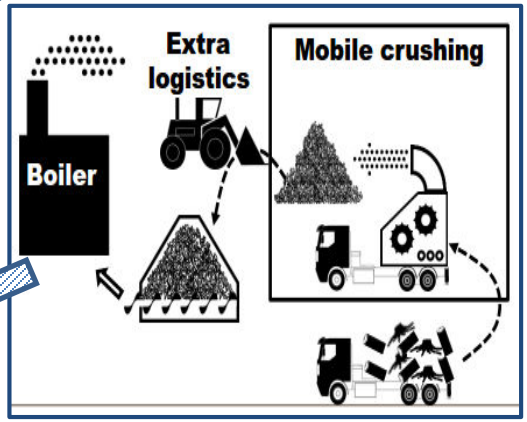
Key Issues in Crushing Costs

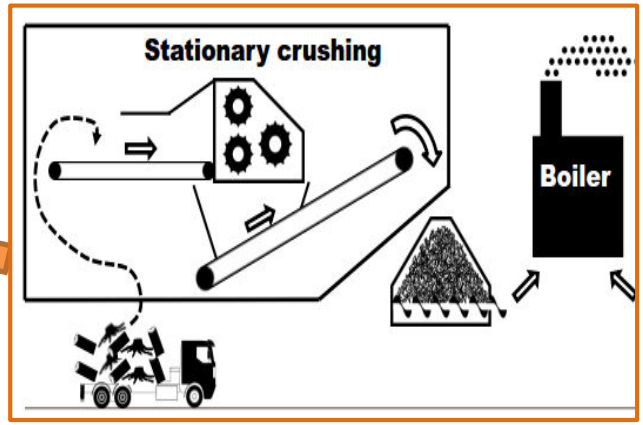
- Motor efficiency, *diesel vs electric*
- Maintenance, *mobility vs robustness*
- Lifetime, *mobility vs rebuildability*

Saalasti Crush 1224H processing stumps and forest resudue bundles in Kyminvoima Finland

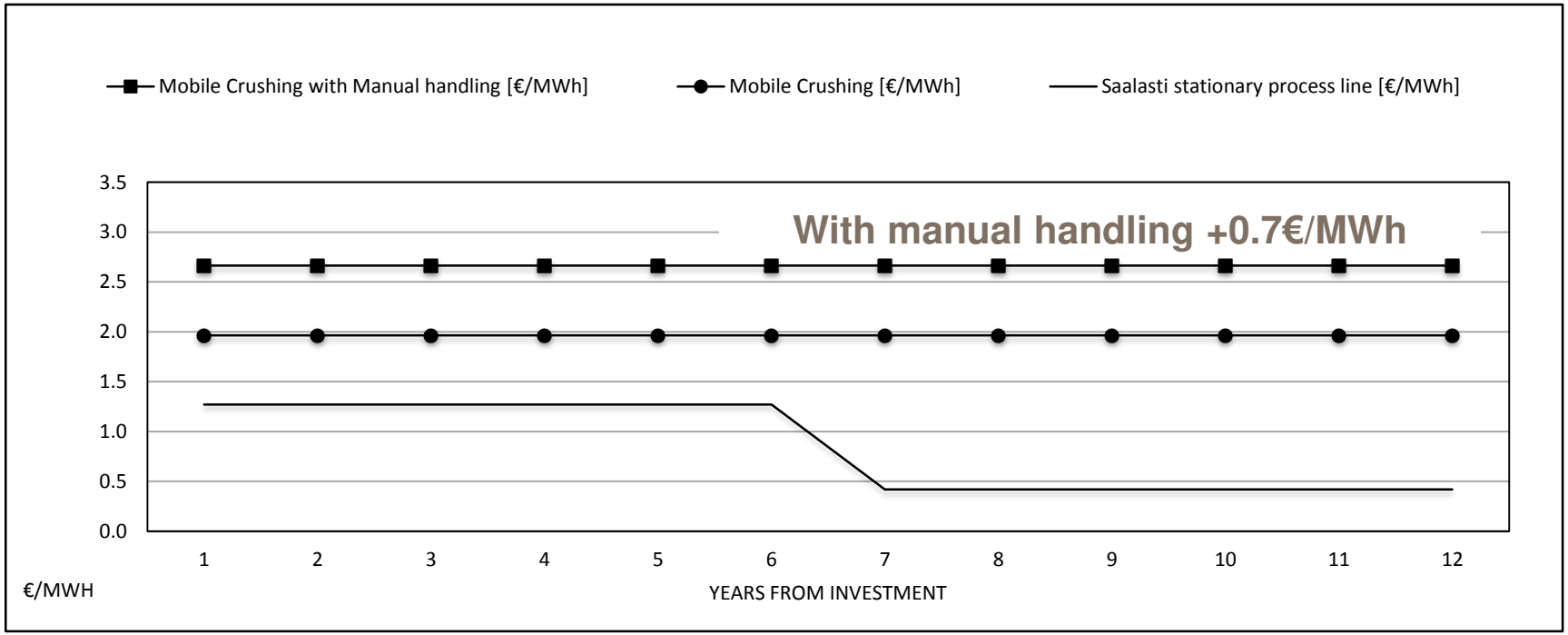
Crushing Cost Comparison





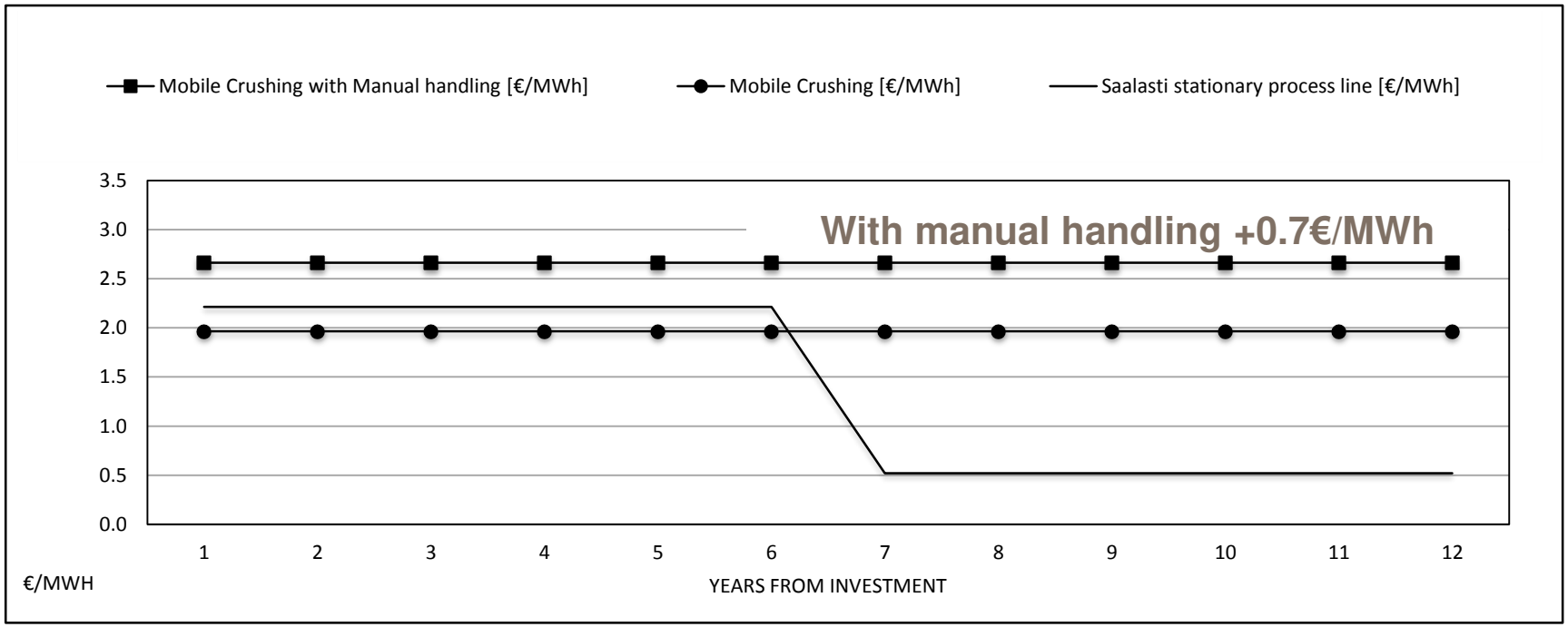


Investment Comparison 15MWe Production



Saalasti Crush H vs 2x mobile with equal capacity: E.g. 100% loan, full amortization in 6 years, 5% interest.

Investment Sensitivity 8MWe Production



Saalasti Crush H vs 1x mobile with equal capacity: E.g. 100% loan, full amortization in 6 years, 5% interest.

Chipping Costs in Longer Run

- **Larger the scale, larger the savings**
- Medium size stationary process line VS 2x robust mobile crusher
  - Processing 130 000 t/a = 492 000 MWh/a (15 MWe consumption)
  - Years 1 → 6 the savings: 342 000 €/a (+ per manual handling 344 000 €/a)
  - Years 7 → +20 savings: 760 000 €/a (+ per manual handling 344 000 €/a)
- **Main argument: For 10 MWe and larger biomass users economical benefits of stationary crushing are obvious and even in smaller scale similar benefits are obtainable.**

Caledonia, UK (UPM)

Saalasti Crush H processing round wood and forest residue bundles

Huelva, Spain (Ence)

Saalasti Crush H processing eucalyptus stumps and forest residues and Saalasti Chipper H processing eucalyptus round wood

Lappeenranta, Finland (UPM)

Saalasti Crush H processing stumps and forest residues

Thank You!

Reference article:
STATIONARY BIOMASS PROCESSORS – CRUSHING STUMPS WITH LOWER COSTS

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