

## LifeCycle Tower - LCT ONE

Architekten **Hermann Kaufmann ZT GmbH**

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### Team

Project management DI Christoph Dünser | Guillaume E. Weissl  
Ing. Benjamin Baumgartl  
Cost Planning Cree GmbH, A-Bregenz  
Construction site management Rhomberg Bau GesmbH, A-Bregenz

### Specialists

Girder planning merz kley partner GmbH, A-Dornbirn  
Heating Sanitary Ventilation EGS, D-Stuttgart  
Electrical planning Ingenieurbüro Brugger, A-Thüringen  
Building physics Bernd Weithas, A-Hard

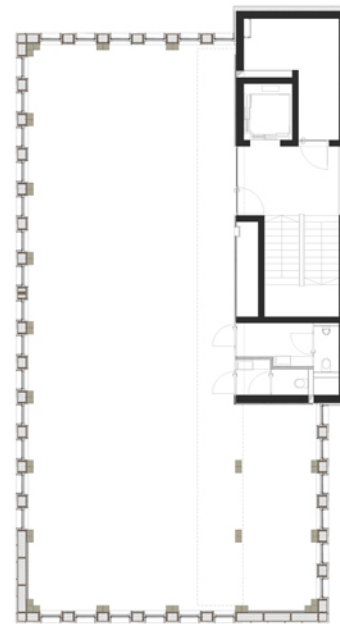
**Client** Cree GmbH, A-6900 Bregenz

**Date** Juni 2011 - November 2012

**Project data** NGF 1.765 m<sup>2</sup> BGF 2.319 m<sup>2</sup> BRI 8.074 m<sup>3</sup>

**Energy** 13 kWh/m<sup>2</sup>a

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Text: Hermann Kaufmann & Martina Pfeifer Steiner



standard floor / stairwell cross section

The LCT ONE (LifeCycle Tower ONE) is a pioneer construction in many respects. The project, which is currently in the realization phase, is the first eight-floor wooden building in Austria. It is for the first time that an almost high-rise building will be made in wood construction. Furthermore, it is the prototype for the prefabricated wooden building developed for the research project "LifeCycle Tower". The aim of the project is to verify the feasibility of the construction system and to declare its functional efficiency under real terms of use. Because this construction system should achieve international marketability, this pilot project is a central building block for testing and marketing.

The building consists of a reinforced staircase core bordering one-way to the office space. Contrary to the proposal in the previous LCT research project to build the staircase core in wood as well, here it is built in site-mixed concrete. This was the result of an intensive examination of the statutory provisions of fire prevention, which shows that it is currently not possible to make the core out of combustible material.

With the certification (according to DIN EN 13501) of the fire resistance REI 90 of the timber joint hybrid ceiling, an important condition of the fire prevention authorities was fulfilled and an important step towards realization was taken.

For this purpose, several timber joint elements of 2.7 meters – corresponding to a facade grill – multiplied by 8.1 meters – corresponding to the potential depth of space – were subject to a fire test at the company Pavus in Czech Republic.

The timber-concrete joint ribbed ceiling is the real key for building upwards, because it makes it possible to separate the corresponding floors consequently by a non-combustible cover. The wooden beams are inlaid into a steel formwork of 8.1 x 2.7 meters; the distances in between are formed and concreted using a grouting technique. Thanks to the high grade of pre-fabrication, the building cycle becomes much simpler. The ceiling elements can be made industrially in a more precise manner, there are no curing times on the building lot and for the laying of a ceiling element the workmen indicate just 5 minutes.

The connection between concrete and laminated timber construction is not made via complicated binders, but rather with screws and shear grooves. A lintel beam of concrete considerably contributes statically to the distribution of the enormous forces from the facade bearings. The cross-grained wood of the double bearings stands directly on the concrete; the connecting arbor is grouted to the pre-fabricated segment on the construction site. This lintel beam facilitates the necessary separation of the construction in terms of fire protection for every floor, also on the bearing level, and also makes discharge from the ceiling into the bearing without charging a timber work element across the fibre. Following the spread of the forces, the bearings are tailored according to the effective statical requirements.



**International Prize for Sustainable Architecture**  
**2013 Competition - Built Projects Division**

**10th Anniversary**

Project name: LifeCycleTower One  
Project location: Färbergasse 17 b, 6850 Dornbirn  
Designer/s: Hermann Kaufmann ZT GmbH  
City - Country: Vorarlberg - Austria





## CURRICULUM VITAE

Univ. Prof. DI Hermann Kaufmann



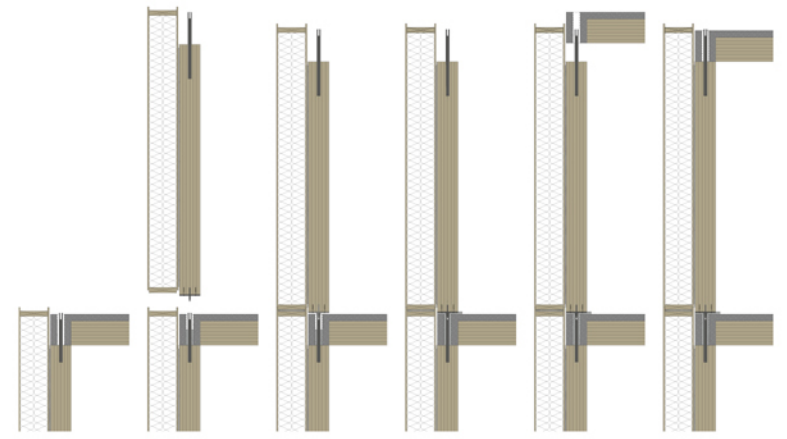
His attitude as an architect is influenced by the ideas of the classical modernism as well as by the debate on the context. Central theme of his work is the search of comprehensive answers to sustainability of building and sounding the possibilities of modern wood constructions.

was born in 1955 in Reuthe, Bregenzerwald (Austria) and comes from a family with a long tradition in the carpentry business. At that time it was a matter of course to help in the parental business where he got to know great directly the possibilities and the fascination of the building material wood but also the way of technical thinking what moulded essentially his work as an architect.

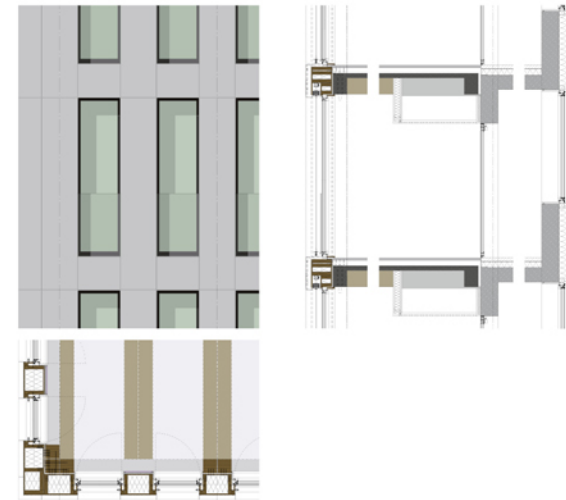
The decision to study architecture was also influenced by his uncle Leopold Kaufmann, outrider in wood constructions and protagonist of the architectural development in Vorarlberg, under whom he learned as intern the hand tools of an architect. He graduated his studies at the Technical University in Innsbruck and the Technical University in Vienna, where he was essentially shaped by his teacher Professor Ernst Hiesmayr. After two years of practice, 1983 he founded his own architectural office consortium with Christian Lenz in Schwarzach.

Numerous halls for carpentries and other businesses attest to his purposeful design concepts for wooden structures which are architecturally elaborated also effective for community halls. Beside numerous single-family houses the project list is completed by cautious renewals of old building substances in sensitive village contexts which prove his fine sense in handling with existing architectural culture and landscape. Housing constructions developed to a main task especially in connection with wood and questions of energy as well as school buildings and public buildings.

He started his teaching activity as guest lecturer at the Liechtenstein School of Engineering and as visiting professor at the Graz Technical University and the University of Ljubljana, Slovenia. Since 2002 he has been a professor of architecture, with a specialisation in timber and laminated wood constructions, at the Munich Technical University.



sequential assembly



facade detail section

