Carbon Footprint Assessment 2011

Never perfect, always improving

FIBERTEX PERSONAL CARE

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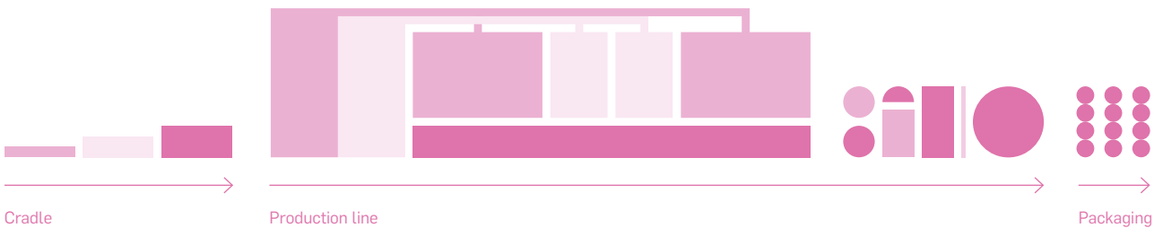
We strive for perfection, but never hope to reach it. Perfection is an ideal. It is what drives us to constantly better ourselves. So when it comes to thinking green, we do not claim to be perfect, but we do claim to be industry leading in the field of constant improvement.

Cradle-to-gate extent



At Fibertex Personal Care, we know the importance of minimising harmful effects through smarter designs, cleaner production procedures and more comprehensive disposal alternatives. In this matter, Carbon Footprinting is an appropriate response to monitoring our value chain, answering our customers' requests for greener products, and providing our Supply Chain down-stream actors with this documentation. This assessment enables us to identifiy hotspots in the value chain and thus it will support and guide us in future product redesign and engineering initiatives.

From cradle to gate

In this brochure you can learn about our environmental efforts along with the results of the Cradle-to-Gate Carbon Footprint Assessment of our Supply Chain in Denmark for the year 2011. The brochure only covers the essential findings of the analysis, leaving more specific but nonetheless essential details to the fully documented ISO14040/44 compliant report which, to the best of our knowledge, represents the first such assessment for a spunmelt product that has been externally reviewed.

In other words: what was the environmental impact of producing 1 ton of spunmelt nonwoven fabric in 2011?

By identifying flows of material and energy, it is possible for us to derive and sum up greenhouse gas emissions originating all the way from the early processes of extraction of raw materials and energy capture to each process in the manufacturing of our nonwoven material down to the factory gates, before we deliver the fabric for transport to our customers.

Never let by-products be by-products

The nonwoven fabric product system for Fibertex Personal Care - Cradle-to-Gate - entails more than 2000 processes in total. The complex network of industrial activities, interconnected by material and energy flows, can be represented in a simplified form, as seen on the opposite page.

Why let waste go to waste?

In spite of our continuous efforts in improving our resource efficiency, the joint-production of waste is inevitable. But the way we manage these by-products makes a great difference.

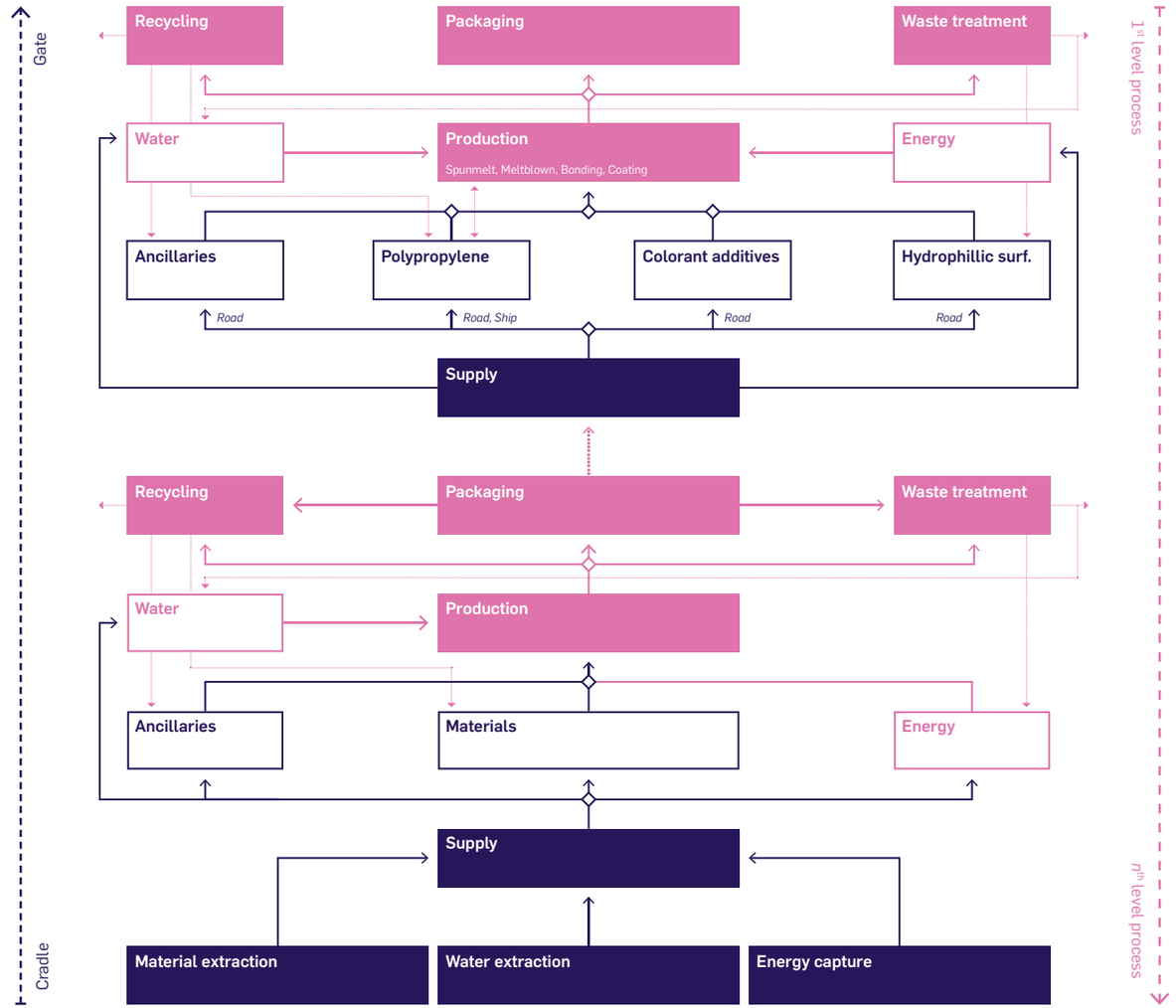
At Fibertex Personal Care, no waste is landfilled, it is recovered, recycled or converted back into useful energy instead.

The entirety of our non-conforming fabric is recycled, either internally or via an external party, which displaces significant resources otherwise needed to produce additional virgin material.

Municipal solid waste is sent to a combined heat-power plant to be transformed into heat and electricity. This heat feeds back into the local central district heating system.

The wastewater is treated by a municipal waste water treatment plant and re-introduced into nature, paper-based waste is recycled for further application, and finally, hazardous waste is neutralised in high-temperature incineration chambers and converted into energy.

Simplyfied view of more than 2,000 processes



- **Supply**
- **Materials**
- **Fibertex handling**
- **Ressources**

A snapshot of an impact

The carbon footprint assessment is by design a snapshot in time, but it's a snapshot that allows us to measure our progress quantitatively from now on.

By gathering up elementary flows of material and energy necessary to sustain all the required industrial operations, we're able to quantify and characterise the greenhouse gas streams. Calculations regarding the global warming potential (GWP) of these greenhouse gases use a model provided by The Intergovernmental Panel on Climate Change (IPCC) in 2007, with a 100 year time horizon (IPPC GWP_{100a}).

The analysis came to the result that producing one functional unit in 2011 (1 t of white nonwoven spunmelt fabric) releases the equivalent of 2907 kg of CO_2 (IPPC GWP_{100a}) in the atmosphere.

Stated CO_2 values are equivalent to IPPC GWP_{100a}.

On the following pages you will find three cases that demonstrate some of the improvements already gained from our environmental efforts.

Recycle and reduce

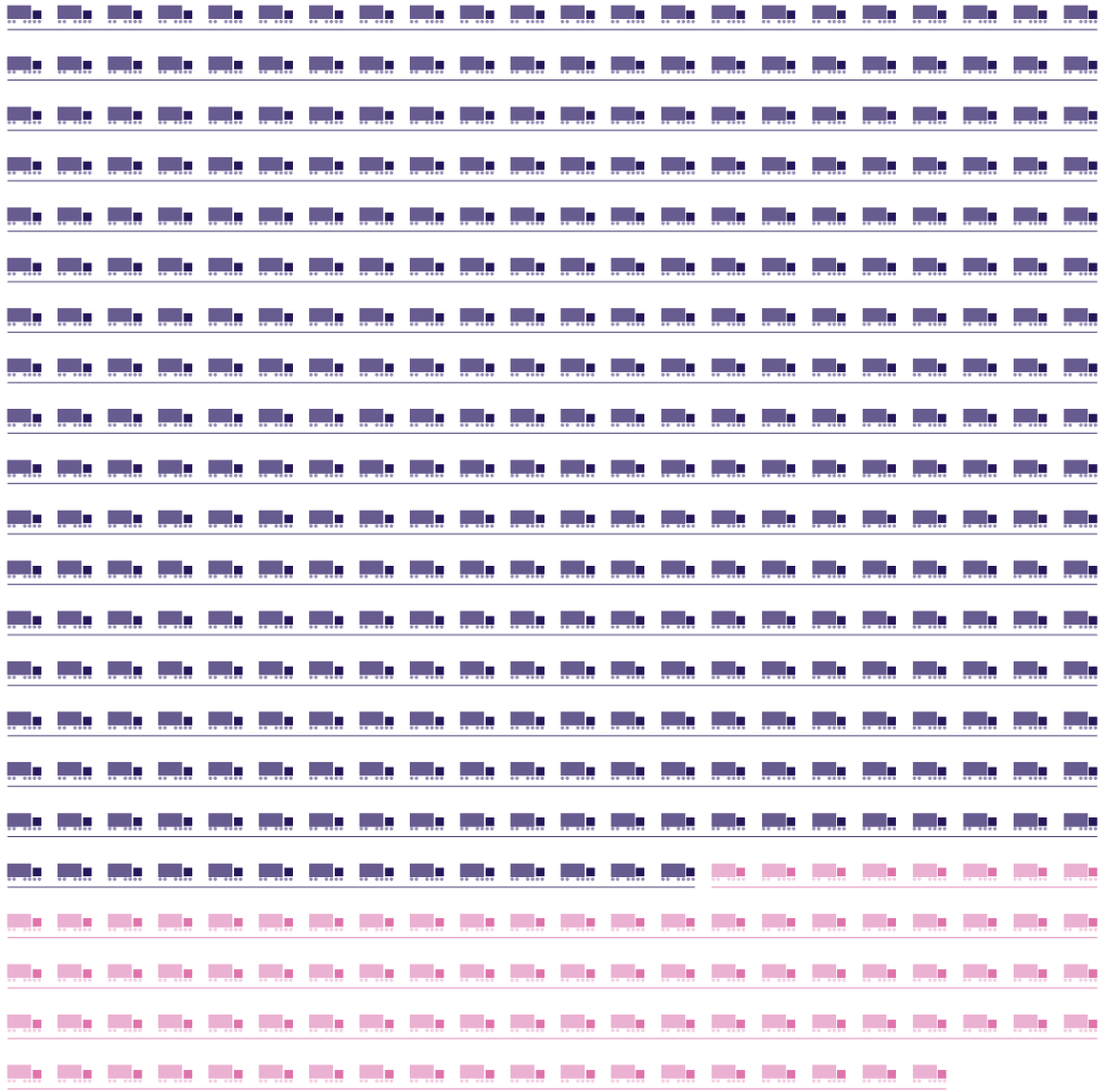
Case #1

Through improved waste management, which includes the fact that no waste has been going to landfill for more than ten years, and through increased use of recycling waste into new nonwoven, the usage of virgin PP has decreased substantially. This has accumulated into a combined total saving of almost **100,000 tons** of virgin polypropylene resin from 2000-2011.

Space is a terrible thing to waste

Case #2

For several years we have worked diligently with our transporters and customers to optimise the utilisation of each truck and container, whereby we now save almost **one thousand** truckloads/containers each year, helping to reduce road congestion as well as CO_2 emissions.



By optimising truck utilisation, we now save almost 1000 truckloads/containers each year.

10 Truckloads of nonwoven

10 Truckloads of nonwoven diminished by optimisation

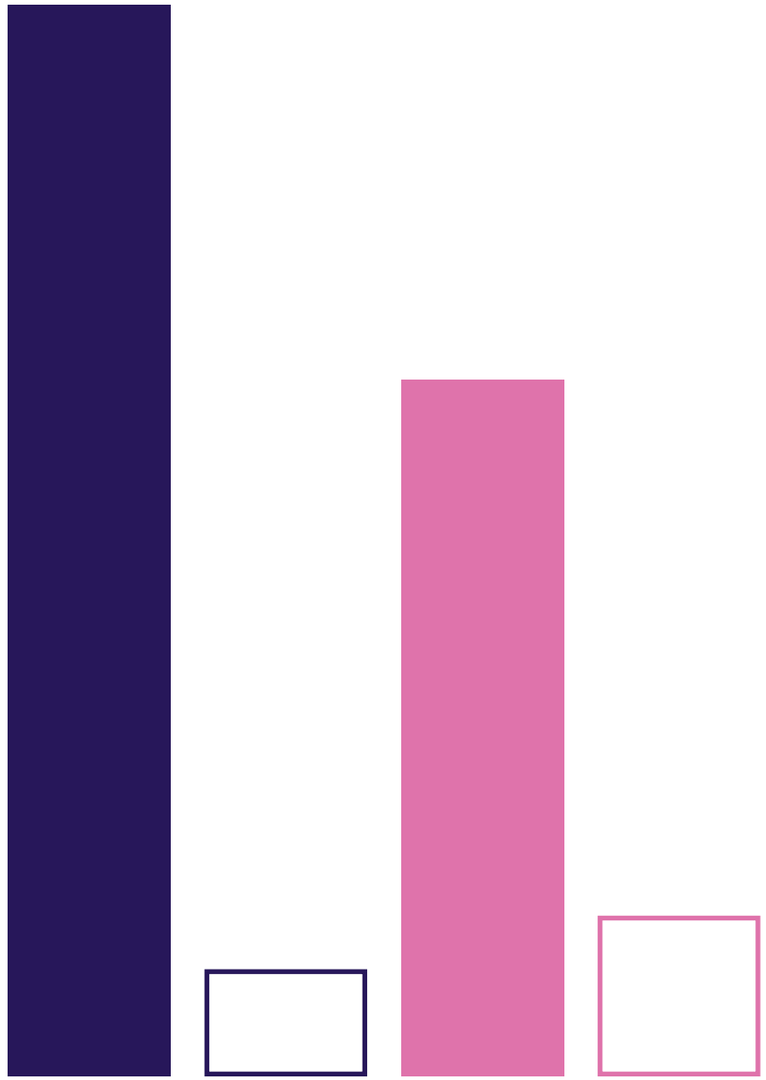
Welcoming the next heat generation

Case #3

Over the last few years we have changed several of the heating systems on our production lines from electrical heating to natural gas heating, which has a considerably lower carbon footprint pr. kWh.

The carbon footprint saving stems from the relatively low carbon foot print of natural gas burning combined with the direct use of the calorific energy. This is opposed to burning fuel for the production of electrical energy, and then converting it back to heat with losses incurred at every stage.

In the future it might even be possible to exchange natural gas for biogas to achieve further reductions.



These are just three examples of our commitment in reducing our environmental impact, but many more will follow in the years to come. We are never done improving.

From cradle to gate

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