Results from Element Matching

Project name: Merge_test

Construction site located at: 62.7205, 9.8696

Summary of results

Total score	Substitutions	Savings
459.32 kg CO2 equivalents	81.58%	78.27%

The 'Greedy Algorithm Plural' algorithm yields the best results, substituting 31/38 demand elements (81.58%). Using 'GWP' as the optimization metric, a total score of 459.32 kg CO2 equivalents is achieved. For comparison, a score of 2114.16 kg CO2 equivalents would have been obtained by employing exclusively new materials. This results in a total saving of 78.27%. Note that impacts of transporting the materials to the construction site is not accounted for. Open the CSV-file "Merge_test_substitutions.csv" to examine the substitutions.

Constants used in calculations

Constant	Value	Unit
Density timber	491.0	kg/m^3
Density steel	7850	kg/m^3
GWP new timber	28.9	kg C02 equivalents
GWP reused timber	2.25	kg C02 equivalents
GWP new steel	800.0	kg C02 equivalents
GWP reused steel	4.0	kg C02 equivalents

Information about datasets

Elements	Filename	Number of elements
Reused	SUPPLY_DATAFRAME_SVERRE.xlsx	109
Demand	DEMAND_DATAFRAME_SVERRE.xlsx	38

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Performance of algorithms

Name	Score	Substitutions	Time
Greedy Algorithm Plural	459.32	81.58%	0.121

The design tool is runned with 1 algorithms, namely: Greedy Algorithm Plural. The Greedy Algorithm Plural yields the lowest score, as shown in the table. The substitutions by this algorithm are completed in 0.121 seconds.