Digital Sustainable Construction The Use of BIM to Simplify Whole Building LCA



Digital building models offer a great potential to link external LCA and material databases for sustainable assessments and their live visualization. This contributes to achieving climate targets.

Save the Planet - Use LCA

The construction and operation of buildings is the largest emitter of CO₂ in the world, consumes a large amount of resources and generates 25% of solid waste. Life Cycle Assessment (LCA) is a method for the holistic evaluation of the environmental impact of buildings. However, this method is quite complex and timeconsuming because energy and material flows are extracted manually from 2D drawings and building descriptions. Method: Linking LCA Data with Digital Building Models By using digital models, the information required for the LCA calculation can be provided earlier, more structured and easier to access. Combined with a new method, developed in this project, the LCA data sets of the German open source LCA database ÖKOBAUDAT are integrated into the model and linked to the data of geometry.



This is done by using an Application Programming Interface (API) which enables a mapping of ÖKOBAUDAT LCA data sets per Universally Unique Identifier (UUID). As a result, a very fast calculation of the whole building LCA is possible and provides a foundation for automated sustainable assessments in multiple ways.



Digitalization as a Tool

Building Information Modeling (BIM) has a high potential to integrate LCA into day-to-day planning more efficiently. This digital planning method enables the design of buildings as digital 3D models of information depth.



See the whole picture and understand how much energy and emissions are embodied in buildings. Translate and visualize complex LCA results as understandable assessment formats, e.g. CO₂ in costs. Use BIM models linked with LCA Data and material databases to create a material passport, indicating e.g. recycling potential.

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