Alternative Fibers in Tissue

Making the tissue industry fit for the circular economy

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Transformation of the paper value chain

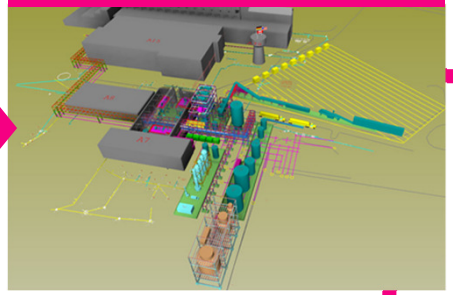
- **Existing setup:**
  - Pulp is produced centrally in big units where forest resources are located and distributed in dried form to paper mills
  - Paper mills are producing paper from wood pulp dissolving the market pulp and drying it in the paper production process
- **New setup:**
  - Pulp is produced at the paper mill in small modular units, fitted to the needs of the paper mill from locally available alternative fibre resources like wheat straw, barley straw or other agricultural residues
  - Pulp is produced and processed in the paper machine in liquid form and only dried once during the paper production process
  - Byproduct from pulp production offers additional opportunities either as CO2 neutral fuel or as alternative biobased material to substitute fossil based raw materials
- Pulp Production from Straw has been done in the past but there was no competitive solution, the breaktrough of our concept is to ensure no environmental impact at a competitive cost


Alternative Fibers
From Agricultural Waste

Columbus – The Idea

Locally grown alternative fiber

Alternative fiber pulp mill facility

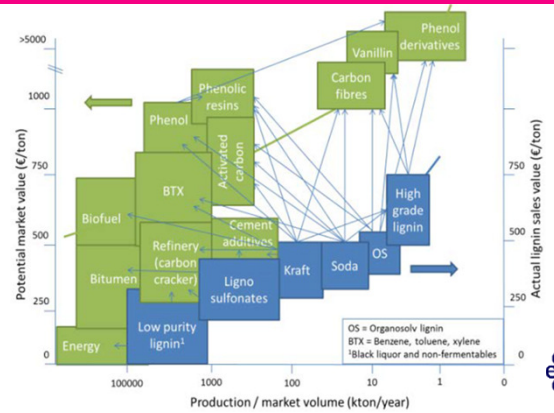


Tissue pulp for direct use

Paper production

Co-product for sale and/or Energy generation

Lignin production vs. utilization



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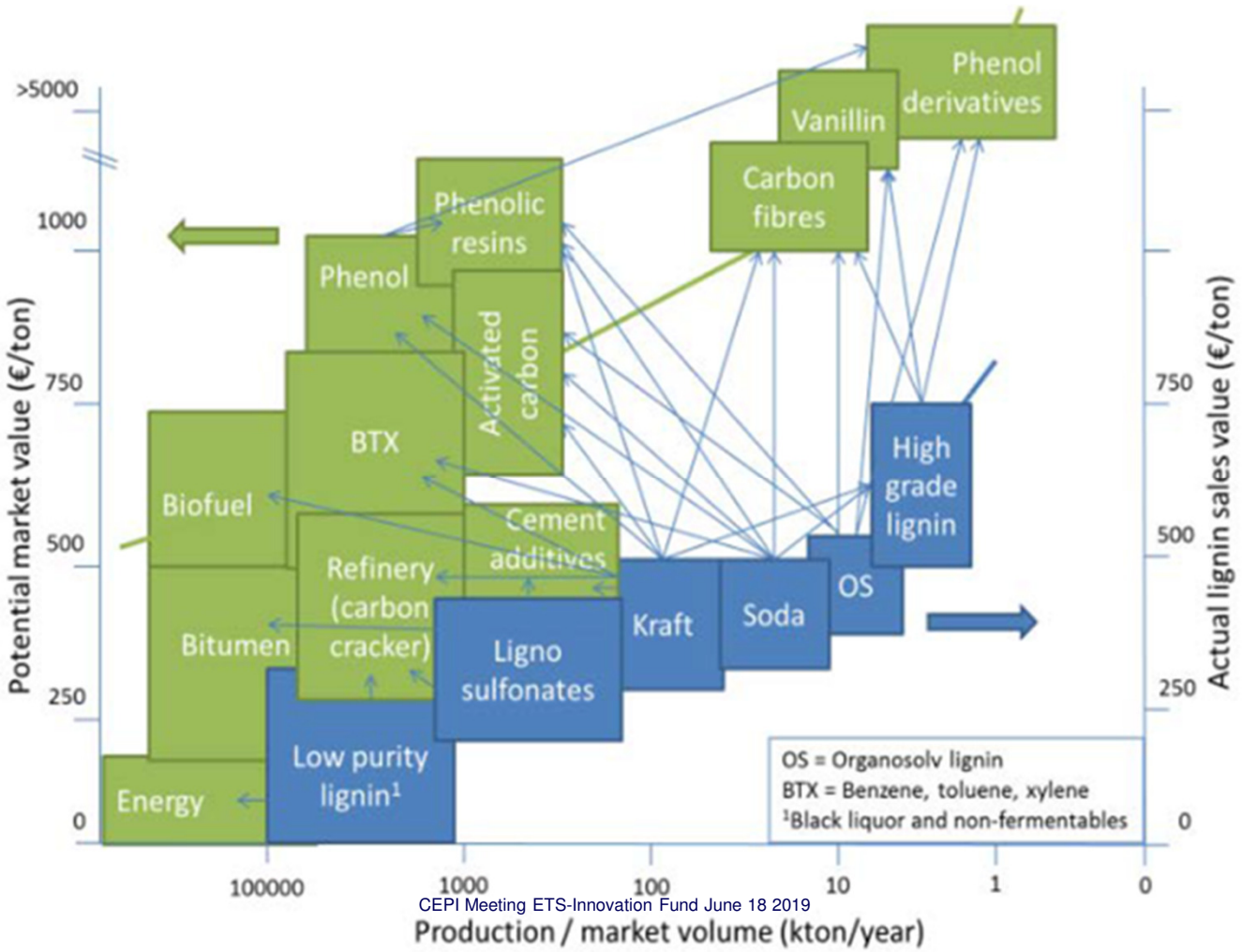
Worldwide Lignin market



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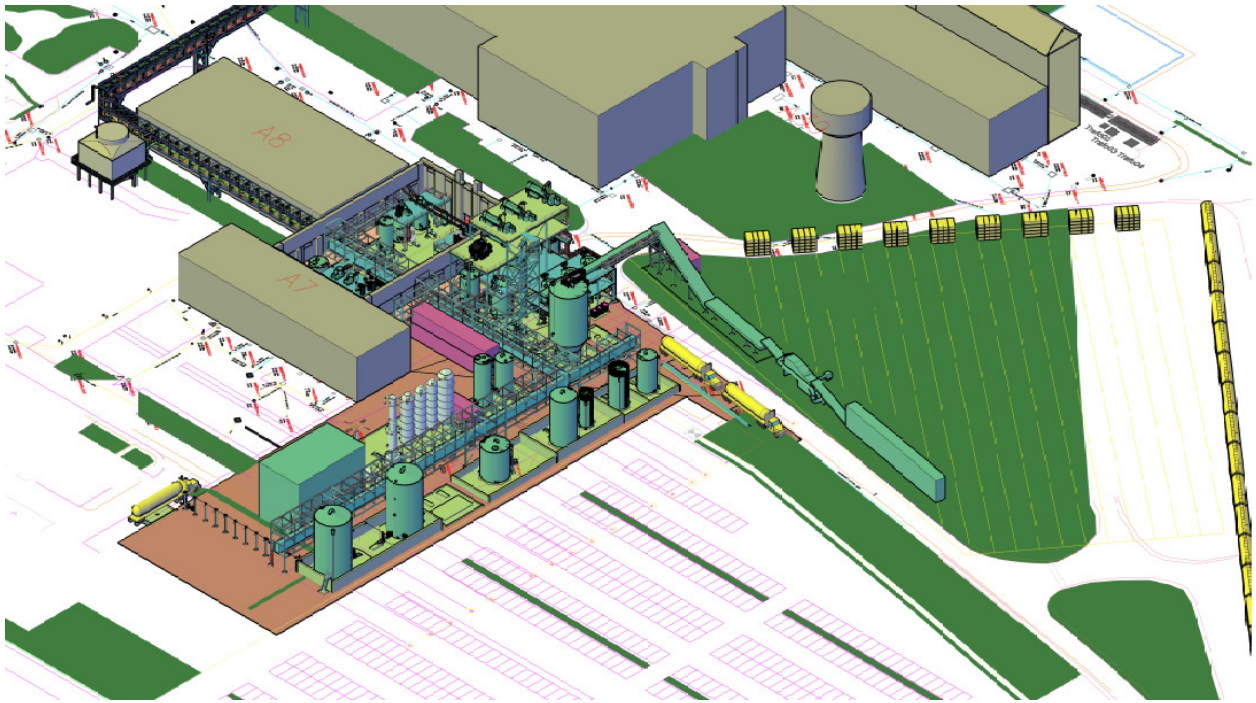
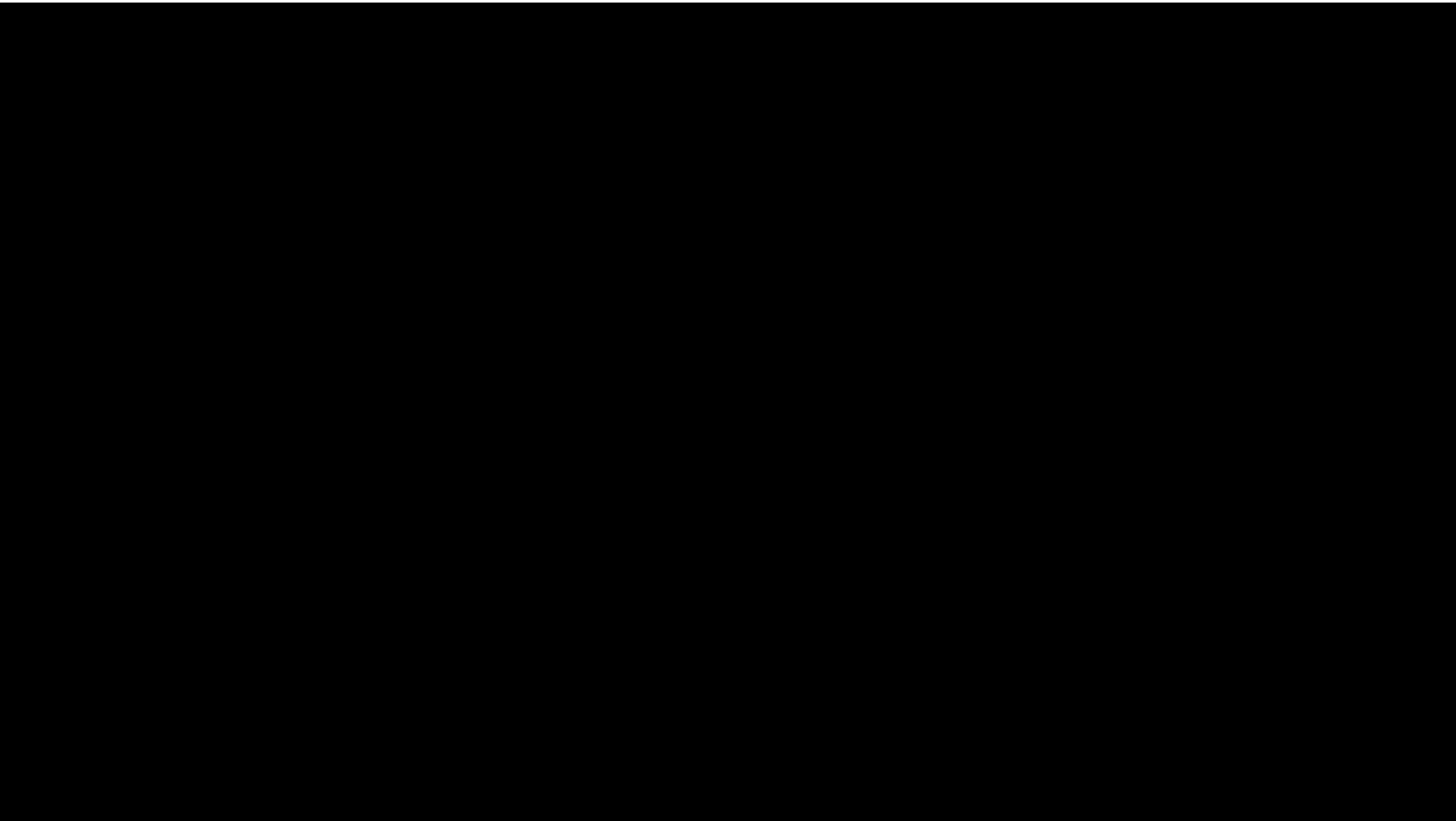
Columbus Application at Mannheim

- 100 t/day 35.000 tons per year plant
- replaces ca. 10-15% of virgin pulp at the site
- First industrial installation worldwide of the Phoenix Process for bleached straw pulp
- Investment in Pulp plant aprox. 42 Million EUR (does not include further refining of byproduct for material or energy use)
- Integration into a site with a sulfite pulp plant, five paper machines and 23 converting lines
- Lower water usage than traditional pulp mills
- Zero effluent



Advantage of integrated and decentralized pulp production from alternative fibres

- Local pulp production units combined with tissue Production capacity e.g. increased local rural GVA without increased CO2 emissions
- No compromise on product quality
- Reduces transportation with regards to pulp consumption to a minimum
- Pulp produced and used in diluted form - no additional drying energy needed for pulp drying
- Local availability of biomass for energy production –even in areas lacking forestry base
- Potential for a Lignin value chain, replacement of fossil based materials
- Variety of annual plants (wheat, barley, oat…)
- Process ready to apply – Essity has exclusive license for tissue
- Could be applied to other paper grades as well as by other tissue producers once the license runs out

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