



Smart Textiles

Case study

by-wire.net (Netherlands)



Introduction

'[By-wire.net](http://www.by-wire.net)' is a Dutch SME that loves to expand innovative fashion by sharing knowledge. As freelance intermediary Marina Toeters works for fashion and technical companies; creates concepts, brainstorm sessions, presentations and garments for example for technical companies that are looking for new applications for their materials or advises designers interested in material and process innovation (see: www.by-wire.net). For this training TU Delft contacted the company to give a training session with the LCA to go tool. The company owner was motivated to receive the training in order to better integrate life cycle thinking in the company's business and to get more information about LCA in general. Toeters is also tutoring students at several institutions whom she would like to teach more about this subject.

Report

The training event took place in the morning and beginning of the afternoon of December 2nd 2013 in the workshop and office of the SME 'by-wire.net' in Utrecht. Natascha van der Velden from TU Delft gave a practical training session to both companies and helped them to analyse two products (and several design alternatives) with the LCA-to-go tool for smart textiles. One of the products analysed were gloves with and without conductive fingertips, which already can be found in large numbers on the market. Toeters analysed three dresses, two with different solutions for an integrated heating section and one without the functionality.

The feedback on the tool as given by 'by-wire.net' can be summarized as following:

- After registration and logging in, the list of products appears at first. It would be better to show the page with Introduction/Data/Data Quality/Results or the Introduction itself.
- Introduction text is quite long and "scientific" and halfway reading both participants lost their concentration. (At the end of the session it appeared that both had read the text quite well because they did not need to go back to read about the comparison and how this would work. Although this could also mean that the tool "works for itself".) And idea is to give a very short introduction where after the assessment needs to be undergone and give an explanation (about eco-costs etc.) afterwards.
- Both participants would like to have the possibility to alter the data in the lines (and not to delete the complete line at first and enter a new one).
- It would be better to express the weight of the product in grams, since most users will asses a prototype and not a mass produced product in large quantities.
- The items in the eco-costs database could be named more clear (e.g. designers refer to Nylon instead of polyamide)
- Upon request, TU Delft will check whether eco-costs data on acryl fabric and washing (laundry) can be added to the internal database of the LCA-to-go tool.



In general the participants in the training were very enthusiastic about the LCA-to-go tool and provided several remarks about the beta version tested. Comments for improvement were concerned with the user interface and data choices. Moreover, the user's experiences about the way the tool guides them through the LCA process were discussed. As a result, the tool will be amended to allow instant comparison of design alternatives of products (this function worked well in the final release version). The users considered this feature as one of the attractive parts of the LCA-to go tool.

Eco-costs, as a single indicator, were first considered to be a (too) simple representation of reality. However, after testing the LCA method that is implemented in the LCA-to-go tool, and a short demonstration of the Idemat database this choice was better appreciated and understood. The possibility to retrieve extra eco-costs data for free from the Idemat website <http://www.ecocostsvalue.com> and the possibility to insert them in the LCA-to-go tool was found very valuable feature.

The assessment of the gloves gave a remarkable result: the non-smart version of the gloves (without electronics) scored better in terms of environmental impacts because the silver content in the conductive gloves comes with a rather high environmental burden. The three versions of the dress did not show large differences but an improvement in terms of eco-design between the two functionality dresses could be made clear (by choosing another solution for the conductive material). As expected, the dress without the active temperature-control function had the lowest environmental burden of all design alternatives analysed.

Both participants in the training confirmed that the LCA-to-go tool allows for a relative easy and quick assessment and they were positive about the extra knowledge they gained about LCA in such a short period of time.

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