CCES 2025
Textiles & Apparel Track Session Summary

Processing Textiles for Insulation Panels Pilot

In collaboration with multiple industrial and research partners, the CTTEI set out to test the recyclability of the Recyclo-Centre's textile surplus through a high-volume solution in the building materials sector, where textiles are recycled into insulation panels. The project was part of a sorting and processing pilot carried out by the thrift store itself and CHROMA Conseil, to evaluate the costs and resources involved in manually sorting and detrimming textiles. The pilot also explored alternative pathways, including a high-value option in the crafts sector, where textiles are upcycled into quilting products.

Speaker:
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SUMMARY

Maxime Saint-Denis from the CTTEI (Centre de Transfert Technologique en Écologie Industrielle) presented a pilot project focused on transforming textile waste into insulation for the construction sector. The CTTEI, an applied research center in Sorel, Quebec, aims to reduce waste and find solutions for industrial waste, including textiles.

The project's main objective was to confirm the technical feasibility of producing textile insulation in Quebec and assemble a team to develop prototypes quickly. This initiative is highly collaborative, involving numerous partners.

The project originated from a collaboration with a thrift store Recyclo-Centre in Sorel, Quebec, which handles about 150 tons of textile surplus annually. A previous pilot project by the thrift store and CHROMA, a key project partner, focused on manually sorting and trimming textiles to prepare them for local recycling outlets, addressing the lack of optimized equipment in Quebec. Market research confirmed the viability of two complementary recycling outlets for these textiles:

1. Craft sector: Small quantities of cotton and woven textiles are bundled for quilting, offering high market value.

2. Insulation panels: Large quantities of textiles are used, where the fiber itself doesn't necessarily hold high market value, but the application provides a viable solution for the thrift store's textile surplus.

For the insulation panels, the thrift store handled sorting and trimming. General Recycled, a Quebec-based shredder, processed the textiles. Groupe CTT applied fire retardants to meet construction sector regulations. Finally, Nature Fibres, a manufacturer of hemp insulation panels, integrated the shredded textiles into their production. They are interested in textiles to enhance insulation performance (R-factor) and reduce costs, as hemp is often imported.

The prototypes, encompassing different textile percentages (from 100% textile to textile-hemp mixes), are currently being tested at SEREX, another research center. Tests are being conducted for thermal conductivity, sound absorption, fire resistance, and fungal resistance to compare them with existing market products. A simultaneous life cycle assessment (LCA) is being conducted to ensure the solution genuinely reduces environmental impact.

Key success factors for the project include the involvement of all relevant experts from the outset, the concurrent LCA guiding decision-making, long-term vision developed with an economist NUNO ID, and financial support from various partners (Techni Textiles,, Recyc-Québec, and Desjardins).

The team is awaiting performance results and LCA conclusions to confirm their findings. Future plans for Phase Two of the project include reducing costs, enhancing prototype performance, and scaling the solution within the region with appropriate partners.