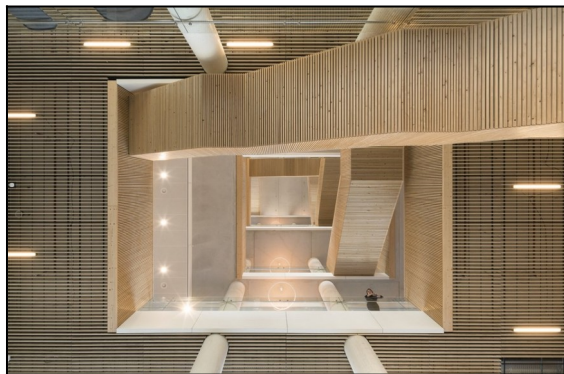


C2C Development : Venlo City Hall

Located on the banks of the river Maas in the city of Venlo, The Netherlands, the high-rise of its City Hall has a natural ventilation tower and uses PV panels as shades for sunlight. The city hall is also part of a precinct re-development. In the design brief the City Council stipulated that the City Hall had to be "*open, accessible and transparent*" for both staff and visiting public. The building had to be built according to the Cradle to Cradle principles (C2C; McDonough and Braungart, 2002). Details of all materials used and source to be recorded in a materials database ("BAMB" 2022).



City Hall in Venlo, The Netherlands. On left central solar chimney and clean green face and on right looking up in the central void with wooden stairs.

The link to an English subtitled video about the building is here : <https://www.youtube.com/watch?v=a8dsIBwdiLM>

During the project the question came up how they could save more money over the life of the project. They came to the conclusion that spending an extra €3.5 million at construction they would save more than €17 million over the life time of the building, so the extra money was spent. The building was constructed within budget.

When the project gets handed over to the City a demolition schedule is presented. Then when the building is at its end of life it can be dismantled according to this schedule and know what type of materials are used.

If you are interested in the making of foundations 9m deep under water it is worthwhile to watch the next video. The architect's webpage is in English [City Hall Venlo - Circular and Cradle to Cradle \(C2C\) \(kraaijvanger.nl\)](http://CityHallVenlo.nl) explains the various items. On that page is also the construction video. It is in Dutch but I will explain here what they are doing so when you see the video you're will get the idea.

@19.10 minutes.

Creating the garage walls (nearly 1m thick) of the underground parking garage. After this they dig out 15,000m³ sand to 9m deep. Before they are too deep it is time to install 180 tubular piles and 370 wall anchors to prevent the floating upwards of the pit. At a given stage the upwards groundwater pressure will be too high. So to get counter-pressure the pit is pumped full with 40,000,000 liter water from the river Maas. They install a special pontoon from which they continue digging. The pouring of the concrete of the floor is a 24/7 job because it needs to be done in one go in the 65m x 65m area. Specialist divers help with the 4,700m³ concrete pour while only being able to see 30cm in front.

C2C concrete is not available in Europe; instead they used recycled concrete as aggregate. They also worked on creating new types of concrete to reduce the amount of polluting components in it. Then in future it will have a higher value for reuse.

@24.05 minutes.

To save on concrete “bubble deck” concrete was used. Between 2 slabs of concrete a layer with balls of recycled plastic. On the whole the concrete is lighter and can have a wider span. Which results in fewer pillars, so more parking spaces and feels more open.

Overall the construction used proven technologies and materials, however their combinations are new.

@38.05 minutes.

In the last phase 2 large cork oaks craned in to the glass house at 50m height. The glasshouse are the lungs of the building.

“BAMB” 2022. Buildings as Material Banks. 2022. <https://www.bamb2020.eu/about-bamb/>.

McDonough, William, and Michael Braungart. 2002. Cradle to Cradle : Remaking the Way We Make Things. New York: North Point Press.

Venlo-nl. 2022. The Making of Venlo City Hall. <https://www.kraaijvanger.nl/en/projects/city-hall-venlo/>.

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