FINAL REPORT

THE BENEFITS OF THE STUDY VISIT TO 'S-HERTOGENBOSCH, THE NETHERLANDS, 6 – 12 MARCH 2012

FROM A PERSONAL PERSPECTIVE

The concern that the wealth of modern Western societies is dependent on cheap energy and is unsustainable was heightened by the oil crisis of 1973, which could be seen as an opportunity to reappraise our economic models. However, with the advent of North Sea Oil and the Thatcher government this opportunity was lost nationally; and on a personal level, with a young family to support, these concerns faded into the background. It was in around 2007 that interest in the issues of energy and resource use was reawoken by the film, *An Inconvenient Truth*, and following this an MSc course in Environmental and Energy Studies was successfully completed at the Centre for Alternative Technology.

The Study Visit to the Netherlands was particularly enlightening because real practical examples of careful energy and resource management, based on the *Cradle to Cradle* and *Circular Economy* principles, could be experienced firsthand and in depth. Additionally, some insight was gained regarding how wider environmental awareness and in particular the *Cradle to Cradle* and *Circular Economy* principles are being integrated into the curricula of schools in the Netherlands. This has contributed significantly to personal Continuing Professional Development by providing further knowledge and experience in the fields of energy and resource use, and by stimulating ideas for the introduction of related issues into Scottish education.

Personally, the highlights of the time in the Netherlands were visits to the Desso carpet factory; the Materials handling company, Van Gansewinkel; and to schools and colleges. At the Desso Carpet Factory we learned that following a take-over in 2007, and after consultation with architects and other clients, a strategic decision was taken at the highest level in the company to manufacture more sustainable products. It is significant that this decision was not based on a vague concern for the environment, but was a business decision to be a front-runner in what was seen as the future for manufacturing. It was enlightening also to experience that the transformation to more sustainable production was very challenging, and involved a great deal of hard work. Nonetheless, this effort has borne fruit in a 41% reduction in CO_2 emissions since 2008; the use of 100% renewable electricity; the design of products for ease of disassembly and reuse of materials at the end of their useful lives; and the implementation of a system for the collection of used carpet tiles and their processing into separate materials for reuse.

A similar transition has taken place at the materials handling company, Van Gansewinkel where there has been a transition from a waste services provider to a materials provider. This has been driven by economics, rather than by legislation or by a vague concern for the environment: materials are simply becoming more scarce and expensive. These may be sustainability issues, but for the company they are especially business issues: following *Cradle to Cradle* principles is seen as a new business opportunity. Again, an awareness was gained of just how much hard work and attention to detail is needed for the transition to a *Cradle to Cradle* model for materials use, and how preconceived ideas about the best way to handle materials are being challenged. The company has even become involved in assisting with the design of products to make the reuse of materials easier.

We visited Koning Willem I College, a vocational college for 16 – 18 year olds. Here we experienced sustainability as part of the curriculum: the college has introduced new energy and climate modules, and all their sustainability modules are very popular; the school has one of the largest websites in the world on sustainability, and has international links in sustainable education across Europe. There is practical relevance to their work on sustainability: the Dutch government will be procuring 100% sustainable goods by 2015, and the municipality is endeavouring to be climate neutral by 2030. We additionally experienced how the college has reduced its own energy consumption, mainly by the use of newer laptops, and i-phones.

We also visited one campus of the Christiaan Huygens College, Eindhoven, housed in a purpose built low energy building. Utilising underground aquifers as energy stores, the 'Energy Roof' uses solar panels to heat water in summer for use in heating the building in winter; in winter cool water from the roof is pumped underground for cooling the building in summer. The roof additionally incorporates photovoltaic panels, cooled from below to improve efficiency, and the school is a nett producer of electricity in the summer.

An Architect's Impression of the new Building for Christiaan Huygens College

DISSEMINATION ACTIVITIES

On our return to our school, my colleague Pauline Smith and I discussed how we could disseminate to colleagues the knowledge and experience we had gained during the Study Visit. It was decided that we would undertake a joint presentation to all our colleagues during the in-service days at the start of summer term, in April 2012. We agreed on the aspects we would each cover, and we each prepared a PowerPoint presentation. My presentation concentrated more on the technical aspects of the study visit, and the PowerPoint slides used are included in the Appendix to this report. The presentation was well received, and there were some interesting questions asked after the presentations. For example, we were asked why it might be that the Netherlands seems to be further ahead than we are in putting in to practice *Cradle to Cradle* and *Circular Economy* principles. In reply we expressed the view that it may be partly to do with the nature of Dutch society, which is possibly less bound by tradition, and more open to new ideas; it may also be to do with the fact that the Netherlands is a very densely populated country, and minimising waste is a more pressing issue. Following the presentation we received more informal feedback, usually expressing a lively interest in the topics introduced and in how they could be furthered in our school. One colleague, however, expressed the view that many of the environmental issues of our times – particularly global warming – are not rigorously supported by carefully analysed scientific data.

Pauline Smith and I attended the Ellen McArthur Foundation follow up meeting at Bathgate Academy in summer term of 2012. On our return to our school we discussed with our Depute Rector, Jim McDougall the possibility of being a 'Pathfinder School 'for the Ellen McArthur Foundation, which would involve in particular the trialling of curriculum materials involving Circular Economy principles. Our Rector was keen on the idea, and we began by analysing the teaching materials provided at the Bathgate Academy meeting to decide which departments in the school could be approached to try out the materials. Our analysis is show in the table on the next page.

These departments were approached near the end of summer term 2012 and considerable interest and enthusiasm were expressed for trying these teaching materials. However, at the time of writing this report (October 2012) none of the materials had as yet been trialled, and so there was limited feedback. The Art Department felt that some of the teaching materials would be quite useful in connection with work with S3 pupils on designing using existing used materials. The Economics and Business Studies Department were planning to use some of the teaching materials in connection with resource use as part of an Economics course with S3 pupils. However, it was felt that the language of the course materials was not so accessible

for pupils of this age (turning 14 during the school session), and some of the concepts would have been difficult for the pupils to grasp – it was perceived that there was a possible clash with elementary Economics language which was being introduced at the beginning of the course. It was planned to introduce the Circular Economy concept during a topic on Efficiency, and to use the teaching materials in stand-alone lessons over 2-3 hours. It was felt that it would be good if there were a clearer context in terms of what is happening in industry at present in connection with waste.

UNIT	TITLE	DURATION	LEVEL	POSSIBLE DEPARTMENTS TO TRIAL
GT1	Fast Track Introduction to the Circular Economy	3 hours	14 - 16 (S3-S4)	Economics & Business Studies; Art (Design)
G2T	Investigating Linear and Closed Systems	50 minutes	14 - 16 (S3-S4)	Chemistry; Biology, Economics & Business Studies
G3T	Systems Thinking (Coffee)	60 minutes+	14 - 16 (S3-S4)	Biology; Economics & Business Studies
G4T	Circular Economy - Systems Thinking Activity	Open	14 - 16 (S3-S4)	Art (Design); Modern Studies
G5T	The Need for Infrastructure Change	30 minutes	14 – 16 (S3-S4)	Art (Design); Geography
G6T	Circular Economy – Project Checklist	Open	14 – 16 (S3-S4)	Art (Design)

An Analysis for the Possible Trialling of the Teaching Materials

It is clear that there is potential for using the teaching materials with our classes, but more time is required before their impact within their school and the ‘added value’ to our pupils can be meaningfully evaluated.

APPENDIX

POWERPOINT PRESENTATION TO ALL STAFF
(DELIVERED APRIL 2012)

Education Scotland
Foghlam Alba

ELLEN MACARTHUR FOUNDATION
Rethink the future

STUDY VISIT TO THE NETHERLANDS

The Circular Economy
'Cradle to Cradle' Principles

SCHOOL & COLLEGE VISITS

- De Rotonde Special School
- Koning Willem I College
- Christiaan Huygens College

older part of Koning Willem I College

awaiting the organic lunch at the college

KONING WILLEM I COLLEGE

- Dr Rob de Vrind
- chair, sustainability education for Holland
- UNESCO work
- college projects
- steering committee of DMBO
- vast sustainability website

Christiaan Huygens College (architect’s impression)

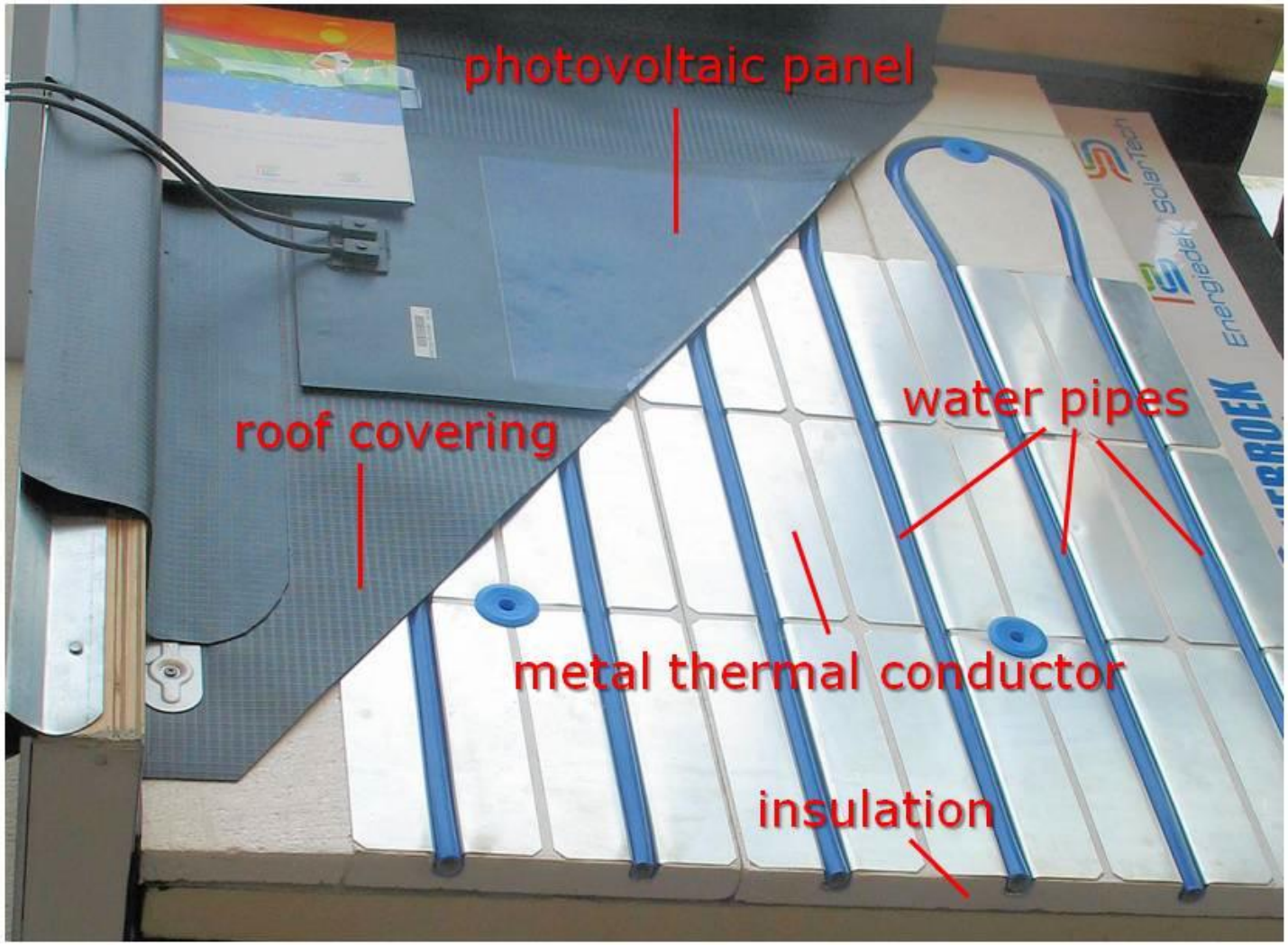
Christiaan Huygens College (architect’s impression)

inside Christiaan Huygens College

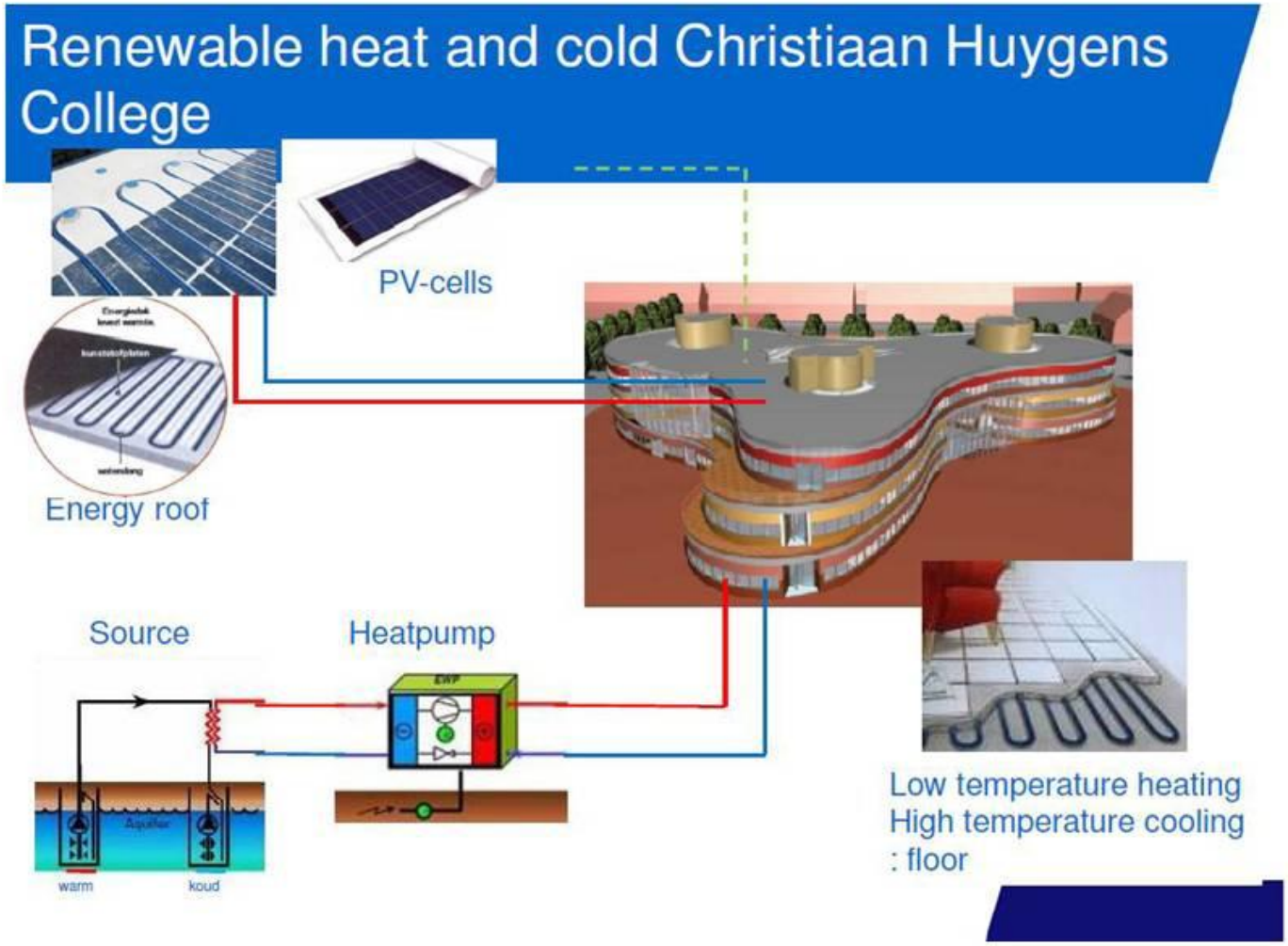
inside
Christiaan
Huygens
College

CHRISTIAAN HUYGENS COLLEGE

- energy surplus
- £108,000 annual savings
- 98.5% CO_2 reduction
- energy roof



section of the energy roof



heating and cooling system

INDUSTRIAL VISITS

- Desso: carpet manufacturer
- Van Gansewinkel: materials handling company

'CRADLE TO CRADLE' PRINCIPLES

- use 'waste' as raw material
- use current solar energy
- celebrate diversity

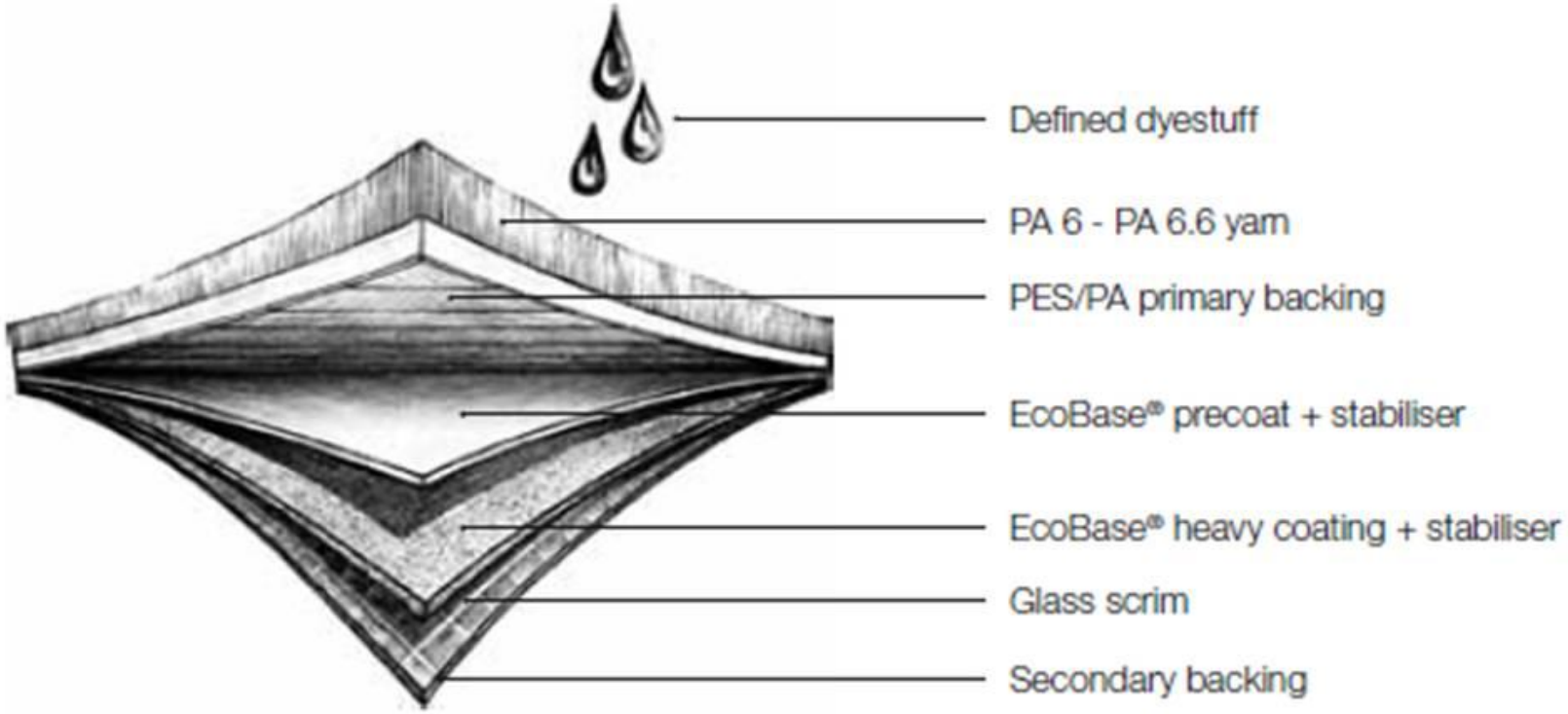
- the business case:
  - raw material scarcity and uncertainty
  - World Economic Forum report:
    up to £400 billion annual savings in EU

DESSO: CARPET MANUFACTURER

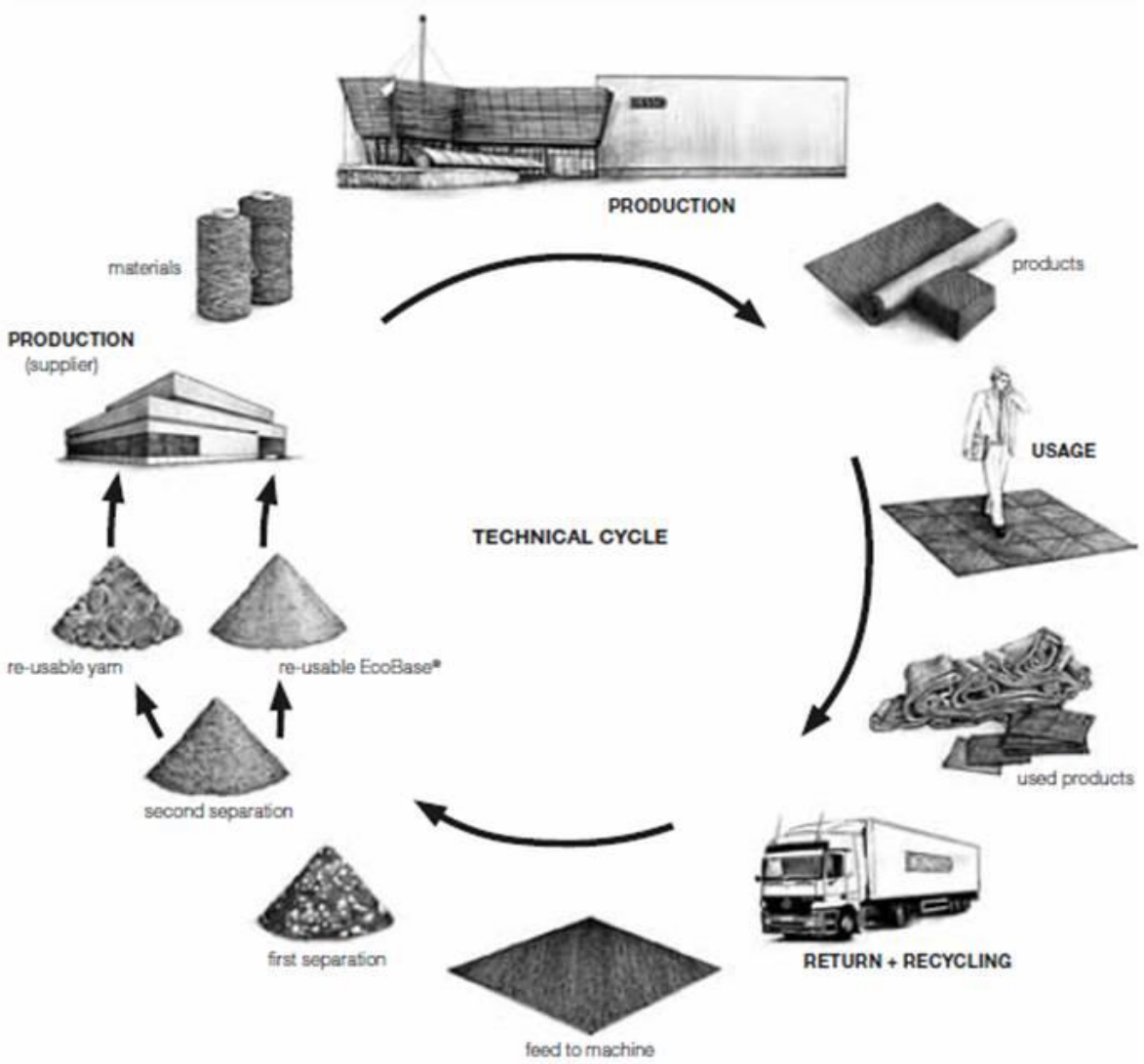
DESSO

The Floor is Yours

- New management in 2007
- Redesign of products
- 'take back' scheme
- Airmaster® improves indoor air quality
- Silver certification: 97% positively defined
- 100% renewable energy by 2020



carpet tile redesign for disassembly



Refinity® - the continuous cycle

VAN GANSEWINKEL: MATERIALS HANDLING

van Gansewinkel

- materials supplier rather than waste manager
- advice on product design
- glass
- gold
- rare earth metals
- tyres
- textiles

‘Cradle to Cradle’ office paper


Education
Scotland
Foghlam Alba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