

Inspired by Cradle to Cradle®

C2C practice in education

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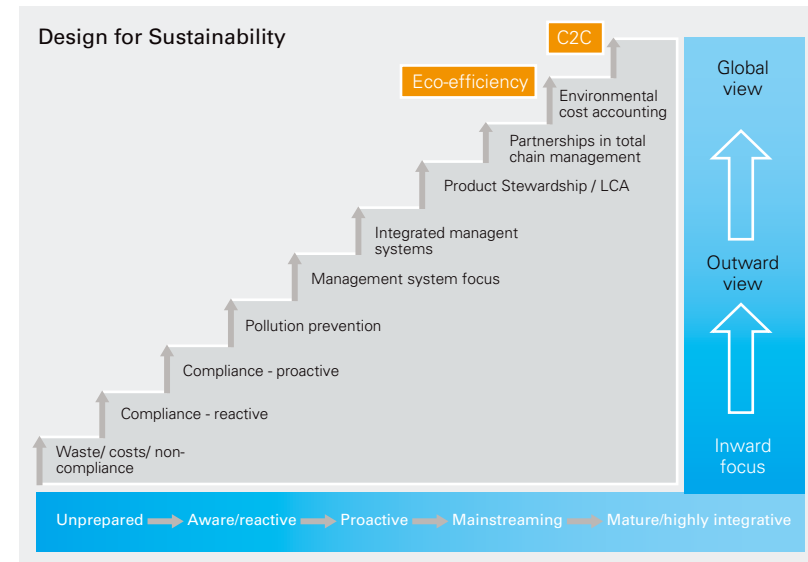
protection, Cradle to Cradle encourages designers, entrepreneurs, policy-makers, material and other scientists alike to create systems and products that are beneficial and add value to all three domains: the economy, society and the environment.

Cradle to Cradle versus conventional Sustainability

In further sections of this book you will frequently see reference to ‘sustainability’ when interviewees are discussing C2C. This is because companies often include C2C under their ‘sustainability’ portfolios. But actually this is not the ideal way to approach C2C because there are fundamental differences. Conventional sustainability usually attempts to minimize bad impacts through efficiency while C2C aims at improving beneficial ones. To illustrate this let’s consider the case of mobile phones. Produced under sustainability principles, individual mobile phones have become far more efficient, but collectively consume many times more materials and energy than they used to, because efficiency made them affordable for billions of users. mobile phones produced under C2C principles are designed to make sure they can be effectively recovered at the same level of quality, not to minimize materials. This is a basic difference in approach for business.

This is why C2C is often referred to as ‘surpassing’ or ‘going beyond’ sustainability.

There are many other differences between C2C and sustainability as illustrated in the scheme below. It is important for readers to keep this in mind when reading this book. It is also true that some application tools used for sustainability are also used for C2C¹.



2. C2C® knowledge and education: a business perspective

2.1 Waste no more – The Van Gansewinkel Groep

Roel Majoor, Organisational Development Manager

(interviewed by Judith van Heeswijk)

The Van Gansewinkel Groep is a major player in waste management in Western Europe. It’s also one of the first companies in Western Europe to fully implement Cradle to Cradle® design in its business processes. The company’s sustainability ambitions have been translated into their business operations and into a strategy that includes Cradle to Cradle objectives.

From their mission statement²:

“By seeing Cradle to Cradle as a guideline, we deal with raw material shortages and the CO₂ problem. We assume opportunities and not debt management.”

The company sees waste as a source of new raw materials and energy. They see their role as one that closes the biological and

technological cycles. The constant conversion of waste into energy and raw materials is seen as added value. The company transformed from a traditional waste collector into a supplier of sustainable raw materials and energy. They seek sustainable solutions for their waste streams and consider their knowledge of waste as something of value to partners. Their goal is to work together in early product design stages so that they can fulfil a role and help deliver profitable solutions for waste streams.



Given that Van Gansewinkel has embraced the Cradle to Cradle concept, this has also had implications for its operations and the way business (waste) processes are designed and managed. This means additional knowledge and competences are needed from employees. Since 2008, the company has been working together with EPEA to streamline knowledge in operations. They found that a lot of implicit knowledge about waste management is useful for understanding the transition to C2C. There was less explicit knowledge about C2C basic

principles, so the company had to acquire additional knowledge about this. The EPEA shared these principles during a first meeting. After that, practical knowledge and experience was even more important to bring employee knowledge up to a working level. The company understands that there is a significant difference between knowing C2C in theory and predicting the way it will have to be applied in daily practice. The steps and processes have to be thought through and visualised several times to be able to thoroughly understand the principle. To really use C2C, insight into its use is essential. You have to make it your own. It is a radically different way of thinking and is, therefore, a paradigm shift. This means it also asks for a paradigm shift from employees. And in relation to customers' needs in particular it is becoming more and more practical, as it also means that you ask the customer to think about waste from another perspective. The Van Gansewinkel employee has to be able to communicate the principle to the customer. Communication is something that should not be underestimated in the transition to C2C.

Van Gansewinkel used three different training courses:

- 1 **Champions training:** A four-day EPEA training course, in which the theory is brought to life and cases are studied. This training course was developed for regional management, key account managers,

waste managers, sales and marketing managers. A total of approximately 150 people took the course. The training course focused on large industry.

- 2 **Sponsors training.** A two-day EPEA training course for employees that need to know how to translate the C2C concept into the organisation. This training course was developed for managing directors, etc.
- 3 **Advisors training:** two one-day training in company courses for sales executives. It dealt with the basic principles and translating them into business operations. The training course focused on small and medium enterprises (SMEs).



Large industry is able to close the biological and technological cycles itself, but that isn't the case for SMEs, which are often just a small link in the production chain. Therefore, they are more dependent on other companies to change production and waste processes. Van Gansewinkel has turned out to be a chain facilitator in some cases. Van Gansewinkel has a reason for doing so because large volumes of waste are often necessary to be economically efficient.

Competences

Van Gansewinkel states that working with C2C principles is more important than knowing them. General change management competences are essential and the three change management steps are:

- 1 **To raise awareness about the need for change.**
- 2 **To highlight the momentum for change.**
- 3 **To create a willingness to change**

It is only after you have taken these steps that you can work on the ability to change. The new competences for Van Gansewinkel were primarily change management ones. The main goal is to be able to address the story in a positive way, to tell it simply and convincingly, i.e. the sales pitch. Telling the story is not about selling a product, but about conveying an ideology. The employees have indicated that using the C2C concept adds more depth to their work and energises them.

Management noticed that employees invest more time and energy in their work than their role requires. This is also evident at course reunions that take place a year after the training. Everyone is very willing to attend them and a lot of passion for the concept is shared.

Technical issues

From a technical point of view, it is mainly the strength of innovation that is important for the company. The company is implementing biomimicry for its innovation processes. It starts by learning to understand processes in nature and, from there, to develop and innovate the company's processes. It's a link between biology and technology or taking the ecological system into the technological one.

Knowledge management

Knowledge management has been very important for the main issues surrounding C2C transition. Several knowledge centres were opened to gather information and knowledge on materials and processes. It is not only the operators who have access to this information, but also account managers and local waste managers. These knowledge centres also provide information on where certain knowledge on materials is available and what specifics are accessible.

Seeing as the company is moving towards a more facilitating position in the materials market, it is focusing more on logistics and purchases. New business opportunities have also arisen, e.g. it's investigating the possibility of producing and selling recycled glass for the consumer market. The glass industry is reluctant to invest though, so Van Gansewinkel has decided to develop this business on its own. This shows how innovative its new role can be.

Knowledge and education

At the moment, the company has to consult others in the new fields of expertise required. For the very first time ever, they have three technical university trainees for these fields, i.e. Geometrics; Industrial Design, and Energy Sciences and Operation Management & Logistics.

Additional knowledge on the basic Cradle to Cradle principles is needed for vocational-level competences. The basic ideology has to be embedded, so that employees are able to convey it to others.

Employees on the technical site who have a vocational education background have to deal with the concept when working on separation plants. The main part of the machines in the plants is developed within the company. Technical engineers and operators are consulted during the development of new separation lines. This process actually hasn't

changed since C2C has been implemented. The operators are used as part of the developing processes. Only the perspective, goals and market needs have changed.

Current developments within the organisation are expected to be temporary, because the transition to C2C is now leading the way. In the future, all the necessary changes will be made. The current change asks for a more project-oriented way of working and for employees to invest more time in it. Over time, however, products in the waste stream will be more and more assembled or degradable. The company wants to have its waste processes aligned with these products and material streams by then. At the moment, the company has to deal with different types of material streams. Over the next few years, all technical engineering education needs to focus more on design. Design principles have to be taught to higher education and academic students.

C2C principles also impact the organisation. A roadmap³ has been designed to change facilities, e.g. the vehicles, human resource management (diversity and employing senior personnel,) and to make internal processes more C2C proof. They admit that pursuing these ambitions is sometimes a bit difficult financially speaking.

2.2 Quality personnel - DESSO

Joris Bressers, Human Resource Advisor

(interviewed by Judith van Heeswijk)



Carpet, carpet tile and artificial turf manufacturer Desso is one of the leading companies in its field in Europe. Their Business Carpets division manufactures carpets for commercial locations such as offices, banks, retail units, public buildings, schools, universities, hospitals and care centres. Point 3 of DESSO's innovation strategy⁴ is its ambition regarding Cradle to Cradle:

"Cradle to Cradle: Developing products and processes that will contribute towards a better environment and better indoor quality."

Desso is the first carpet manufacturer in Europe, the Middle East and Asia to adopt the Cradle to Cradle design philosophy and they are planning further geographical expansion into Latin America. Their carpets and artificial grass will be produced using manufacturing processes that rely on renewable energy, seek to conserve water

and embrace social responsibility. Their products are made from environmentally friendly, pure materials that are safe for human health and are designed in such a way that they can be biologically or technologically recycled⁵ at the end of their useful lives.

Prior to formal Cradle to Cradle certification being granted, products, materials and components must all undergo a rigorous assessment procedure. The initial stages of the certification process comprise assessing raw materials in terms of human and environmental health criteria, and evaluating the manufacturing process according to recycling potentials, energy and water use, and social responsibility. EPEA will be supplied with detailed information regarding all the materials involved in DESSO's products and processes. The future steps towards Cradle to Cradle certification are:

- List all the chemicals a product contains. All compounds are also separated into their components (the base chemicals).
- CAS#, Material Safety Data Sheets are collected as well as all toxicological and eco toxicological data. EPEA evaluates all chemicals on 12 different criteria and gives an overall assessment, i.e. red, yellow or green.