

# Manual BIM-LCA workflow

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**RWTH**AACHEN  
UNIVERSITY

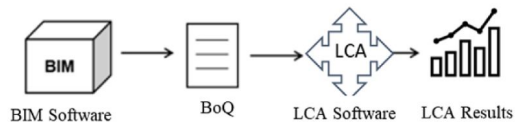


**ETH** zürich

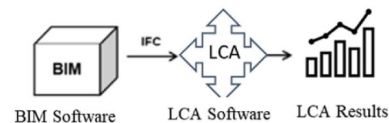
**BRG**

cea

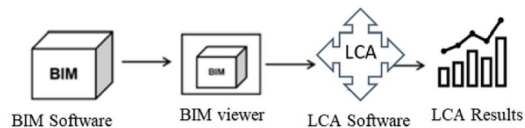
**TYPE 1:** export of BIM environment quantity list to other LCA tools



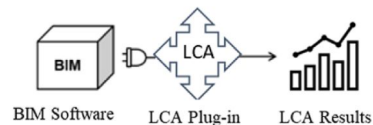
**TYPE 2:** export to LCA tools using the IFC format



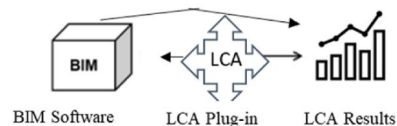
**TYPE 3:** BIM data are processed in a BIM viewer before being sent to LCA tools



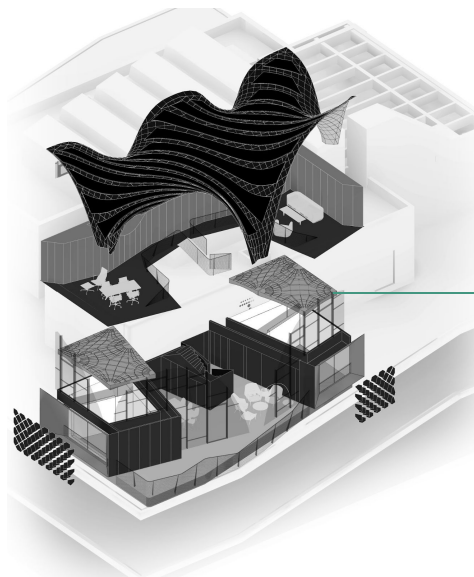
**TYPE 4:** use of plugins in BIM software, e.g.: Tally



**TYPE 5:** development of tools in the BIM environment. In this case, the information is added to the BIM model.



# Manual matching task



## BIM data

Material name  
Component type  
Layer name  
....

Material

**Emissions database**  
kgCO<sub>2</sub>eq per m<sup>3</sup>

# Group task <https://tinyurl.com/sbe2025zurich>

- Try to find 0-3 matches for BIM materials/elements on Ökobaumat
  - The method is up to you - ifc model, Google, existing knowledge, etc.
  - Please progress downwards from row 2 and finish as many as you can
- Document
  - Match name (or “none” if no match)
  - Brief justification
  - Confidence level (1-very low, 2-low, 3-medium, 4-high, 5-very high)

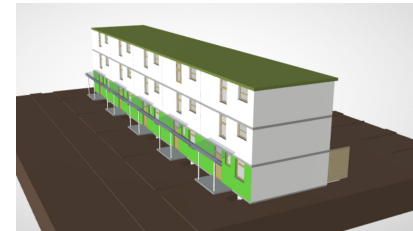
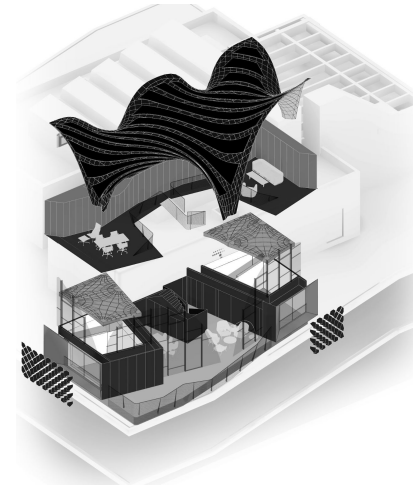
Columns A-O: BIM data

Columns P-X: to be filled in

	A	B	C	D	O	P	Q	R	X
1	Id	model	name	english_name	Volume [m^3]	match1_name	match1_justification	match1_confidence	match3_confidence
2	1hOSvn6df7F8_	Duplex	Floor:Residential - Wood Joist with	Floor:Residential - Wood Joist with Subflooring:144800	1.125354				
3	2WGIh0xUz90vKIT_Sm	1OG-Balkon-1-1	1st floor balcony 1-1		0.087				
4	2p6mMpo0jBHO HiLo	TU DF 1 - Pfostenstock Falztüre:	TU DF 1 - Post frame rebated door: DL - 900 x 2130		0.10707				
5	0foM5uUXf3UBfi HiLo	Pfosten rechteckig:Forster 60 x 90	Rectangular post: Forster 60 x 90 - Post only: 2355404		0.00275				
6	1o7gVYtKXE5gt HiLo	Basic Wall:3-Schichtplatte 27mm	Basic Wall: 3-layer board 27mm - formwork panel: 355523		0.0513				
7	3WYMOXWhn9 HiLo	Basic Wall:Holzfassade hinterlüfte	Basic Wall: Ventilated wooden facade: 1105047		0.372633				
8	1GYJkCWSXDP HiLo	Bleche Fassade_V6:Bleche Fass:	Sheet metal facade_V6: Sheet metal facade_V6:4910201		0.06457				
9	3YjB\$irNvB\$ve1 HiLo	Basic Wall:Holzbau_Archisonic_V	Basic Wall:Timber Construction_Archisonic_Prefabricated		0.016185				
10	2OBrcmyk58Nu Duplex	Floor:Finish Floor - Wood:169093	Floor:Finish Floor - Wood:169093		0.352674				
11	0P4ZzpAg98fhj HiLo	Basic Wall:BSP 140 - 5s:1686981	Basic Wall:BSP 140 - 5s:1686981		1.13687				
12	0kqm0N1Tf3ZwvKIT_Sm	EG-A-1-1	EG-A-1-1		2.6364				
13	3PSzbSor5Dzeh HiLo	Basic Wall:Wärmedämmung_Sier	Basic Wall: Thermal insulation_Slentex 70:687731		0.15822				
14	0YWQUbZyv37F HiLo	Basic Wall:Wärmedämmung_Min	Basic Wall:Thermal insulation_Mineral wool_130:1839774		0.22159				
15	0ZBO6J2ib94OV LTU	Stiffener:Stiffener:1094120	Stiffener:Stiffener:1094120		0.00023				
16	0mZKsgvRH1M HiLo	Floor:3-Schichtplatte 40mm:5206	Floor: 3-layer board 40mm: 5206093		0.02178				

# BIM data in the spreadsheet

- Elements from four open-source BIM models
  - HiLo
  - KIT\_SmileyWest
  - Duplex
  - LTU
- Extracted data
  - Id
  - model
  - Name (German)
  - english\_name
  - Data Structure
  - Type
  - ObjectType
  - Material Descriptor
  - Load-Bearing
  - External
  - Layer Number
  - Layer Thickness [m]
  - Length [m]
  - Largest Surface Area [m<sup>2</sup>]
  - Volume [m<sup>3</sup>]




# Ökobaudat data

Categories

Reset Filter and Sorting

- 1. Mineral building products
- 2. Insulation materials
- 3. Wood
- 4. Metals
  - 4.1. Steel and iron
  - 4.2. Stainless steel
  - 4.3. Aluminium
    - 4.3.01. Aluminium sheets
    - 4.3.02. Aluminium profiles
  - 4.4. Copper
  - 4.5. Zinc
- 5. Coverings
- 6. Plastics
- 7. Components for windows and curtain walls
- 8. Building service engineering
- 10. Composites



Bundesministerium  
für Wohnen, Stadtentwicklung  
und Bauwesen

# ÖKOBAUDAT

## Sustainable Construction Information Portal

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Database Search

DE EN

Database search

ÖKOBAUDAT according to EN 15804+A2 (Sphera MLC)

ÖKOBAUDAT according to EN 15804+A1 (Sphera MLC)




ÖKOBAUDAT according to EN 15804+A2 (ecoinvent)

These datasets are **compliant with the ÖKOBAUDAT** requirements and with DIN EN 15804+A2, but are based on ecoinvent background data.

List datasets (Total number of entries: 1 of 447) (Page 1 of 1)

Show Category Browser

Reset Filter and Sorting

Name ↕	Langu- ages	Location ↕	Valid Until ↕	Type ↕	Owner ↕	Compliance ↕	
<input type="text" value="aluminium"/>	Choos ▼	Choos ▼	Choos ▼	Choose ▼	<input type="text" value="Search..."/>	Choose ▼	
Perforated aluminum sheet with surface finish (Dillinger Fabrik Gelochter Bleche GmbH)	en  de	RER	2029	average dataset	Dillinger Fabrik Gelochter Bleche GmbH	<ul style="list-style-type: none"><li>ISO 14025</li></ul>	 

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# Groups

Group	First name	Last name	Organization
1	Martin	Röck	RISE Labs - KU Leuven
	Anika	Häberlein	Unit of Construction Management and Tunnelling
	Alice Titus	Bakera	EPFL
	Lukas	Vögeli	Chair of Architecture and Regenerative Materials,
2	Bonu	Azizova	Technische Universität Berlin
	Xinyuan	Zhang	Politecnico di Milano
	Alexandra	Weniger	RWTH Aachen University
	Cheng-Tai	Yang	National Taiwan University
3	Salwa	Belhadi	Magnel-Vandepitte Laboratory
	Dragos	Ghioca	ETH Zurich
	Sara	A. Sharbaf	NTNU
	Yazan Nidal Hasan	Zayed	Aarhus University
4	Thanyatorn	Khumpairoj	Tokyo Metropolitan University
	Kristopher	Price	The University of Bath
	Amirhosein	Moshari	Lund University
	Elias	Kufeld	RWTH Aachen
5	Asmaa	Benzidane	École nationale des ponts et chaussées (ENPC)
	Natasha	Balwit-Cheung	University of Cambridge
	Jingxian	Ye	Formerly at Smart Living Lab, ENAC, EPFL
	Loïs	Lozach	ETHZ

# Discussion

- What kind of information did you use for the matching?
- Were you able to find suitable matches, and was it easy or hard?
- How would you usually carry out this task?