The Natural Change in Urban Architecture

INVENTED BY RHOMBERG

2011

If we continue our current lifestyle…

2030

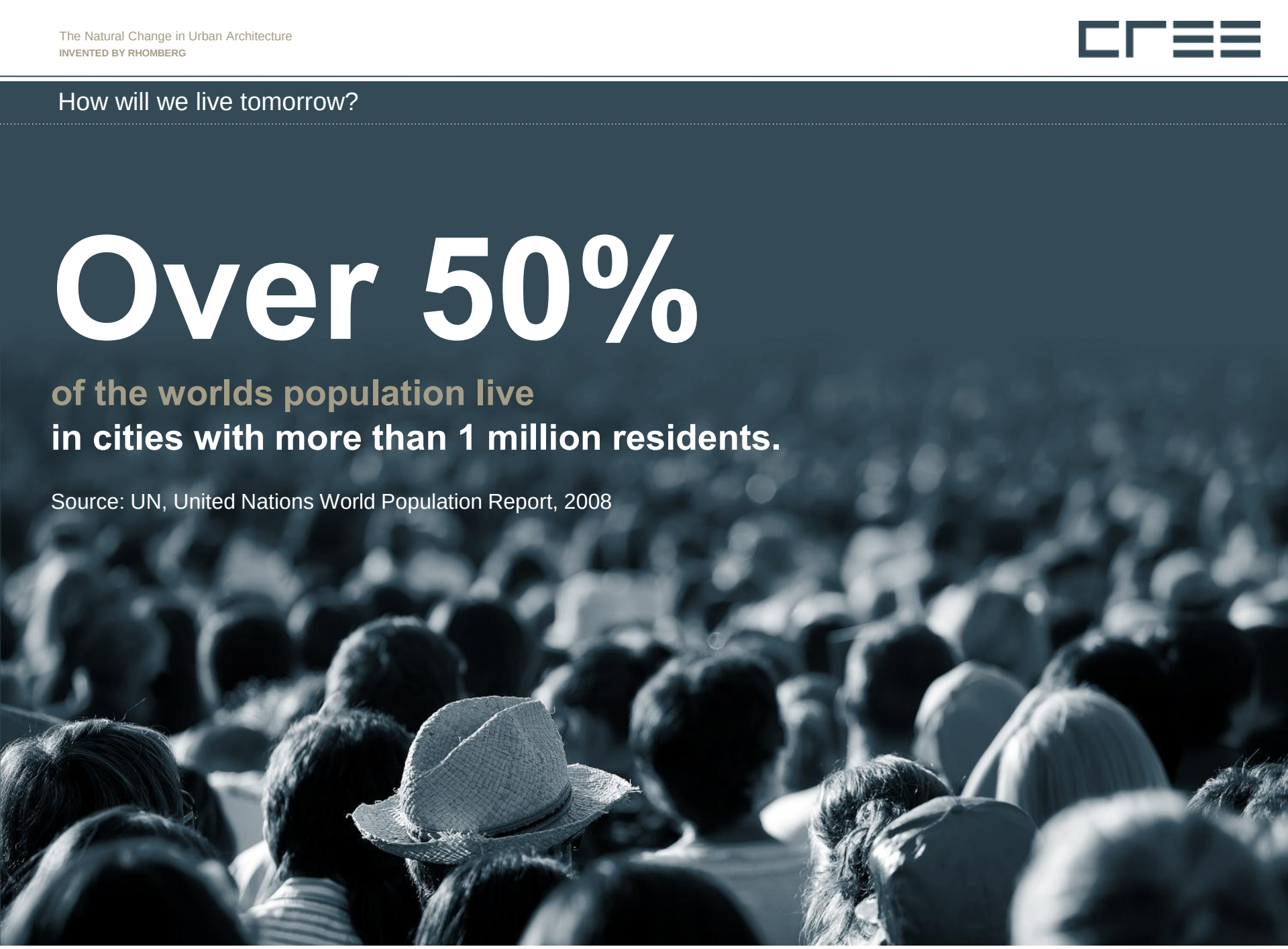
…by 2030, at the very latest, we will need two planets to keep up our human demands for goods and services.

How will we live tomorrow?

Over 50%

of the worlds population live
in cities with more than 1 million residents.

Source: UN, United Nations World Population Report, 2008



How will we live tomorrow?

Cities are growing.

› According to scientific forecasts

› by 2050 more than 75% of our population will live in megacities.

How will we live tomorrow?

How to satisfy demographic development in the future?

How do 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 resource and energy consumption are caused by the building industry.

Source: UNEP, Sustainable Building & Construction Initiative, 2003

How do 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 do 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 this?
1 kg weighs 1 kg. Does it?

How do we use the resources of the planet?

The items of daily life are heavier than we think:




	Jeans	Cell	Desktop	Gold ring
Product-weight	0.6 kg	0.3 kg	5 kg	0.005 kg
Ecological Backpack	32 kg	500 kg	1500 kg	2000 kg

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

How do 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 do we build today?

How do we build today?

Each building is a prototype

Problems:

- chaotic process
- high consumption of resources
- inefficient execution

How should we build in cities?

Wood

A natural renewable material.

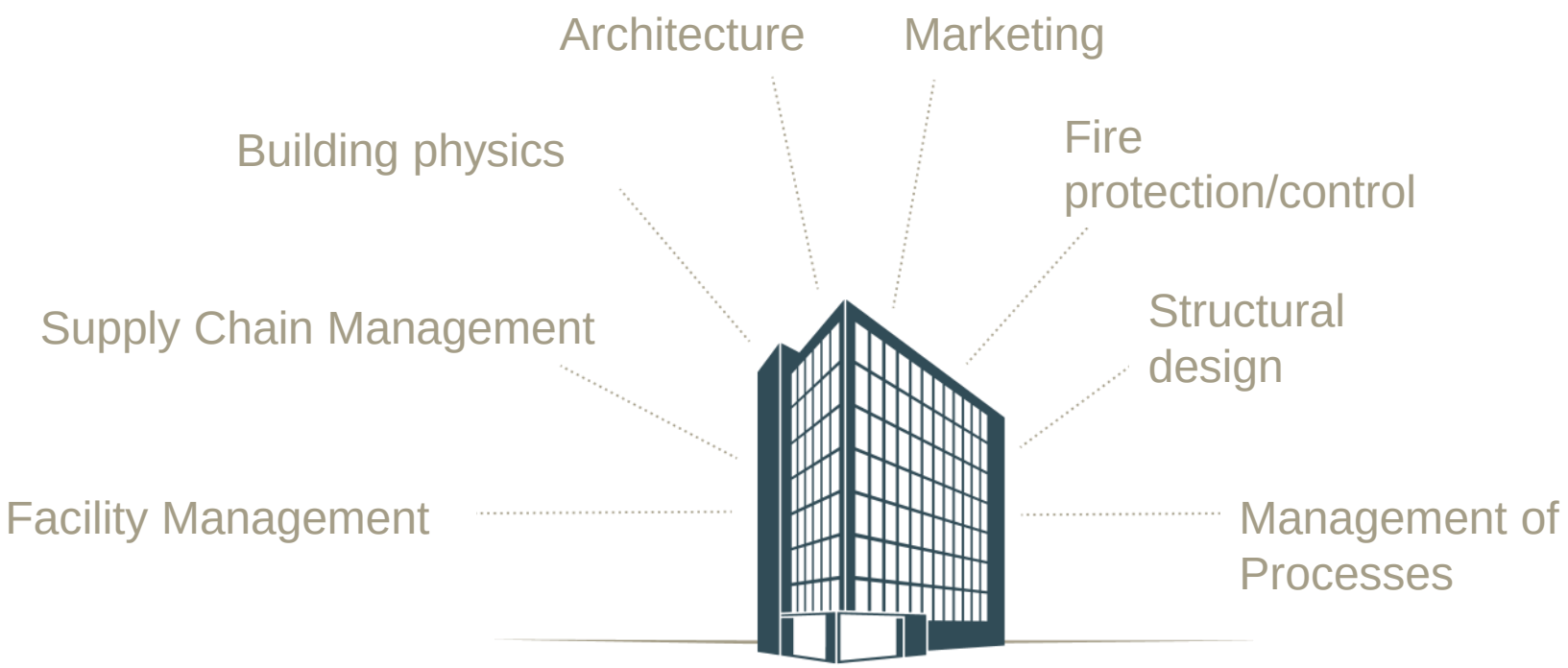
How should we build in cities?

Wood burns. Right.

But wood burns „safely“.

LifeCycle Tower

Integral Design



LifeCycle Tower

Advantages

A hybrid-timber construction system:

› 90% improved CO_2-balance

› reduced input of resources

› lower dust/noise disruption during construction period

Innovative System building:

› short construction period

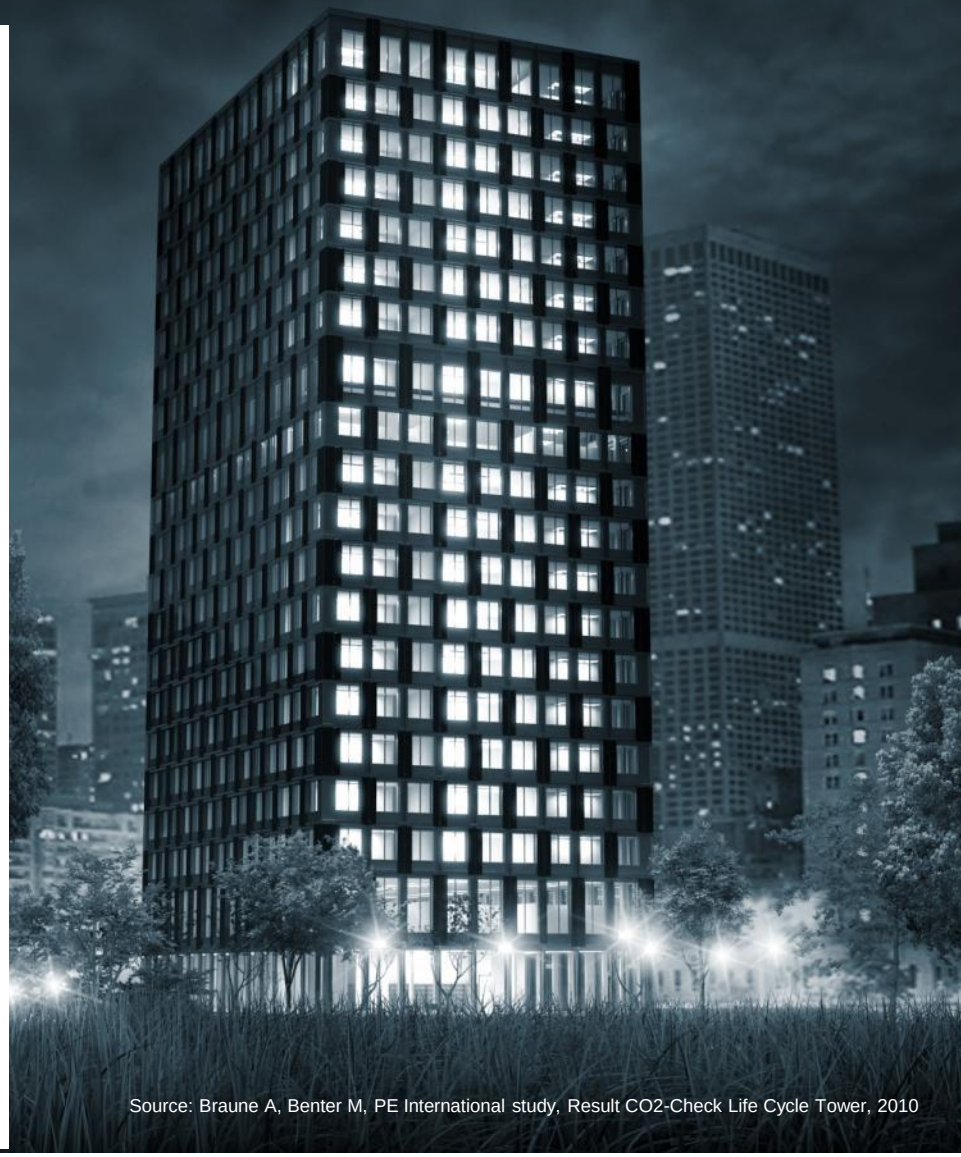
› cost certainty

› reduced sources of errors

Best quality of life:

› individual design

› pleasurable atmospheric environment



Source: Braune A, Benter M, PE International study, Result CO2-Check Life Cycle Tower, 2010

Life Cycle

Assembly

LifeCycle Tower

Design

Use
(Hotel, Office, Residential)

Recycling

De-construction

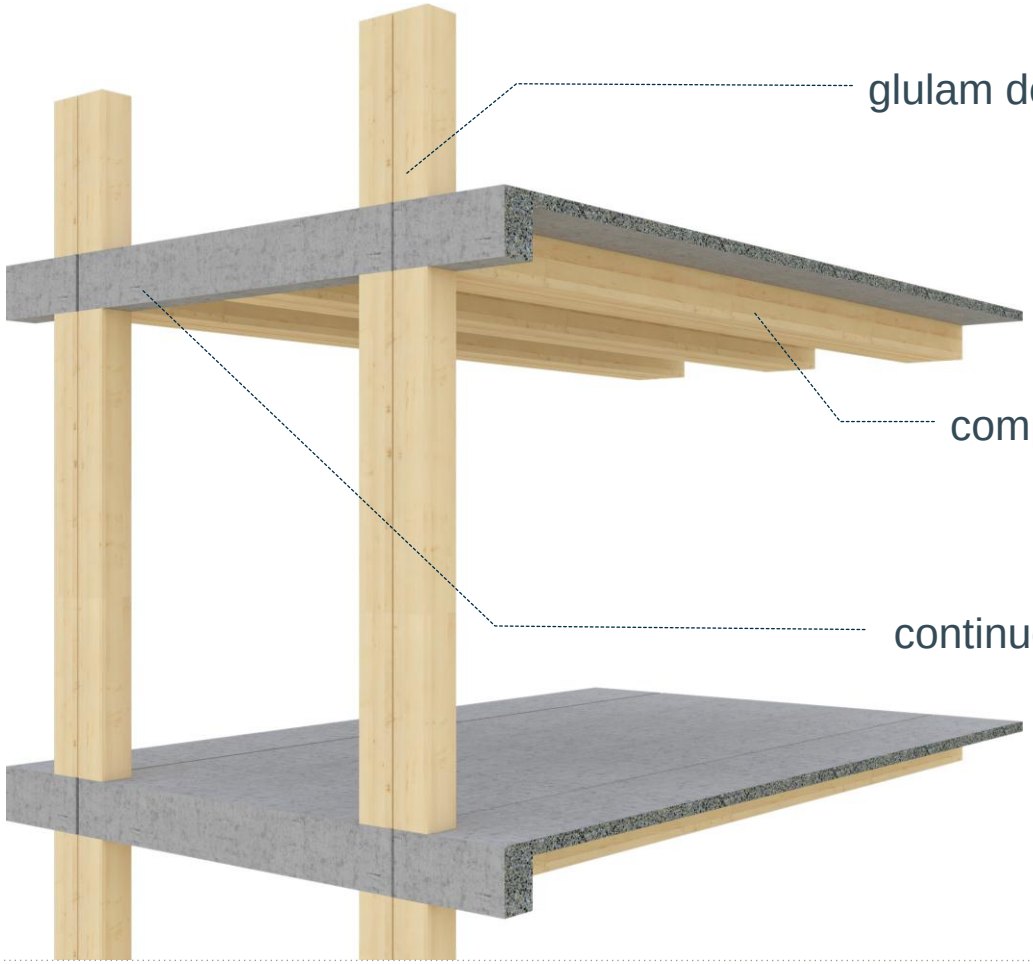
Conversion
(Hotel, Office, Residential)

LifeCycle Tower

Core & Facade

Pics left: Arup GmbH / right: Hermann Kaufmann ZT GmbH

Bearing structure



glulam double columns/posts

composite slab → timber concrete bond

continuous concrete ceiling

Picture: Hermann Kaufmann ZT GmbH

LifeCycle Tower

Slabs

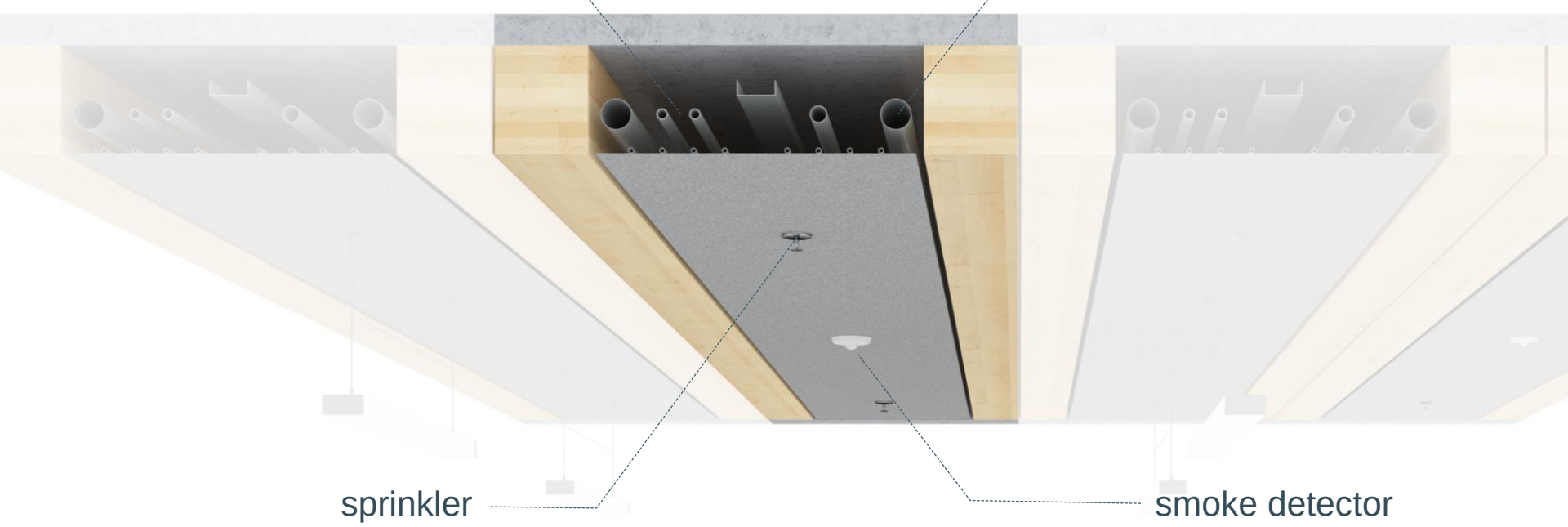
Glulam beams

Reinforced concrete

Building services

Picture: Hermann Kaufmann ZT GmbH

Building services

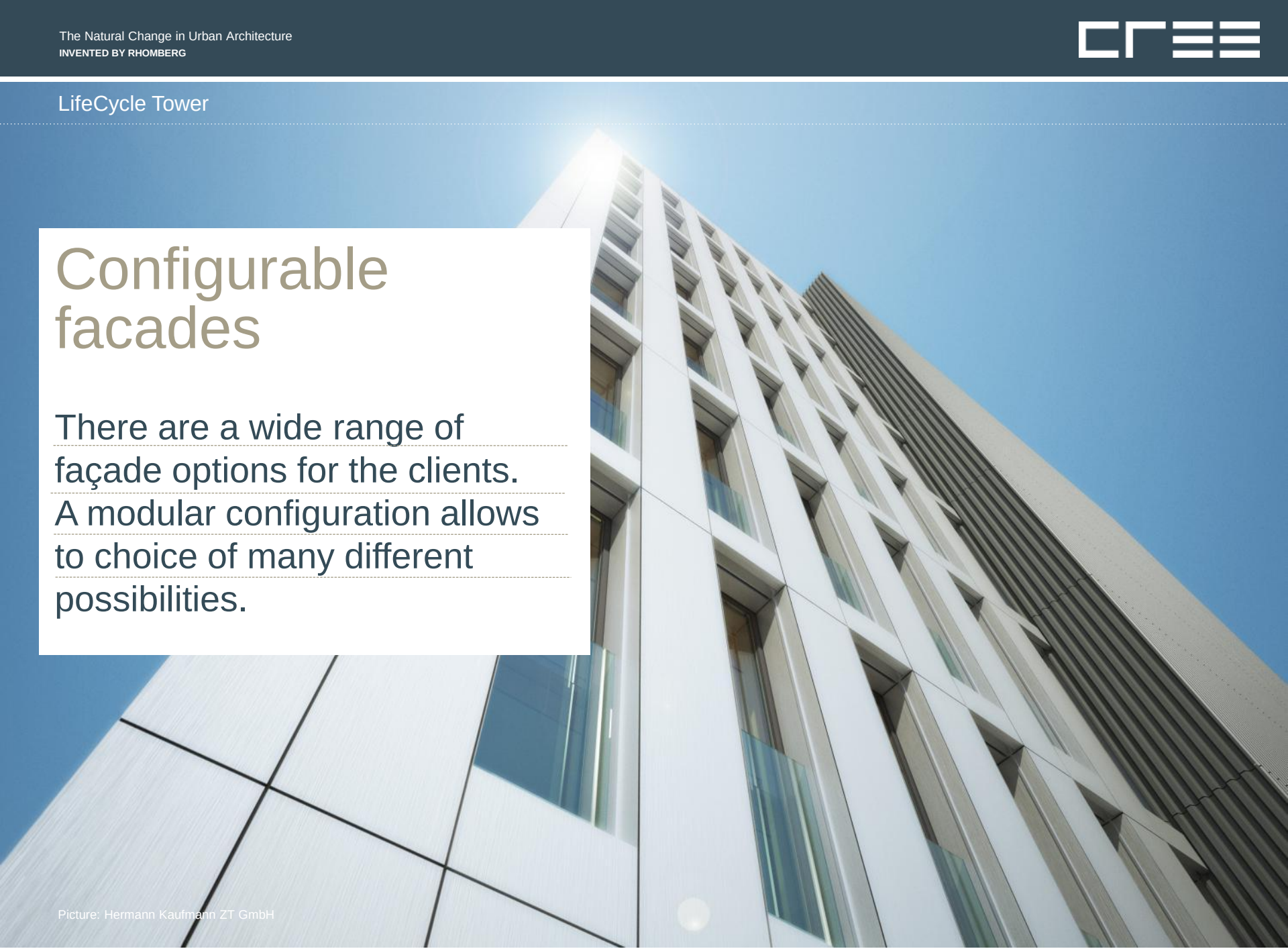


Picture: Hermann Kaufmann ZT GmbH

LifeCycle Tower

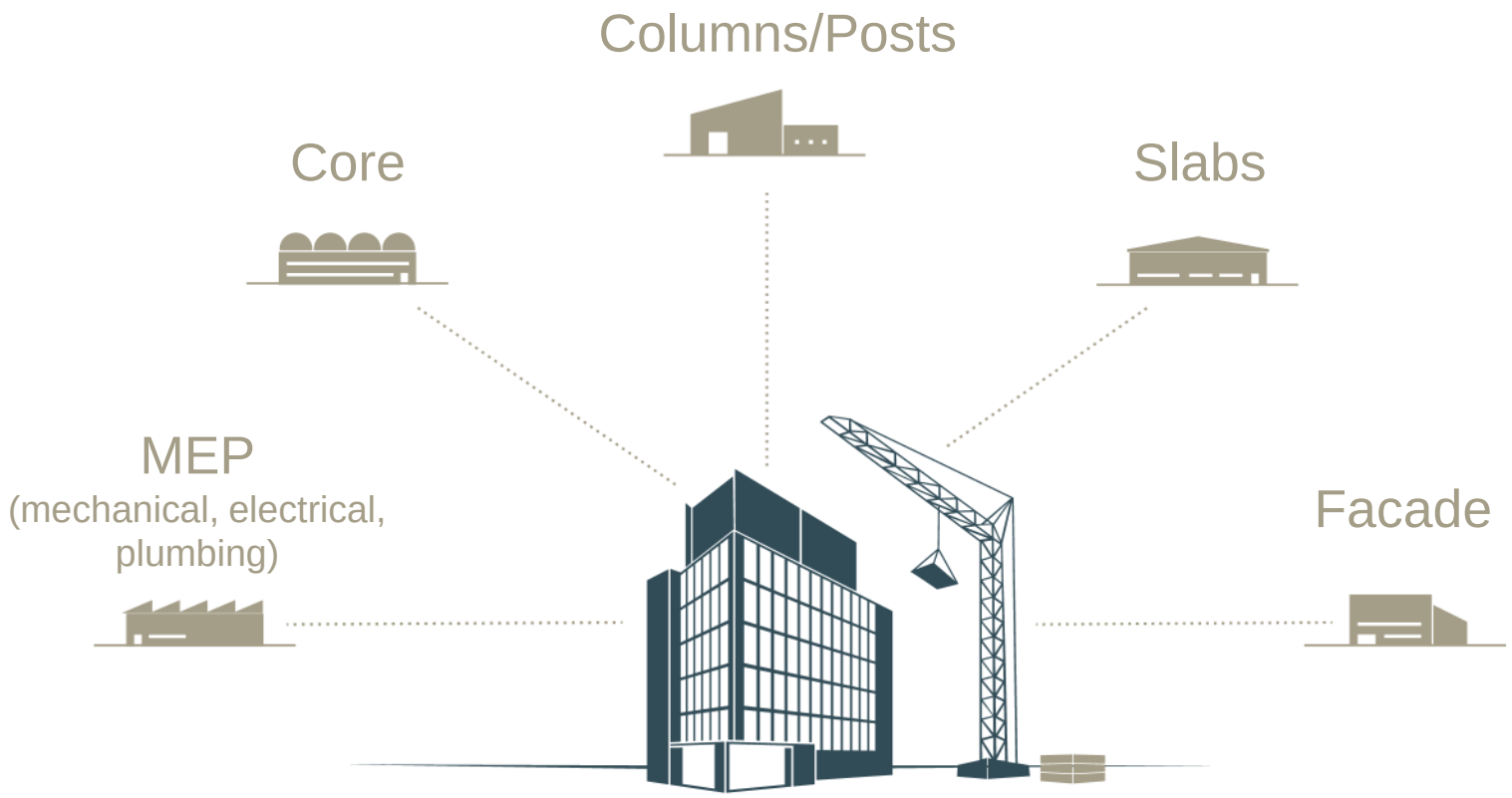
Configurable facades

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



Picture: Hermann Kaufmann ZT GmbH

Industrial manufacturing



Projects

Facts

Project:	LCT ONE
Location:	Dornbirn /Austria
Client:	Cree GmbH
Start:	September 2011
Completion:	September 2012

Dimensions:

Length:	ca. 24m
Width:	ca. 13m
Height:	ca. 27m
Stories:	8
Floor space:	ca. 2.500m² (gross)
Cubage:	ca. 7.500m³ (gross)

Day 1

Day 2

Day 3

Day 4

Day 5

Day 6

Day 7

Day 9

Projekte

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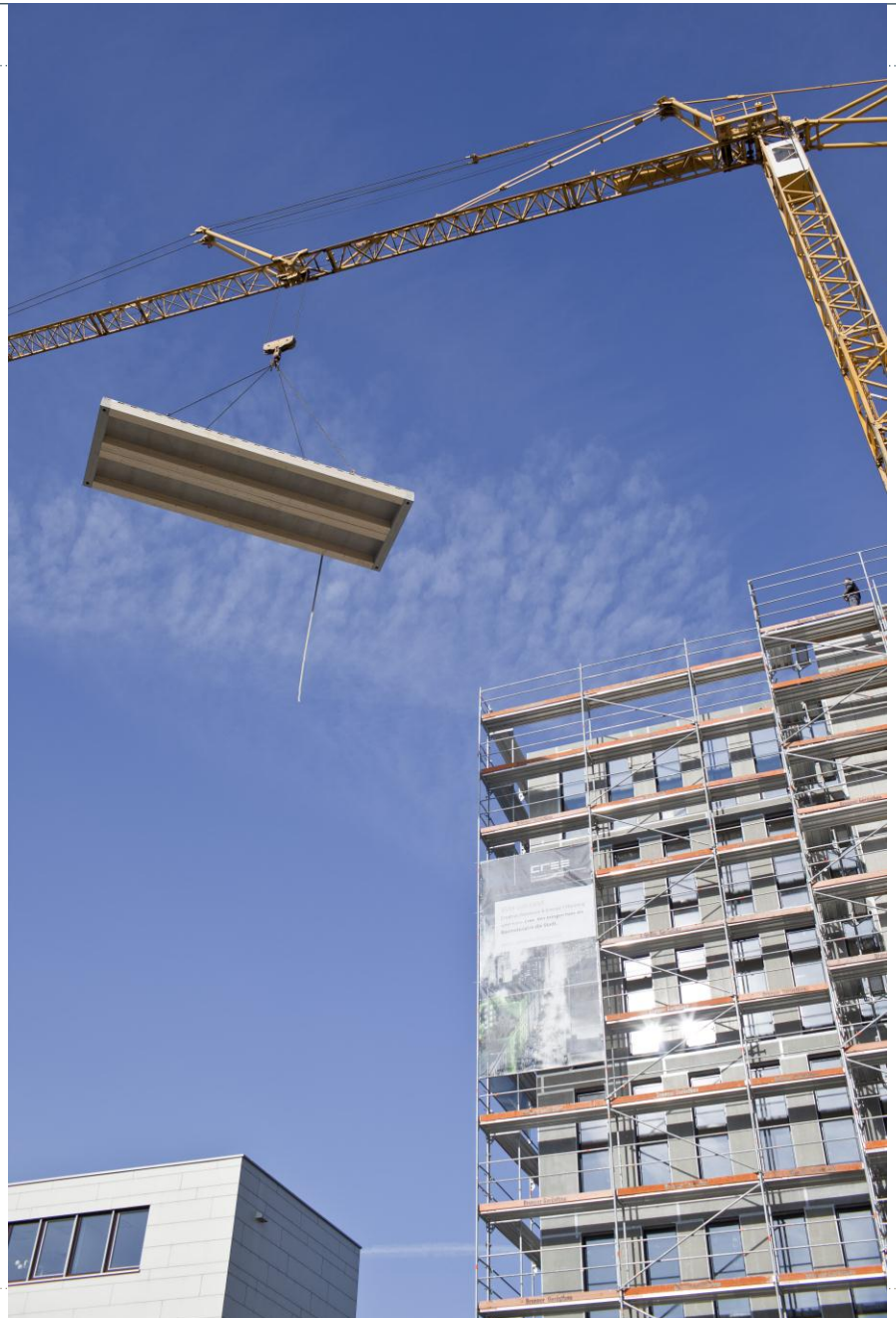

Projekte

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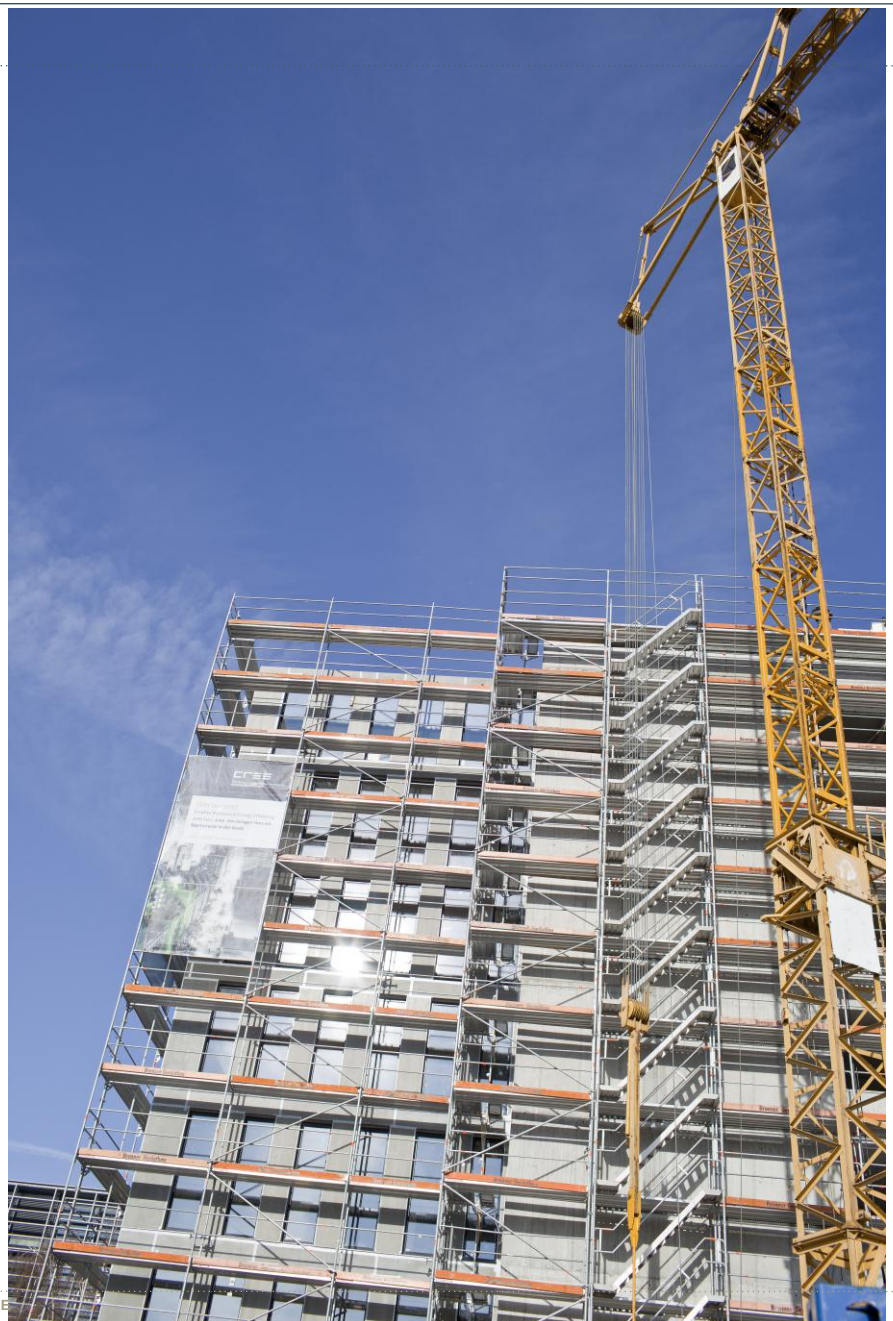

Projects

Illwerke Zentrum Montafon

It continues. The second project is already in the starting blocks: In 2012 a LifeCycle Tower with 120m length for the Vorarlberger Illwerke AG will be erected in Montafon/Austria. It will be completed in summer 2013.
The technological, ecological and economical advantages as well as the verifiable high fire safety of the LifeCycle Tower hybrid-timber construction system were decisive factors for commissioning Cree with the project.
An idea grows - so does wood eventually.

Projects

Facts

Project:	IZM
Location:	Montafon /Österreich
Client:	Vorarlberger Illwerke AG
Start:	March 2012
Completion:	August 2013

Dimensions:

Length:	ca. 120m
Width:	ca. 16m
Height:	ca. 21m
Stories:	6
Floor space:	ca. 11.500m² (gross)
Cubage:	ca. 45.000m³ (gross)

Projects

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