

Circular Economy: A process view on developing high quality products

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The circular economy calls for expanding the life cycle perspective's cradle to grave- by a cradle-to-cradle view. Through postulating healthy materials in order to permit safe circular flows of materials, it claims to reach a holistic quality level (Braungart, McDonough, & Bollinger, 2007; Stahel, 1984; Stahel, 2010). This could boost innovation by reconfiguring materials, products and business models and would allow decelerating resource consumption and waste creation at the same time (Hansen & Schmitt, 2016). The product design concept Cradle to Cradle (Braungart et al., 2007) has been formalized into what can be considered the first product certification standard for the circular economy. It not only certifies the cycle-able material content but focuses also on health effects by banning carcinogenic and mutagenic substances and three other environmental and social criteria.

Although current research indicates that the main differences between circular and conventional innovation processes lie in the intensity of cooperation within and beyond the focal value chain and in handling external and new knowledge (Drahe & Herstatt, 2016; Roome & Louche, 2016), detailed micro-level knowledge about the innovation processes leading to circular products is lacking. For this reason, the Institute for Integrated Quality Design (IQD) conducts a research project in which we explore the role of life cycle orientation, product quality standards and management systems for circular innovation processes (CCIP).

Analysing the product development process of two cradle-to-cradle pioneer companies in depth we found that circular innovation processes differ from conventional innovation processes regarding knowledge flows and cooperation. Particularly a strong environmental value orientation that is reflected in the companies' strategy and management systems supports companies in identifying and implementing circular economy concepts into their product development.

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