



The Natural Change in Urban Architecture  
INVENTED BY RHOMBERG

# 2011



If we continue our  
current lifestyle...

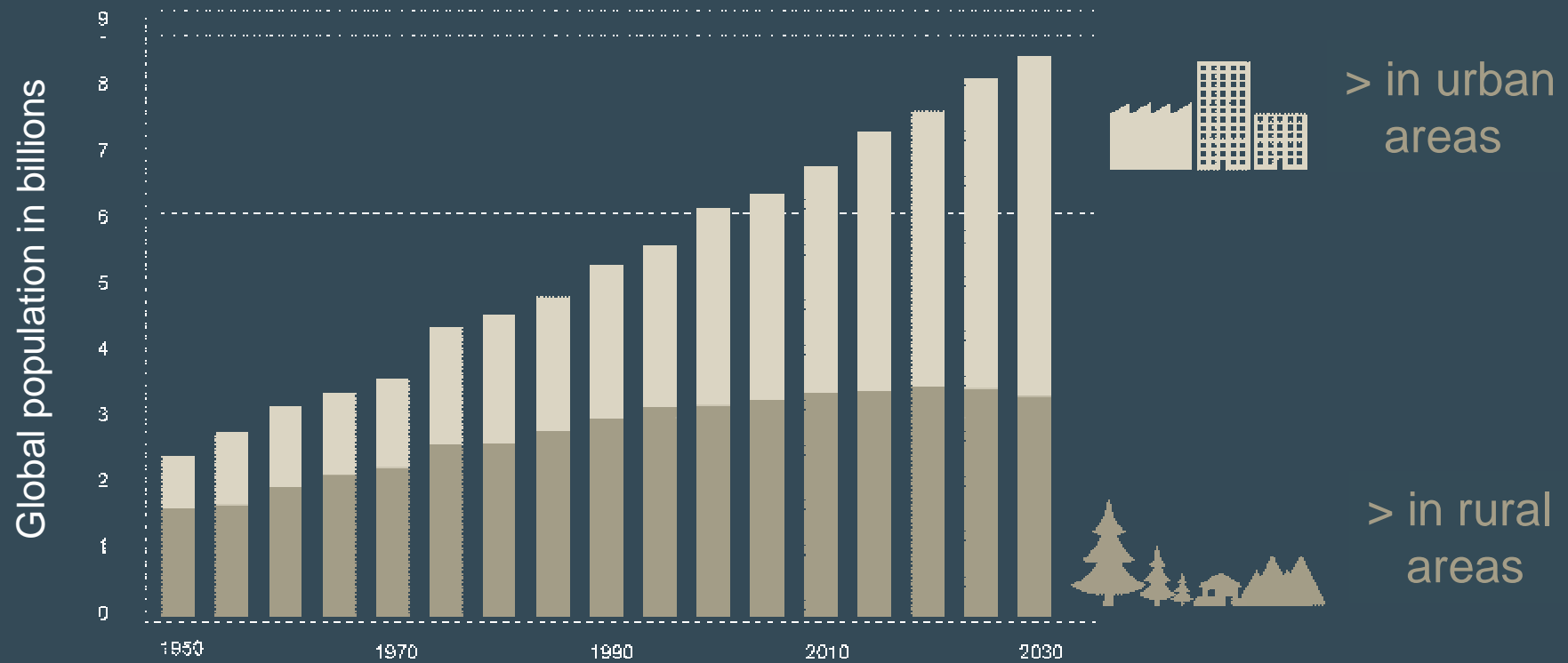
# 2030



...by 2030, at the very latest, we will need  
two planets to keep up our human  
demands for goods and services.

How will we live tomorrow?

# Future of urban lives:



Source: United Nations World Population Report, 2008

How we build today?

# Each building is a prototype

## Problems:

- › chaotic process
- › high consumption of resources
- › inefficient execution

How we use the resources of the planet?

# 40%

> of the current solid waste and CO2 emissions are caused by the building industry.

> of the current resources and energy consumption are caused by the building industry.

Source: UNEP, Sustainable Buildings & Construction Initiative, 2009

How we use the resources of the planet?

How heavy is 1 kg of copper?  
or  
How heavy is 1 kg of steel?

What kind of question is that?  
1 kg weighs 1 kg. Does it?

How we use the resources of the planet?

## Ecological Backpack

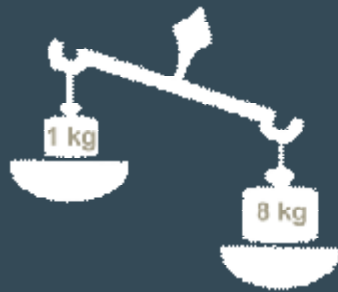
Presented for the first time in 1994 by  
Prof. Friedrich Schmidt-Bleek.

Usually this computational model is used  
as a criteria for the responsible use of our  
planet's resources. It represents the "real  
weight" or total resource-consumption.



How we use the resources of the planet?

## What 1 kg „really“ weighs:



STEEL

1kg of steel weighs not only 1, but also 8 kg.  
In order to produce 1 kg of steel it is necessary to remove approximately 8 kg of natural resources from the earth.



COPPER

1 kg of copper extracts 348 kg from the earth.  
It is well known that we use a lot of these in our traditional buildings.

How we use the resources of the planet?

# The items of daily life are heavier than we think:



**Product-weight**

**Ecological Backpack**

**Jeans**

0.6 kg

32 kg

**Cell**

0.3 kg

500 kg

**Desktop**

5 kg

1500 kg

**Gold ring**

0.005 kg

2000 kg

Source: Schmidt-Bleek 2000, *Das MIPS-Konzept*, Droemer Knauer, München

## Urban Mining

# Urban Mining: rubble is valuable.

You do not have to go to great lengths to produce something that already exists: the term urban mining is becoming significantly more relevant in the field of sustainable building.



## Urban Mining

# Urban Mining in the LifeCycle Tower

- › We know the materials.
- › We know how many materials have been used in the building – and where.
- › We know how you can make the materials reusable again.



How we should build in cities?

# Wood

A natural  
renewable  
material.

How we should build in cities?

Other than water plants, wood is the most important renewable resource in Austria.

Wood growth annually:  
534.000 bank meter

Consumption:  
360.000 bank meter

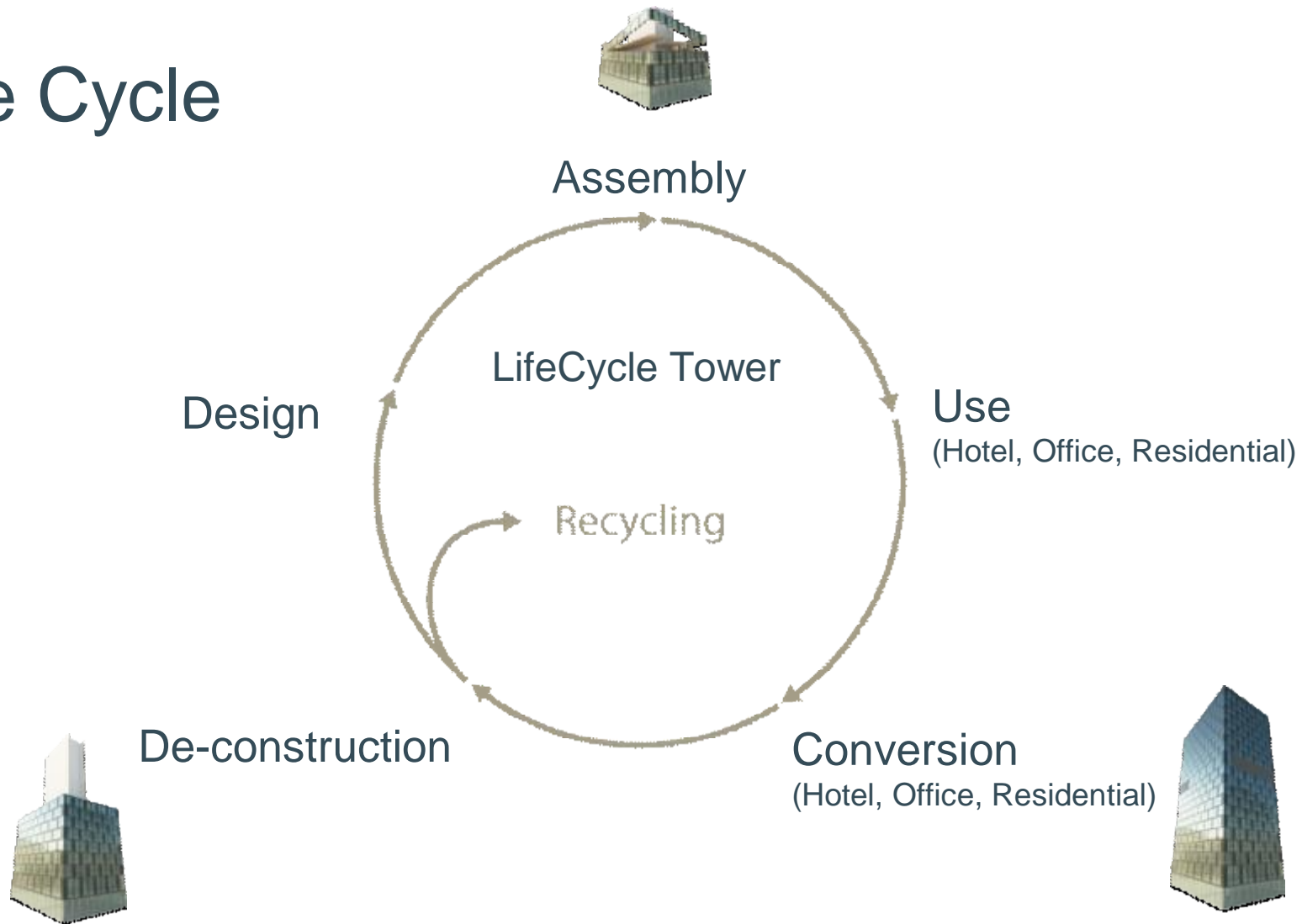


› Perhaps, no wonder then that Cree is a construction company from Austria.

Source: Bundesamt und Forschungszentrum Wald 2004, Österreichische Waldinventur 2006

LifeCycle Tower

# Life Cycle



## LifeCycle Tower

# Advantages

### A hybrid-timber construction system:

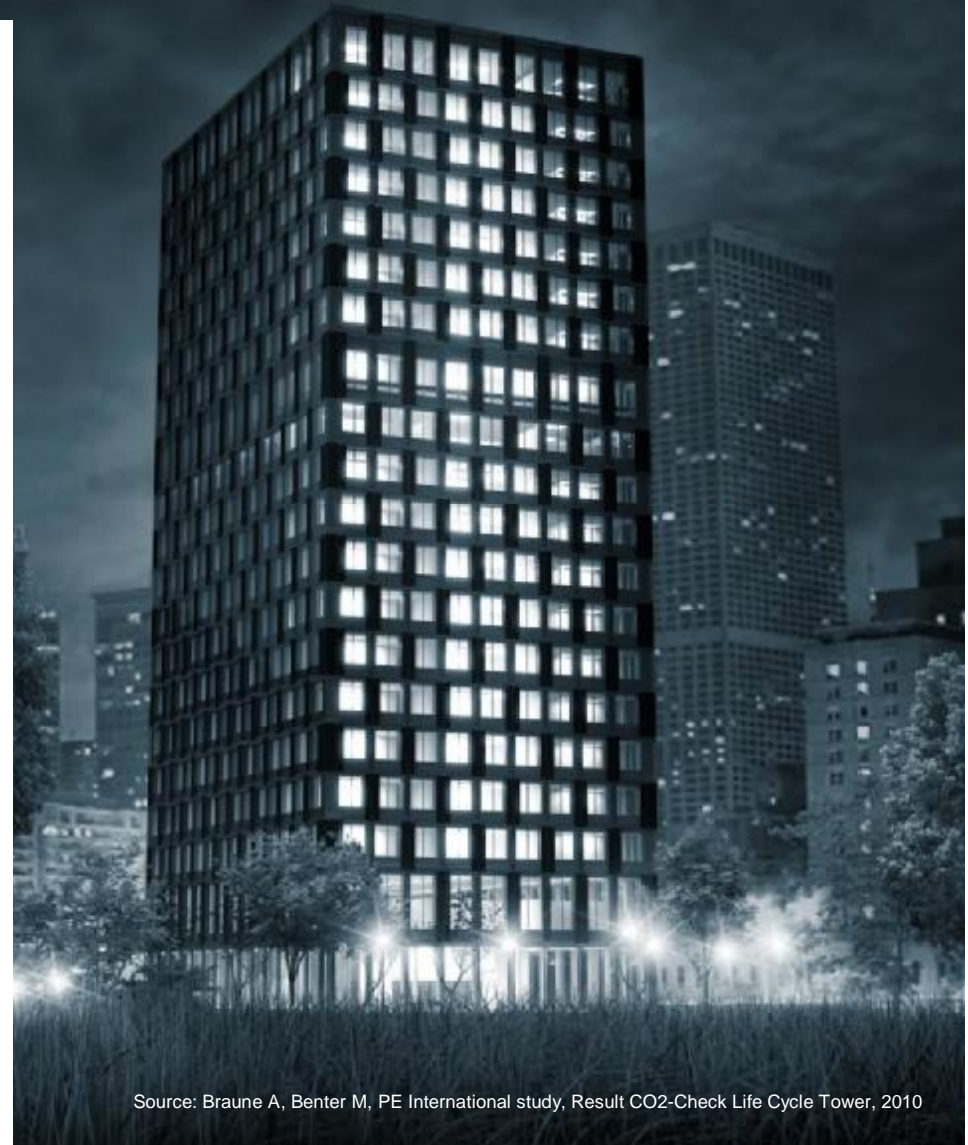
- › 90% improved CO<sub>2</sub> balance
- › reduced input of resources
- › lower dust/noise disruption during construction period

### Innovative System building:

- › short construction period
- › cost certainty
- › reduced sources of errors

### Best quality of life:

- › individual design
- › pleasurable atmospheric environment



Source: Braune A, Benter M, PE International study, Result CO<sub>2</sub>-Check Life Cycle Tower, 2010

LifeCycle Tower

# Bearing structure

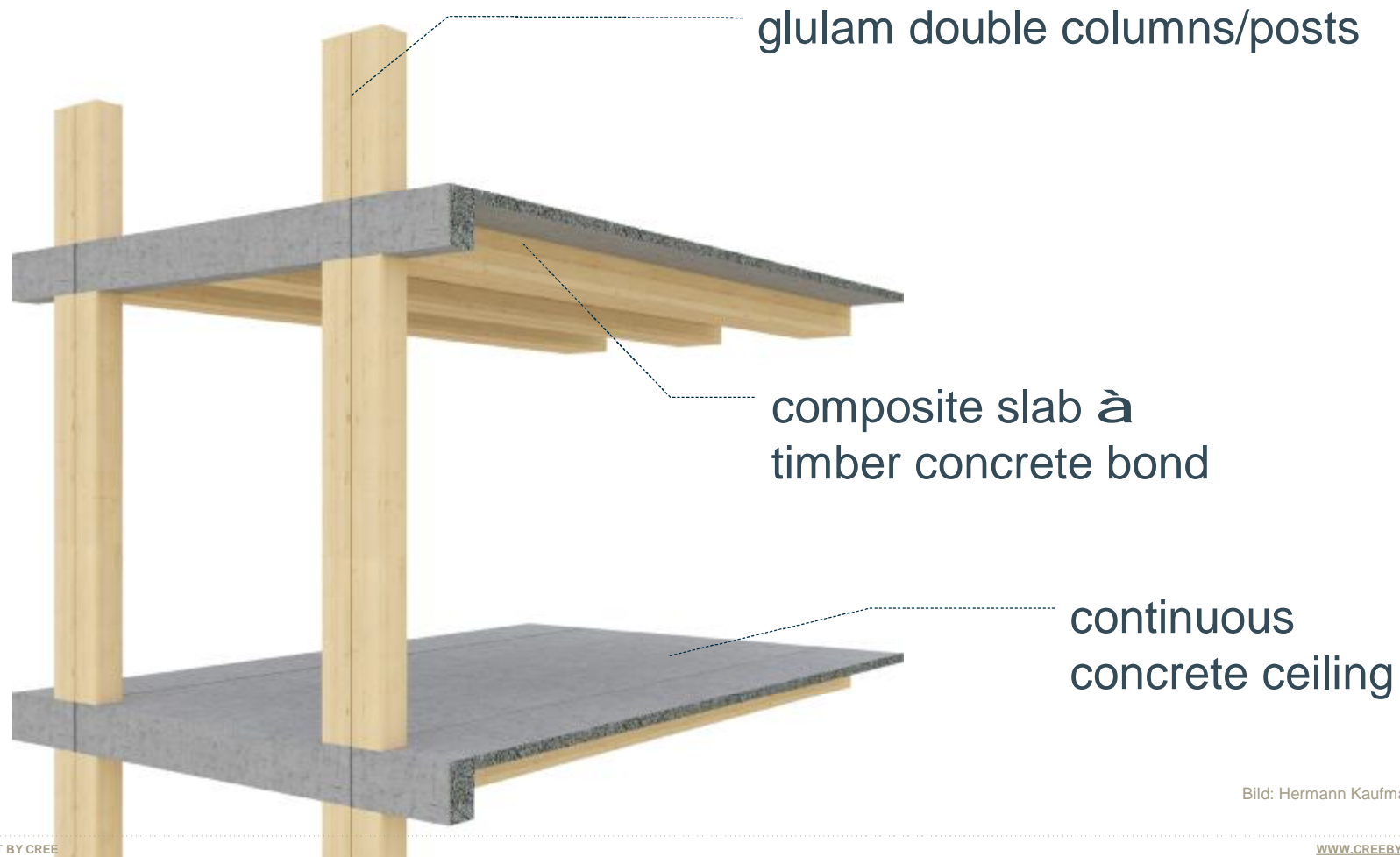


Bild: Hermann Kaufmann ZT GmbH

LifeCycle Tower

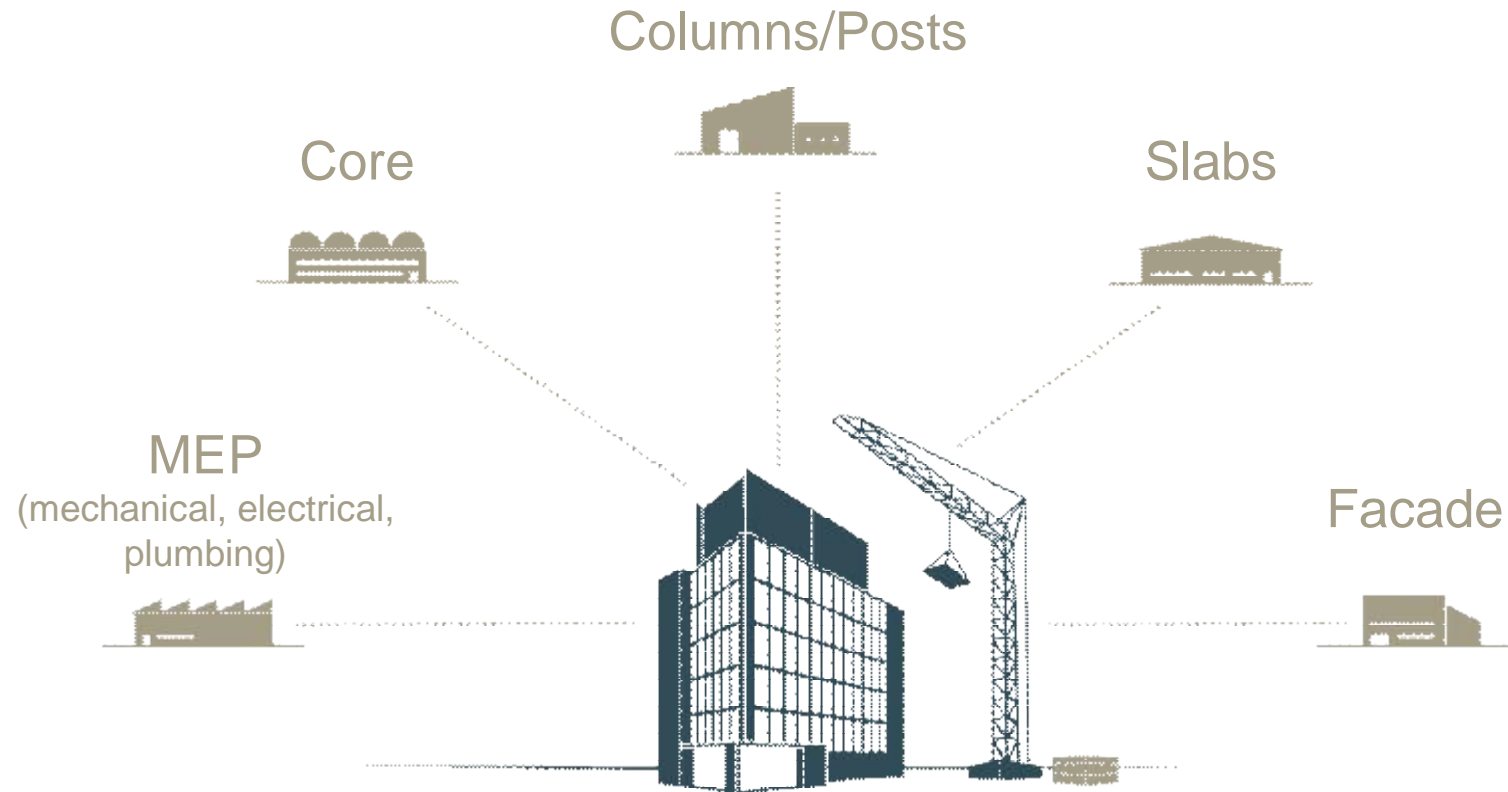
# Building services



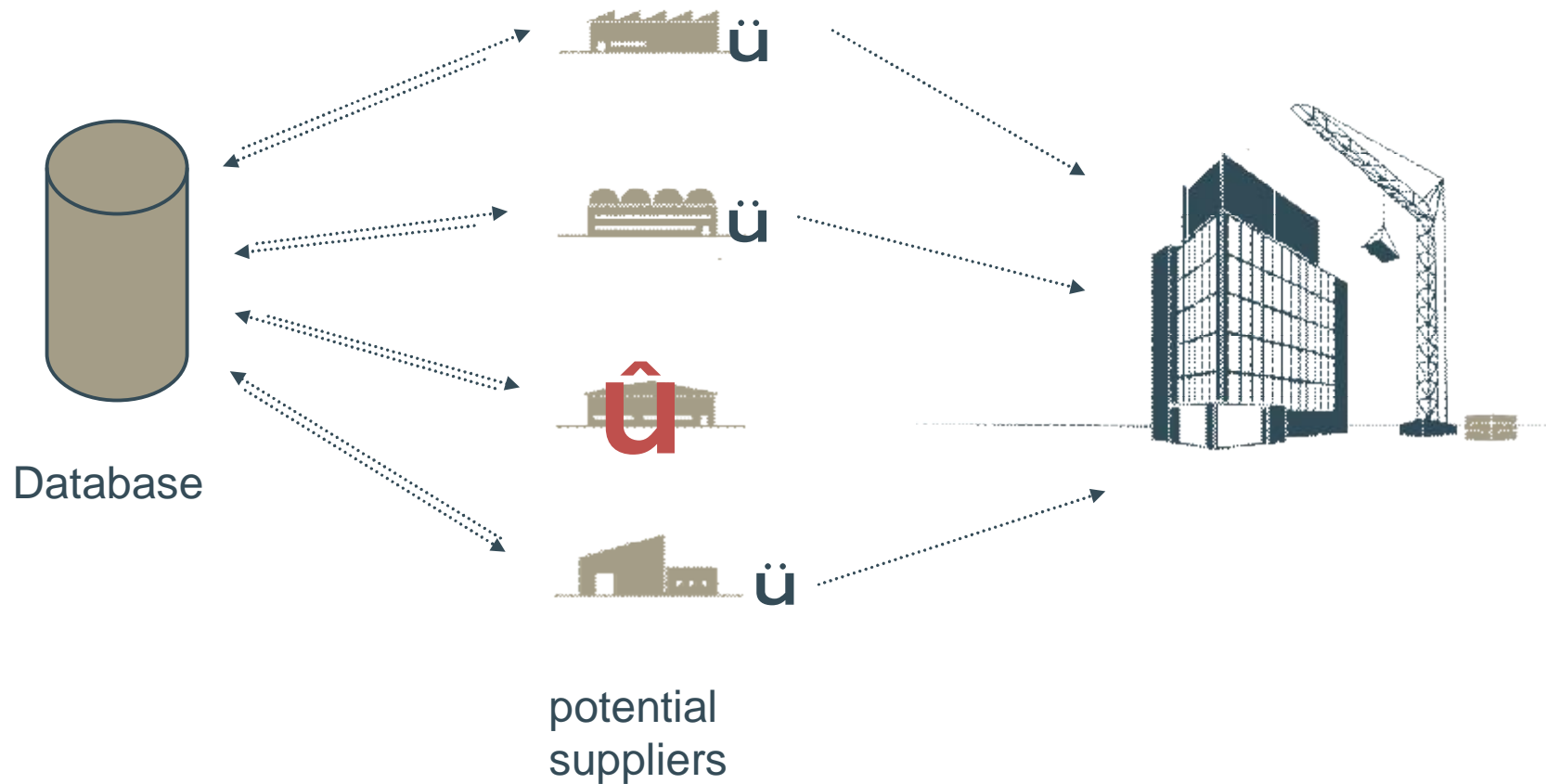
Bild: Hermann Kaufmann ZT GmbH

LifeCycle Tower

# Industrial manufacturing

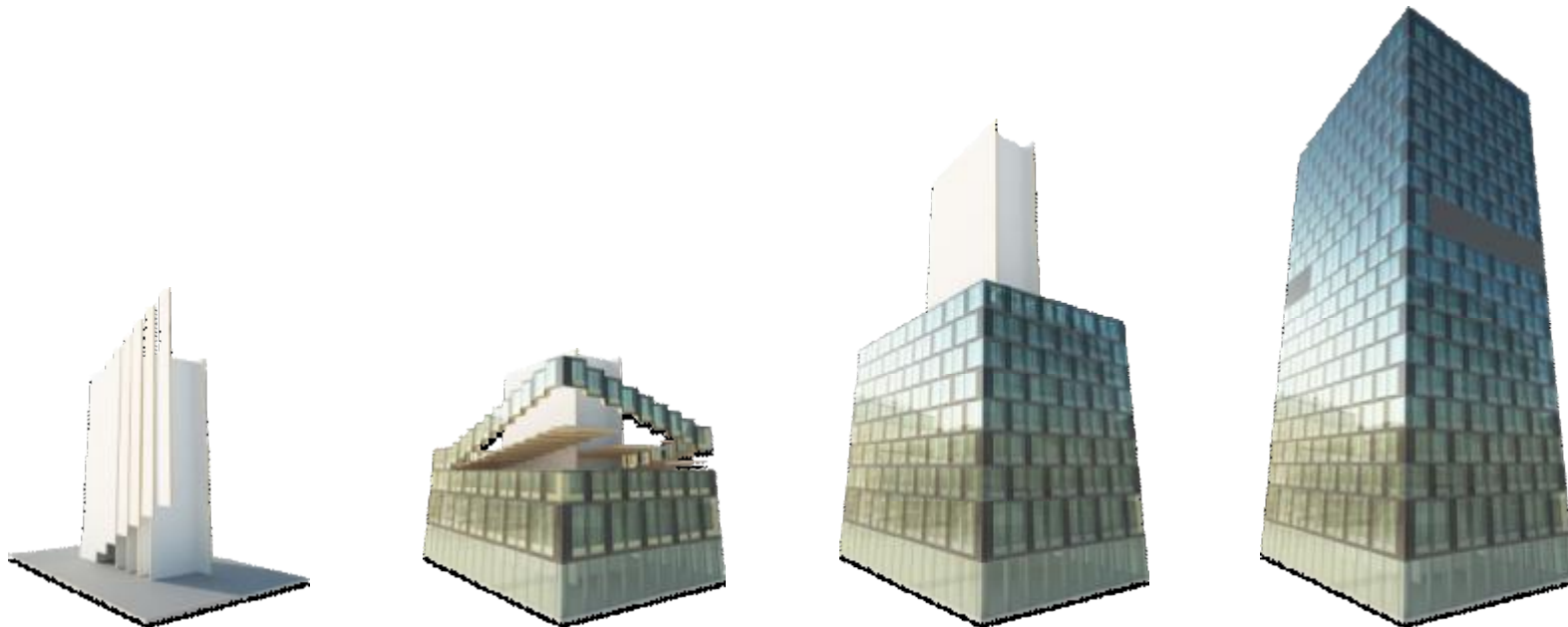


# Resource based selection of Suppliers



## LifeCycle Tower

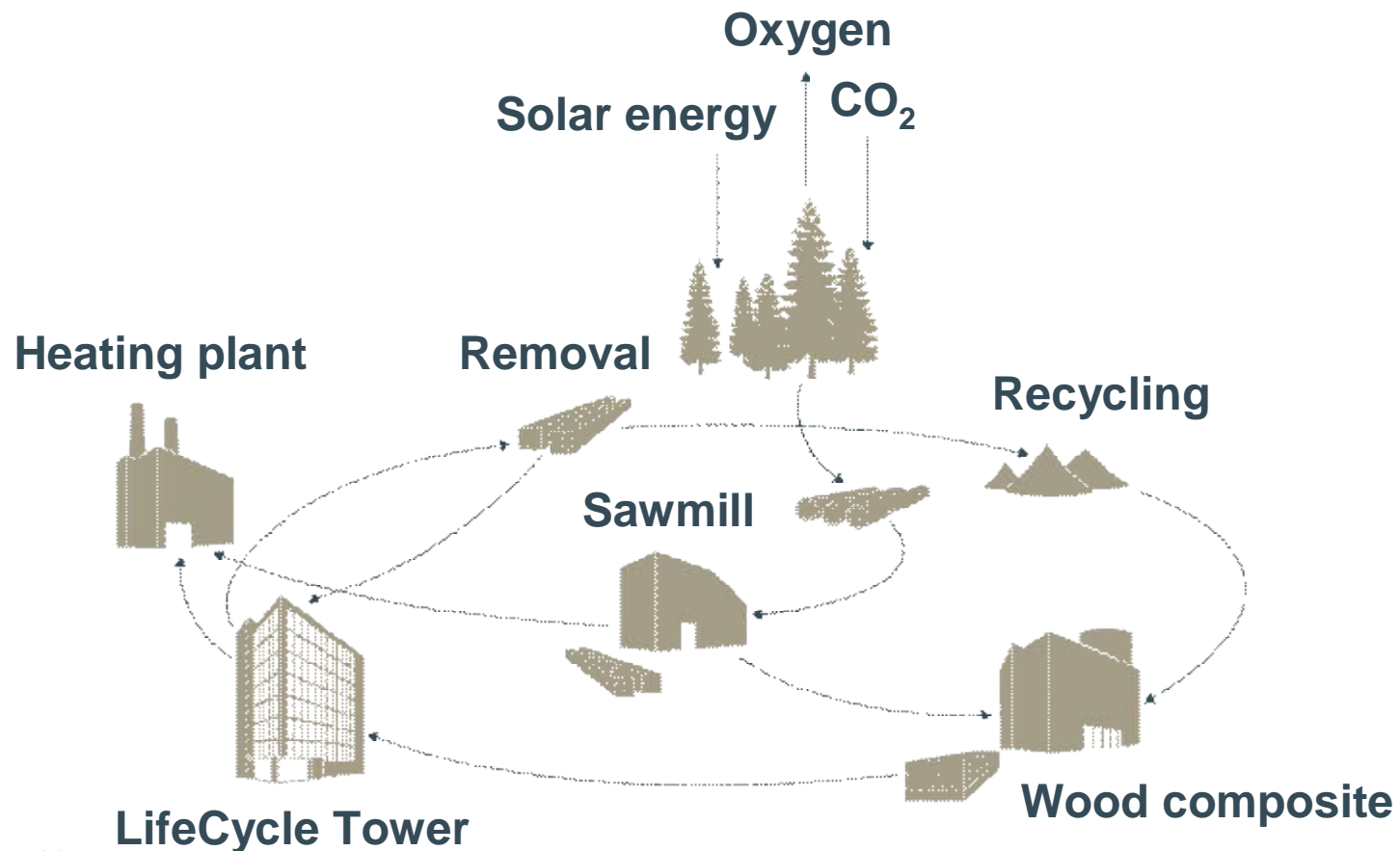
# Construction progress



Picture: Hermann Kaufmann ZT GmbH

LifeCycle Tower

# Ecological cycle



Source: [www.holzistgenial.at](http://www.holzistgenial.at)

## LifeCycle Tower

# Configurable facades

There are a wide range of  
façade options for clients.  
A modular configuration allows  
to choose of many different  
possibilities.

Picture: Hermann Kaufmann ZT GmbH



**CREE**

The Natural Change in Urban Architecture  
INVENTED BY BROWNBORG