


**Post-Fossil Construction
for Game Changers**



THE REAL DEAL.

Edited by Fabian Hörmann

Patrick Suter is a trained carpenter, civil engineer and Managing Director of Erne Holzbau, part of the Erne Group—with over 100 years of experience in the construction industry. The company acts as a total provider and develops project-specific solutions together with clients and specialists early on in planning phases. The experience gained from a high degree of prefabrication in the timber construction plant, regional material resources and digital transformation in the planning and construction industry, currently form a good basis for investing in and combining renewable materials.



Digitalization & Prefabrication

“The basic prerequisites for collaboration are first of all open-mindedness and broad knowledge.”

Fabian Hörmann

The timber construction industry can be described as a pioneer in the digitalization of construction and production processes in the building industry. Digitalization is a fundamental prerequisite for upscaling techniques. How can other regenerative materials and circular construction methods benefit from this cultural and technical knowledge?

Patrick Suter

We have the infrastructure to produce over 300,000 square meters of components annually. And one of the most important points for all regenerative building methods is offsite manufacturing, in a sheltered workshop, so that you can prefabricate quickly, and then produce more efficiently later on the building site. The construction methods have to develop quickly, requiring people's know-how, and the more you can make this available and centralized, the faster the upscaling will be—and I'm not just talking about production. We are talking about planning, consulting and system development, and I believe these will grow together. Wood will be combined with other environmentally friendly materials, which will develop into the construction method of the future.

Digitalization connects everything. Good planning is only good when it actually reaches the construction site. Today, we use industrial equipment with robots in our production halls, and they need to be controlled. And planning tools are now suitable for going directly from planning to production. And that's a huge leap in efficiency, which is why digitalization is an essential basic prerequisite for upscaling techniques.

Manufacturers of straw bale construction elements and companies for rammed earth constructions have been around for over 10 years. However, these regenerative building methods have not yet displaced conventional solid construction methods from the market—which is quite surprising actually. Medieval houses are still standing today, and it's possible to have quality assured prefabrication in factories. So why is that not enough? What could convince developers and investors?

It's true, in the Middle Ages a lot was built with wood and clay. But we also have to be realistic; the demands on building methods are different. Today we construct every kind of building, all the way up to skyscrapers and high-rise buildings. Constructing with straw bales and clay is technically very limited. The material itself is only suitable for buildings of two or three-stories high, at most, and needs to be combined with other materials, like wood for example.

But sometimes it's also reinforced concrete, depending on where it would be applied. And the industry has to develop these construction methods first. So we've not even reached the point yet where the standards lag behind, but the technical solutions are only just emerging.

Nowadays, every developer and investor is in the public eye and has to bear responsibility. We see our task as providing regenerative construction methods so that these people can live up to their responsibility. It's a unique selling proposition because some of these are pioneering projects, for example, when you build the first high-rise building entirely out of wood. We have to get to the point where it becomes the norm, and apply enough pressure so that there's no other way. In addition, these regenerative building methods also have an insane potential because wood is also a fabulously haptic material. It allows for designs that either haven't yet been made or are impossible to produce using other construction methods.

Can the number of units of modular and circular building products, such as lightweight wall elements, be increased with standard dimensions and storage?

To this day, we in the timber construction industry have concentrated on optimal planning and producing individual pieces, which we've developed to make this run very efficiently. However, the distinction between product and project is crucial. Nowadays, a standardized product must be energy-efficient and not produce any CO₂, and the standards will continue to develop. But I do think that projects will remain important, especially in Switzerland, where construction is very bespoke, and will continue to be an important prerequisite for successful construction and upscaling in future. We need both. We need good products, but we also need companies that can implement processes to build a very personalized, specific building from these products.

With regards to circularity, at what point do you disassemble and how much should you reuse?

Circularity can be thought of in different stages of production. For 40 years, we have been making buildings that you can place somewhere, and then later take apart and move to another location. Circularity, in its purest form, is called modular construction, and this technology has been around forever. It will become more critical in the future because it makes it possible to look at the building as storage of raw materials. We take large components apart, i.e. modules, rather than the individual component. In this way, a component retains much of its value: the doors and windows remain in place. The next stage would then be the elementary construction. Suppose we construct a



A timber structure, robotically manufactured rammed earth cores and a prototype hybrid floor/ceiling system define Erne's timber branch extension of 1500 m² of floor area in doubling the size of their team: Erne offices extension (Stein, Switzerland, 2023).

Architecture:
Burkard Meyer.