



Environmental sustainability analysis of material reduction and supply chain optimization of menstrual pads

(EU Life+ project Celstab LIFE13 ENV/DE/001131)

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EDANA Nonwovens Symposium

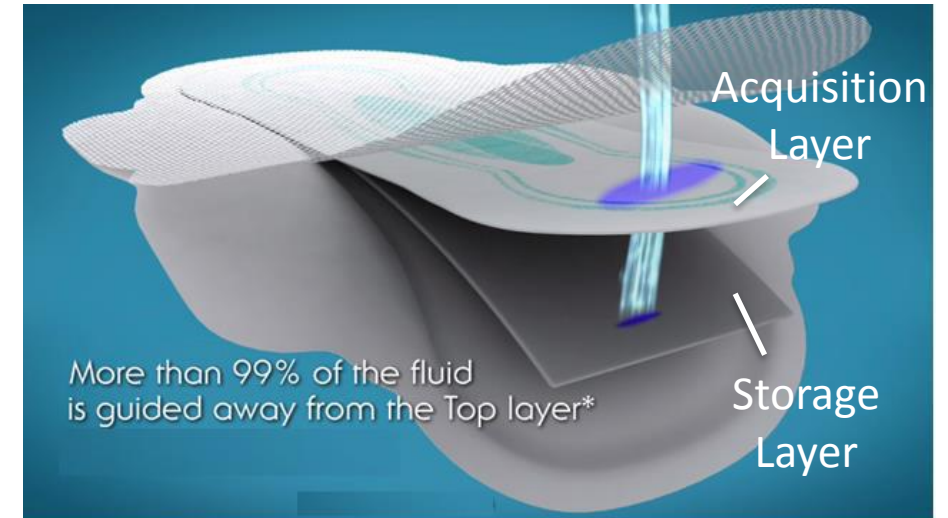
May 2018

Outline

- Function & design of menstrual pad
- Key performance and sustainability materials in menstrual pad
- Life+ objectives
- Approach taken (method, design space)
- Results
- Conclusions

Functions & design of a menstrual pad

- Menstrual pad key functions:
 - Rapid fluid absorption
 - Efficient fluid transport in pad
 - Sufficient absorption capacity
 - Leak prevention
 - Wear comfort

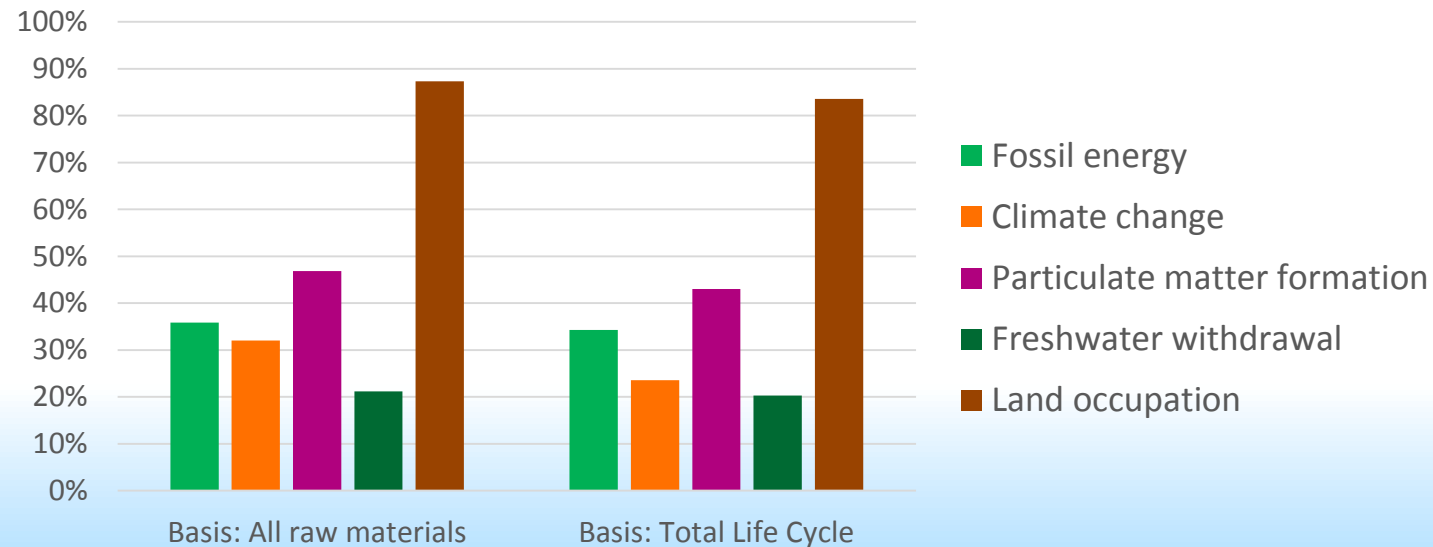


- Overall performance depends on individual material choice, but also how different materials are connected.
- Under-design will lead to more pads used per day, overdesign leads to increased cost and inefficient material use.
- Focus on Acquisition Layer and Storage layer (absorbency)

Key drivers in menstrual pad footprint

- The collective contribution of the storage and acquisition layer account for an average 32% in the environmental footprint

Contribution from the core and secondary topsheet



- The scope of work in Celstab focuses on the main sustainability and performance drivers of menstrual pads.

EU Life+ Celstab objectives

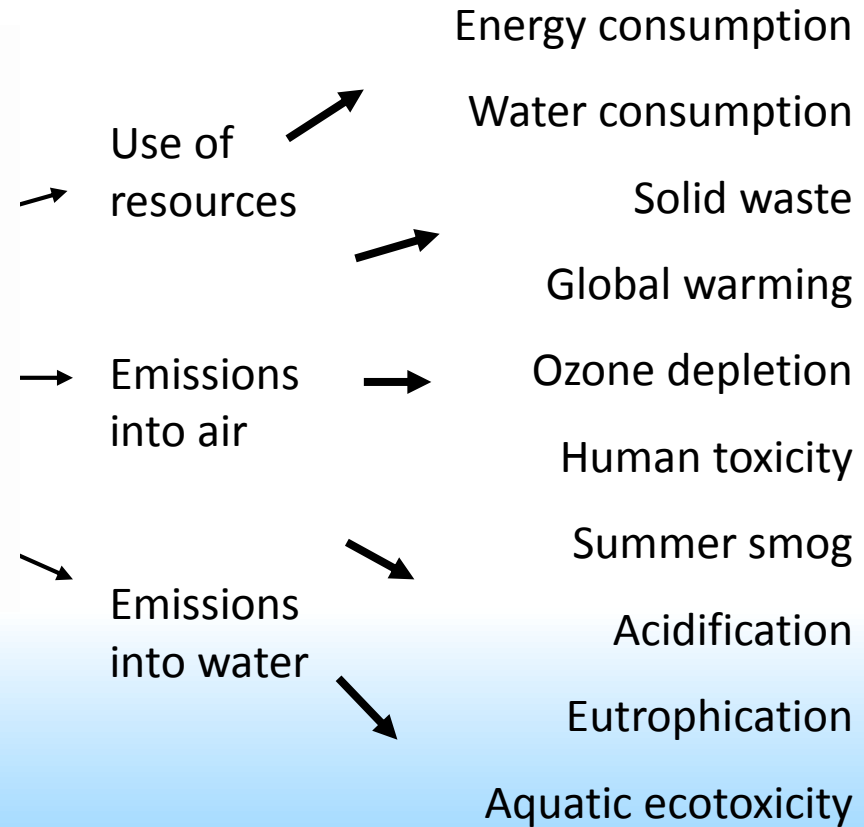


«CELSTAB – A novel and sustainable feminine pad product»

- Life+ is the EU funding instrument to stimulate environment and climate action.
 - Develop new **absorbent structure** for use in P&G menstrual pad to meet consumer product and quality needs
 - Demonstrate **feasibility** to upscale and integrate **new processes** at industrial scale and speed
 - Project timeline: July 1st 2014 – Dec 31st 2018
 - Budget: €2.8 million, 50% funded by EU
- Environmental targets:
 - **15-25% material use reduction**
 - **15-25% overall waste prevention**
 - **10-15% greenhouse gas reduction**

The European funding has been approved under the LIFE+ Environment Policy & Governance program 2013. LIFE is the EU's financial instrument to support environment and nature conservation projects throughout the EU.

Method: Life Cycle Assessment (LCA)



New Multilayer Absorbent Structure

Improved new structure:

- New fibers and supplier process would have softer/cushiony and flexible materials for comfortable products

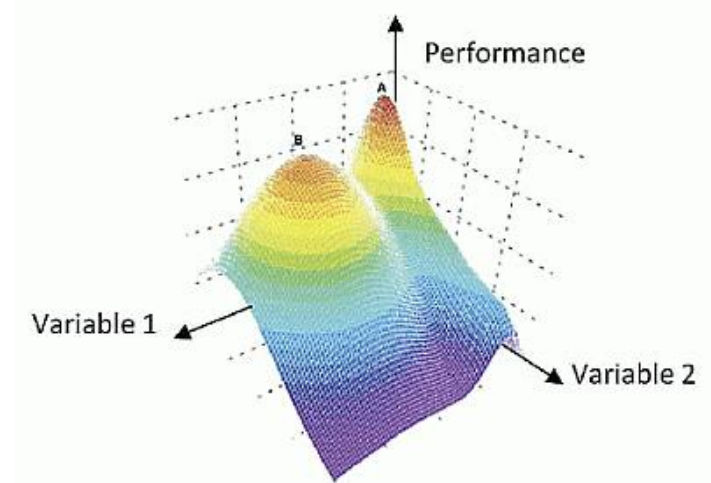
Achievements:

- **Achieves Parity/better product performance** vs reference product. Successful consumer test (90 consumers).
- **Completed local (Europe) pulp resource screening.** These pulps can replace current U.S. pulps, with equivalent good fluid handling results.
- **Successful material mass reduction** without compensating material performance. Met sustainability success criteria in grant agreement.

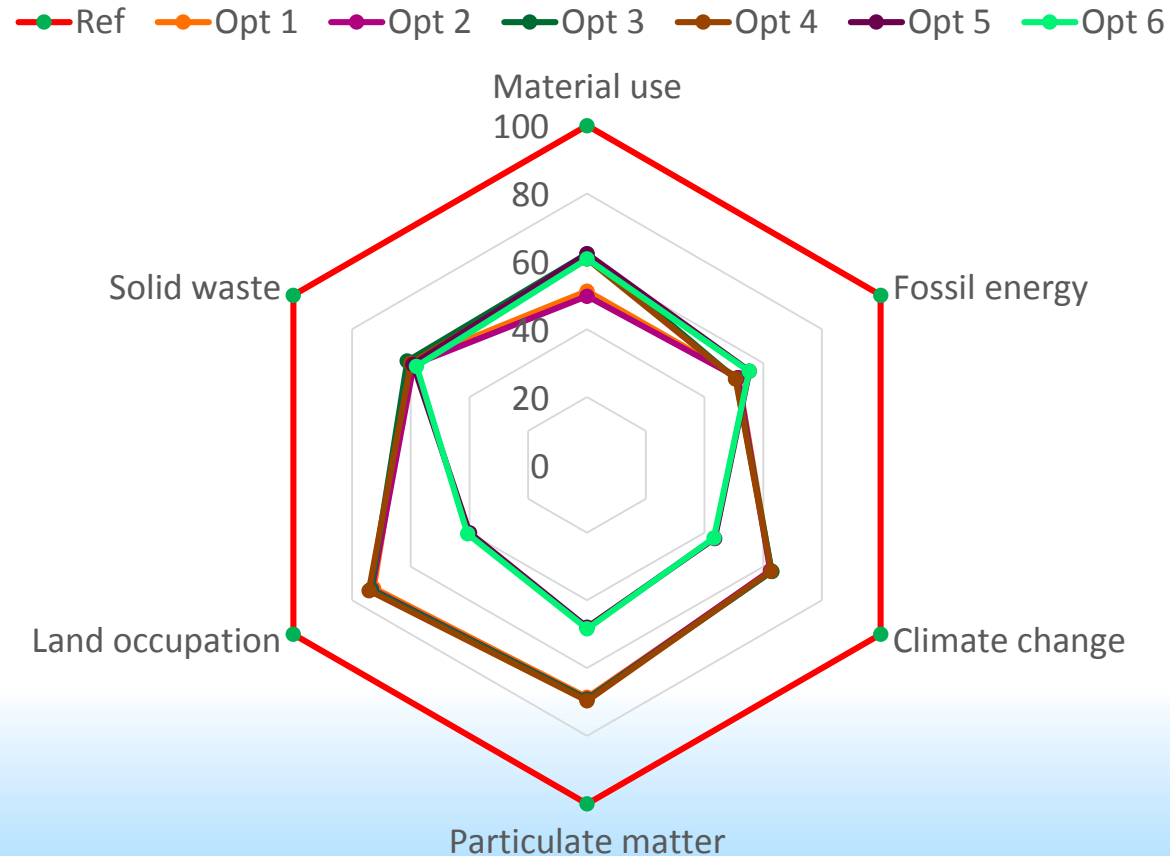
*Get more with
less*

6 scenarios define design space

- Final design depends on
 - Performance
 - Consumer evaluation
 - Cost
 - Technical feasibility
 - Sustainability
- Guidance provided based on sustainability assessment of a design space. Several scenarios are built that account for all material parameter choices:
 - Basis weight
 - Material composition
 - Dimensions
- Sustainability design space defined by 6 scenarios in a Life Cycle Assessment (LCA)



Sustainability evaluation of design space

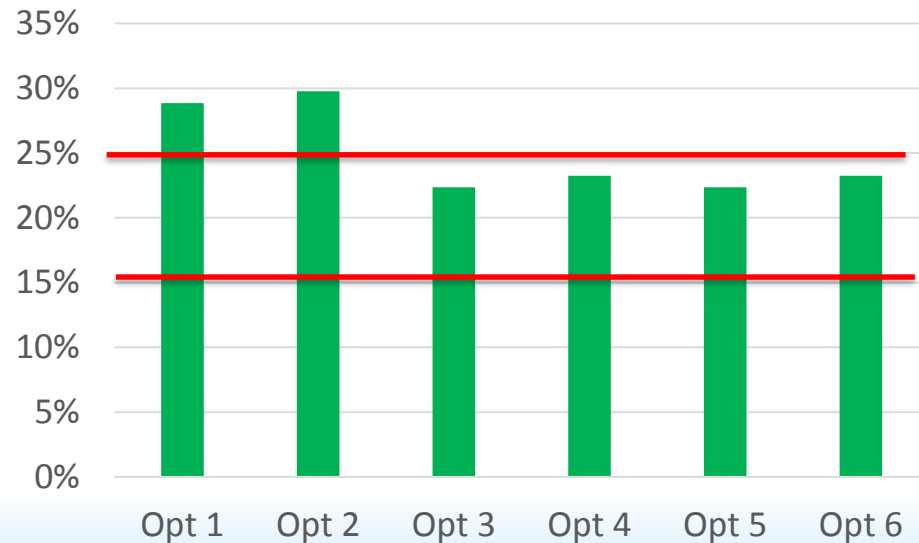


As compared to the reference situation

- All scenarios in the design space show improvements on the 6 relevant sustainability indicators
- Option 5 and 6 show enhanced improvements on climate change, particulate matter and land occupation.

Comparison vs. Life+ design objectives

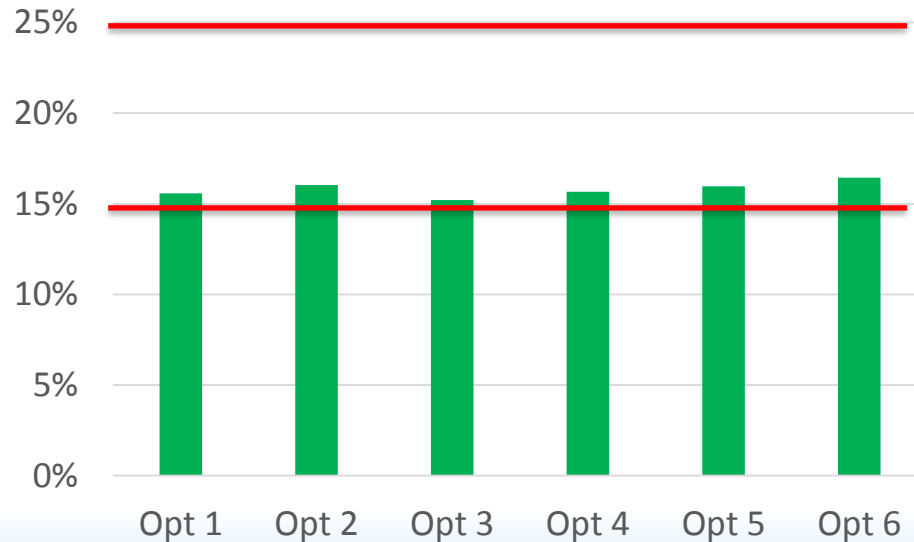
- Objective 1: 15-25% material use reduction



- All options in design space meet or exceed the material use reduction objective
- On an annual basis, this is on average 12,000 tons of material saving.

Comparison vs. Life+ design objectives

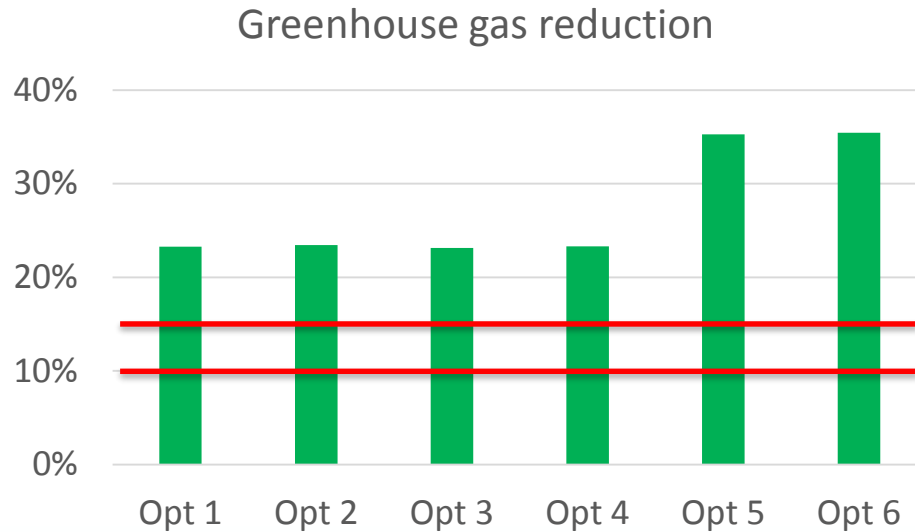
- Objective 2: 15-25% waste prevention



- All options in the design space meet the waste prevention objective
- On an annual basis, this is on average 14,000 tons of waste saving

Comparison vs. Life+ design objectives

- Objective 3: 10-15% greenhouse gas (GHG) reduction



- All options in the design space exceed the GHG reduction objective.
- On an annual basis, this is on average 45,000 tons of GHG saving

Sustainability Improvements from supply chain

- The new materials allow use of locally (EU) supplied pulp as compared to US sourced pulp.
- Annualized benefits from local supply are (averages from the design space):
 - 1,200 tons saving of CO₂
 - 400 ton of oil equivalents
 - 6 ton of particulate matter (fine dust)

Conclusions



- Celstab redesigned menstrual pads
 - Use raw materials more efficiently
 - Achieve parity performance vs. current pads
 - Are significantly preferred by consumers
 - Achieve break-thru sustainability results
- In addition to benefits from redesigning the pad, benefits are achieved from sourcing pulp locally.

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