



Vedr.: LCA Variantstudie Hi-Con

Analysis LCA variant study of Hi-Con and steel balconies

Case:
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This variant study is a comparison between a Hi-Con balcony with steel railing and a steel balcony with a steel frame, wooden planks for the base, and steel railing.

Assumptions:

Both variants of the balconies have a length of 3.55m and a width of 1.9m, totaling 6.75m². The balconies have railing on three sides made of steel.

For this variant study, Hi-Con's EPD (High Strength Precast Concrete Balconies) was utilized for phases A1-A3, while generic values were used for concrete elements in phases C3 and D.

Surface treatment was not considered in this variant study.

The study was conducted in LCAbyg 5.2.1.0 and calculates total CO₂ emissions over a span of 50 years.

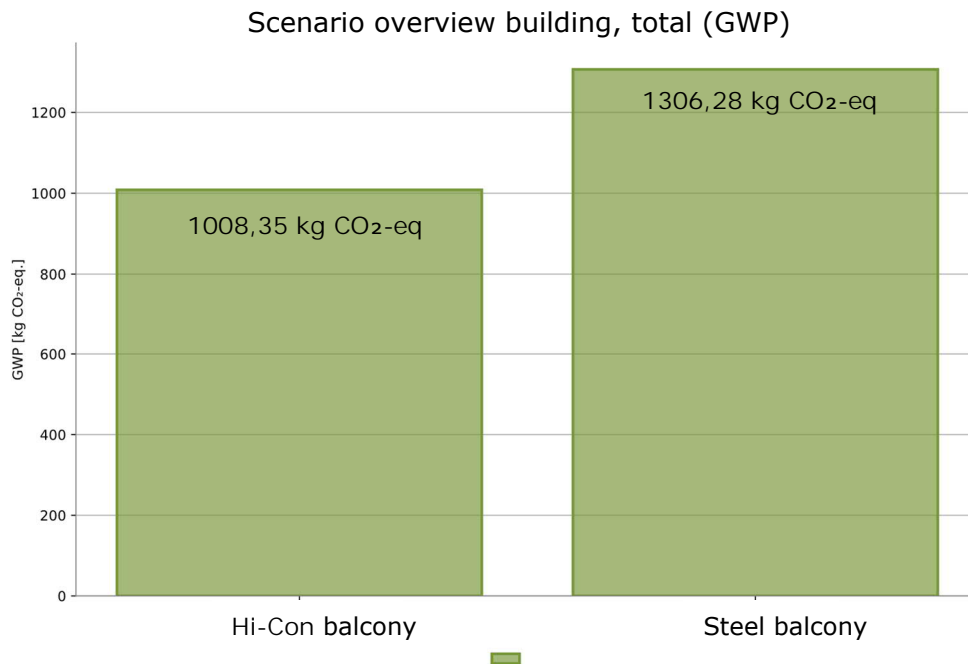
Balcony variants:

Hi-Con balcony	
Construction material	Weight
90mm Hi-Con balcony slab	1550 kg
Brackets/suspension brackets	92,5 kg
Railing, vertical balusters	257 kg
In total	1899,5 kg

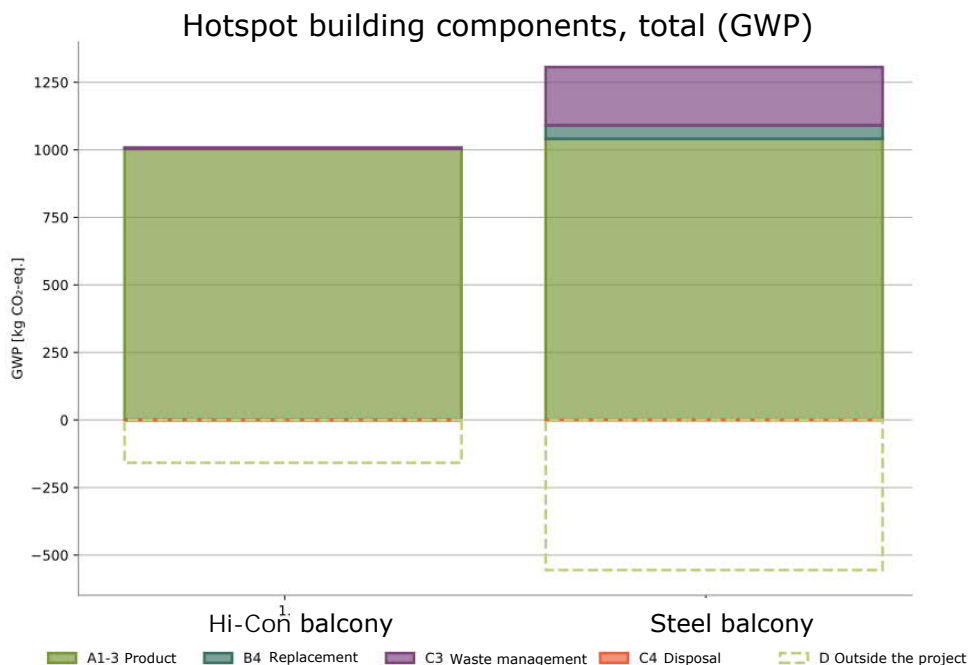
Steel balcony	
Construction material	Weight
Bottom frame and drainage plate, steel	630 kg
Balcony base, wooden planks and battens	80 kg
Brackets/suspension brackets	70 kg
Railing, vertical balusters	250 kg
In total	1030 kg

All quantities are provided by the general contractor.

Analysis:



The column chart depicts the total Global Warming Potential (GWP) over 50 years for both variants. It is evident that Hi-Con balconies have the smallest environmental impact in terms of GWP compared to the steel balconies. Hi-Con balconies exhibit a 22.8% lower CO₂ emission than steel balconies.



The column chart provides a phase breakdown of the two variant studies. It is noticeable that phase A1-A3 is nearly identical for both balconies. For B4 (replacement) and C3 (waste treatment), it is evident that due to the steel balcony's inclusion of wooden planks with a lifespan of 30 years, they need to be replaced, followed by waste treatment. Phase D is not included in the LCA calculation but gives an idea of the potential for reuse in a new project/product. It is apparent that steel balconies have greater potential for reuse, as steel can be directly reused or recycled into a new product. In contrast, Hi-Con balconies do not have as significant potential for reuse, as they will most likely be crushed and utilized in reclamation projects, etc.

Conclusion:

It can be concluded that Hi-Con balconies have the smallest CO₂ impact of the two variants. However, it should be noted that a product-specific EPD was compared with generic values, which could introduce some uncertainty into the analysis.