

Revolutionary BIOFORSENSE® technology in brief

CH-Bioforce's BIOFORSENSE technology can fractionate all three biomass constituents – cellulose, hemicellulose and lignin – in a single process in an economic, profitable and environmentally friendly way

Raw materials are utilized maximally

Material efficiency is up to 90 %

Agricultural residues



Other biomass



Mechanical wood processing residues

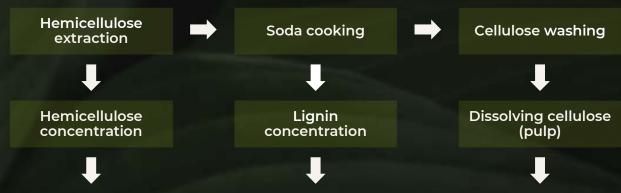


Low freshwater consumption



Highly sustainable production process

No harsh chemicals are used, freshwater consumption is extremely low, and the process is carbon-neutral



All three biomass constituents can be extracted with high and consistent quality



1. XYLENSE® (Polymeric hemicellulose)



2. LIGNENSE® (Sulphur-free lignin)



3. CELLENSE™ (Dissolving grade cellulose)

Production concept and products

CH-Bioforce's sustainably produced high-quality biopolymers can be used in numerous applications across different industries, providing a large and differentiated customer base

Input material **Biorefinery Applications** Cosmetics market **Products** Agricultural residues 30-40 % Microparticle replacement Thickener **CELLENSETM** Mechanical wood processing residues BIOFORSENSE **Emulsifier** ECOCERT 25-30 % Humidifier **COSMOS-Approved** COSMOS Film forming ingredients for cosmetics **XYLENSE® Patented** technology ECOCERT **UV-Blocker** 20-30 % **Antimicrobial** COSMOS **Antioxidant LIGNENSE®**

Xylense® as emulsifier

- ✓ Xylense® has turned out to be an excellent emulsifier
- ✓ Can replace less sustainable Guar Gum and Gum Arabic in cosmetics
- ✓ Demonstration and attendance at In-Cosmetics fair together with Hetkinen Oy





Xylense® as prebiotic and humidifier

- ✓ Xylense® was launched as an ingredient in all four new products of SOLROS-Cosmetics
- ✓ Xylans have prebiotics function and helps skin microbiome
- √ Xylans are good humidifiers to keep skin moist



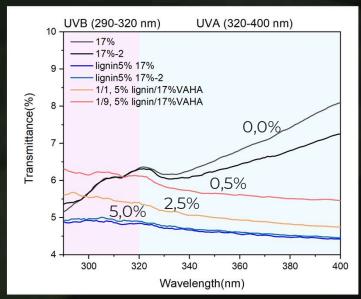


Lignense® as UV-Blocker

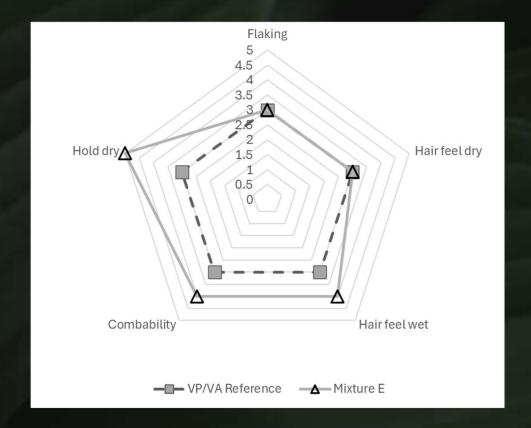
- ✓ Lignense® is an excellent UV-Blocker
- ✓ Dark color of the cream disappears on skin
- ✓ Lignense® does not have the traditional bad smell of Kraft-Lignin
- ✓ Test products were made in co-operation with Luonkos

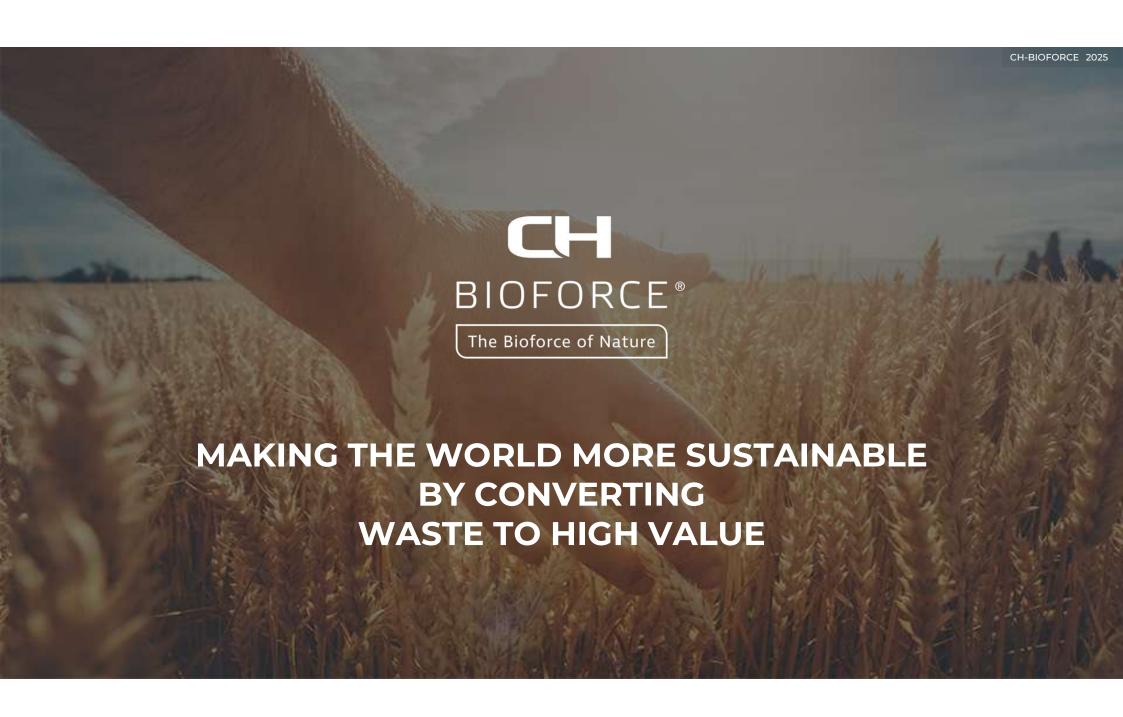






A hint of what's to come...





Production concept and products

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Input material kets **Biorefinery Products Application** Agricultural residues 30-40 % **Textile fibers Apparel** MCC Nonwoven textiles Cellulose derivatives Cosmetics Pulp & paper applications Consumer board **CELLENSE®** BIOFORSENSE **Mechanical wood Emulsifiers** Cosmetics 25-30 % **Defoamers** Paints and coatings **Sweeteners Food industry** Dietary fibers Packaging industry Surface sizing **XYLENSE® Patented** Foams technology Resins Cosmetics 20–30 % Carbon fiber Construction Polyurethane **Batteries** Anode material **Fertilizer** Concrete thickener Air Filter **LIGNENSE®**

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Bio Char Antimicrobial/viral