Cree: High aspirations with wood

Rhomberg Bau in Vorarlberg founds new company for sustainable architecture

More than 50% of the world's population today lives in cities with more than 1 million inhabitants - and the trend is increasing. It is therefore little wonder that around 40% of today's energy, CO_2 and resource consumption and 40% of waste production are accounted for by the global construction industry. In the past, urban architecture has been based predominantly on conventionally produced prototypes with long, complex construction work. A situation which the Vorarlberg Rhomberg Group intends to change with a hybrid construction system for high-rise buildings which is based predominantly on a renewable raw material - wood.

Started as an international development project together with the Vorarlberg architect Hermann Kaufmann, the internationally active consulting engineers Arup, the timber construction company Wiehag and the Technical University of Graz, the LifeCycle Tower developed under the leadership of the Rhomberg Group is soon to become reality. A prototype will be completed in Dornbirn in the spring of 2012. Responsible for this development is a company that has been specially founded for this project by Rhomberg Bau: Cree.

New alliance of nature and technology
The name Cree is borrowed from the philosophy and lifestyle of the original inhabitants of North America of the same name. The company is continuing the Cree Indians' all-embracing close connection and association with nature in a modern way: In today's terms, Cree stands for **C**reative **R**esource & **E**nergy **E**fficiency.

As part of the Rhomberg Group, Cree is not just an entrepreneurial diversification, but the logical consequence of four generations of architectural experience since 1892 - developed from the need to trade. At the same time, the Vorarlberg company is not just a construction company, but equally a source of ideas and inspiration for new strategies for sustainable handling and living with nature and its resources. The Rhomberg group's know-how and broad range of services help Cree bring wood into the city as a building material. A team of architects, planners and engineers ensure not only reduced life cycle costs, a high level of sustainability for the buildings resulting in immense cost benefits – but also maximum comfort and fulfilment of all the latest safety requirements.

Safeguarding resources, building sensibly
Most products which we obtain from the earth's resources involve much more material than their actual weight suggests, as a result of excavation, transportation and processing. According to the renowned chemist and environmental researcher Prof. Friedrich Schmidt-Bleek, every material has an "ecological rucksack". On average, 8 kg of rock and fossil fuels have to be removed from the earth in order to produce one kilogram of steel, 348 kg for one kilogram of copper, while a kilogram of aluminium "actually" weighs 37 kg. In addition, today's industrial community generates tremendous CO_2 emissions.

For these reasons, to use wood as the main component for high-rise buildings may at first sight appear to be unusual. However, the advantages are obvious, for no other building material is produced with a similar regard for energy saving. Wood is a naturally renewable raw material, has high strength and low weight, and guarantees optimum heat insulation, durability, noise and vibration damping characteristics. As one of the earth's oldest building materials, wood meets the latest safety requirements even today, and is also 100% recyclable. In urban architecture, wood is therefore an outstanding alternative for the future.

Architecture of the sustainable future: The LifeCycle Tower
Cree's core project is the LifeCycle Tower: a sustainable wood-hybrid construction system for multi-storey buildings, which has been thought out down to the last detail and yet can be designed to meet individual requirements.

A LifeCycle Tower is erected as a system: several modules are pre-manufactured in the factory and are assembled on site. Compared with conventional construction methods for similar buildings, this enables the building time to be reduced by half - as is the exposure to dirt, dust and noise.

In spite of the minimal use of resources and energy in the overall life cycle, it is still possible to have high aspirations with a LifeCycle Tower: the hybrid timber building can extend to up to thirty storeys with a height of 90 metres. With a building of this kind, it is almost obligatory to have a facade which does not consume energy but which produces energy - and thus makes a significant contribution to the CO_2 climate balance. Michael Zangerl, Manager of the development project at Cree, is convinced that the vision of wooden structures in the city has immense potential and can set a precedent: »The LifeCycle Tower is intended to assume a pioneering role for sustainable construction methods.« In addition, the concept provides enormous opportunities for the timber construction industry as well as for all component manufacturers associated with any aspect of house building, as Hubert Rhomberg adds: »The systematic construction method makes it possible to use regional resources on a global basis. Both small and medium-size companies will be able to benefit from this.«

Maximum individuality
High-rise buildings are not only for living in. The LifeCycle Tower concept therefore provides a number of options for almost all kinds of urban architecture. A building system with a versatile character: as well as living accommodation, a LifeCycle Tower can also be used for offices, a hotel or catering. A tremendous difference from the outside, but one which is hardly noticeable in the detail - all the different types of use can be realised at the planning stage with minimal effort.

Nominated for the Austrian State Prize 2010 for Environmental and Energy Technology
Cree stands at the very beginning - but already the company can be proud of a highly renowned award. The vision of the LifeCycle Tower was nominated for the Austrian State Prize 2010 in the Research & Innovation category. In February, the jury selected the futuristic lighthouse project from amongst 80 entries, and presented the nomination certificate to Directors Hubert Rhomberg and Michael Zangerl. »We are delighted. This recognition helps to make the project known to a wider public, and also confirms the path that Cree is following,« enthuses Hubert Rhomberg.

The LifeCycle Tower: Data and facts

Dimensions:
Length: can be chosen at will
Width: can be chosen at will
Height: up to 100 m; up to 30 storeys above ground

Grid:
1.35 m, floor span optionally 8.10 m or 9.45 m without supports. A system for use as offices, retail sales, hotel or living accommodation. Easy conversion of use due to flexible system design.

Materials:
Basements and ground floor steel-reinforced concrete; from 1st floor, floors wood-concrete hybrid design; facade supports wood; main development optionally wood or steel-reinforced concrete

Energy standard:
e.g. Plus energy house or passive house, electricity generation with photovoltaic facade, ventilation system on request with air conditioning

Building shell:

Element facade with increased noise and thermal protection; integral solar protection; optional manual ventilation windows for natural ventilation; surface architecture can be individually designed

Building progress:
Reduced building time compared with conventional buildings

CO_2 emissions:
90% improved CO_2 balance compared with conventional buildings.

Cree
The Natural Change in Urban Architecture

Cree GmbH
Mariahilfstraße 29, 6900 Bregenz, Austria
Tel. +43 (0) 5574 403-190
info@creebyrhomberg.com
www.creebyrhomberg.com

Ansprechpartner:
Michael Zangerl
michael.zangerl@creebyrhomberg.com