

Timber Basements

Basements in timber



Timbase
Timber Basements

First timber basement

What seemed impossible for a long time is now reality. The first multi-familyhouse with a basement completely consisting of wood is realized and located in Thun.



The atmosphere in the basement is similar to any other living area.



“The community room in the basement is the ideal place for yoga lessons thanks to the cozy, woody atmosphere.”

Doris Baumgartner
lyengar yoga teacher, www.bern.yoga

The building land and estate prices have increased enormously over the past few years. This requires exploiting every inch of a building thoroughly and wisely. When basements are built with wood instead of moist concrete, a cozy living space can be created. This is exactly what Regula Bircher and Stefan Zöllig have done when building their multi-familyhouse containing five apartments in Thun. The nationwide first timber basement provides space for a multi-purpose room with a communal kitchen, offices, workshop rooms as well as a guestroom. In addition, the approximately 200m²

basement offers space for a laundry, installations and cellar compartments with plenty of storage space.

Yoga lessons in the basement

Once a week yoga lessons for about ten locals take place, led by Doris Baumgartner. “Most exercises/Asanas are done on the bare wooden floor, whereas for some the yoga mats are used”, says the yoga instructor. The wooden optics and the warm surfaces in the basement are calming and cozy.

Economical and climate protective

Not only occupiers are astonished by the wooden basement. So are the investors and the environment. Because: steel and concrete are some of the most climate destructive building materials in existence. The abandonment of these building materials, also in subterranean levels, is a valuable contribution to climate protection. Further, a basement build with wood is assembled much faster than its counterpart, the concrete.

Architecture
HLS Architekten, Zürich

Building owner
Yamanakako AG, Thun

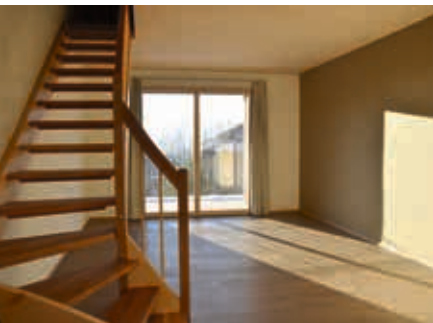
Timber construction engineer
Timbatec, Zürich

Large areas in timber
TS3 Timber Structures 3.0 AG, Thun

Timber construction and prime contractor
Stuber Holzbau, Schüpfen



Stefan Zöllig in his new home with the spectacular view over the castle in Thun.



First timber basement – a contribution to climate protection

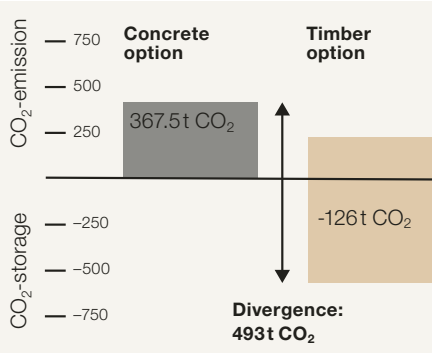
Concrete basements are the most commonly used subterranean building system nowadays in Switzerland – this is about to change. Because timber basements are much more climate friendly and allow a faster assembly.

The Timbase AG offers building basements including its covering base plate in timber as prime contractor.



Steel and concrete are the favoured building materials nowadays, but they are very CO₂-intensive. One cubicmeter of ferro-concrete causes 500 kilogramm of CO₂-emission, whereas one cubicmeter of timber stores about one ton of CO₂. If the wood gets burned after its felling or the dead trunk is left to rot in the woods, all the already stored CO₂ is re-released into the atmosphere again. This can be prevented, if it is used for building instead. The CO₂ stays within the material as long as the building persists. If we want to achieve climate neutrality by 2050 we have to stop building with steel and concrete immediately and invest in timber building instead. Anyone who wants to contribute to climate protection builds with timber. In the timber multi-familyhouse “Blüemlimattweg” a total amount of 222 tons of CO₂ are stored – 126 tons of it in the base-

ment alone. If the basement would have been built in ferro-concrete, the manufacture of these materials alone would have caused 360 tons of CO₂ emission. That leaves a divergence of 493 tons of CO₂.

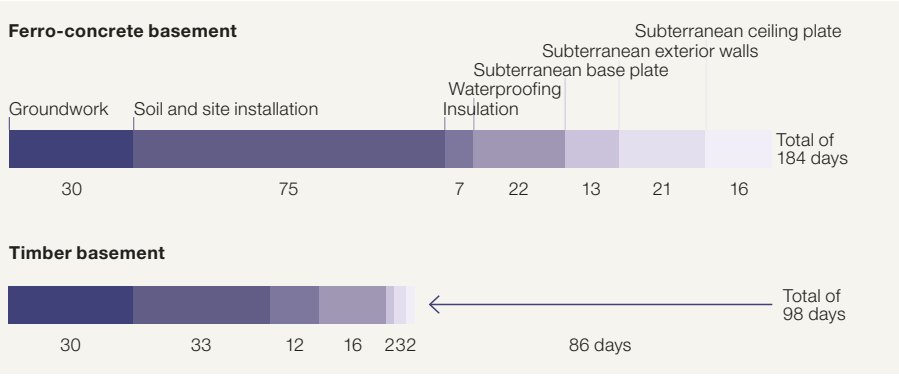


No drying time needed

Not only is the drying time needless in timber basements which is favouring the environment, but their assembly is much faster as well. It took a total of 98 days to build the timber basement and covering it with the base plate at the building in Thun. In comparison, it would have taken approximately 184 days to build the same structure in ferro-concrete. One of the biggest benefits in timber building is the fast assembly. Why not using this to our advantage when building basements?

Over 500 tons of CO₂ were saved due to timber as choice of material.

The building phase of the project “Blüemlimattweg” was shortened by almost three months due to building the basement in timber.



“Objectively, there are no arguments against using timber below the ground.”

Professor Christoph Renfer from the Bernese university BFH is in charge of the research project which closely examines various approaches to the concept of timber basements.



Prof. Christoph Renfer is a professor for fire protection and timber building as well as head of the domain fire safety and building physics at the Bernese university BFH.

Christoph Renfer, the BFH is supervising the pilot project “Timber Basements” as research partner of an Innosuisse project. What exactly is your research about?

The goal of our project is to present scientific proof for this building system and to guarantee its minimal durability of 100 years, as nowadays required on the market. For this, we are currently closely monitoring the already built wooden basement in Thun. Our monitoring covers the interior of the basement, the timber walls as well as the surrounding soil. We measure the temperature and humidity. Based on this data we can predict how these parameters within the building system will behave in the years to come.

The surrounding waterproofing membrane prevents the outside water to get into the timber construction. What happens if the construction gets wet nonetheless?

This issue is also part of our research project. On one hand we measure how much humidity the construction can take before it gets critical.

On the other hand are we working on a solution of how to repair the timber walls and the waterproofing membrane from inside when necessary. We are further working on measurements to take to keep the inside humidity to a minimum.

What is there to consider further with timber basements?

A timber basement is considerably more lightweighted than a ferro-concrete construction. The lower density confronts us with further challenges which we are working on finding solutions to. For one, we have to ensure that the building will not float away in case of standing in the water. And, of course there is the factor of earth pressure. Especially with this building in Thun where the house is not on all sides surrounded by soil and thus could theoretically be pushed off the hill.

What is this research project to you personally?

Timber buildings are very resistant, as constructions from all over the world proof. But these constructions are usually standing on

even grounds and also not in the water. With a timber basement we are breaking new grounds and do what no one else in Switzerland has done before, even if objectively there are no arguments against using timber below the ground. And even a basement built in ferro-concrete needs a waterproof membrane in order to ensure water-resistance. The longer I thought about this, the more I really comprehended the fact.

What comes next?

The demand for timber basements is immense. We keep receiving inquiries and the demand for other uses such as subterranean carparks in timber is increasing too. But, as part of our research project, which will continue until April 2023, we are exclusively focusing on timber basements for the use of workspace, storage rooms and living space. Another aspect we are about to examine are the different functions of the insulation within this building system. Timber stores heat considerably better than concrete, so it is obvious that the timber construction requires less insulation, which concludes in material savings.

Services offered by Timbase

The timber basement in Thun is a pilot project, which the startup company Timbase offers to realize as prime contractor.

What seemed impossible for a long time is now reality. The first multi-familyhouse with a basement completely consisting of wood is realized and located in Thun. A few research questions must be solved before this construction system can enter the market successfully. The corporate research project of the Bernese university BFH along with Timbatec, TS3 and other business partners takes on these questions. From within this circle of research partners the Startup Timbase was incorporated and offers services as prime contractor covering everything from planning, manufacturing, delivery, assembly and guarantee of the product timber basement.

Timbase is possible thanks to the commitment of the following companies:



Assembly of the CLT base plate covering the timber basement.



25 years of Timbatec

Stefan Zöllig incorporated the company Timbatec 25 years ago as a sole proprietorship in Steffisburg. Over 3000 timber projects have been realized since.

25 years after incorporation, Timbatec is a group of several companies striving the same goal: "The increase in ratio of timber buildings within the building industry". All our companies contribute to that individually.

Timbatec

Timbatec, an innovative engineering company, pushes the use of the resource wood on the building market and constantly develops new technologies to advance timber constructions.

TS3

The TS3-technology enables column-ceiling constructions in timber as they were only realizable in ferro-concrete so far. Thus, timber constructions open up a new market.

Timbase

Timbase is our newest member of the Timbagroup and develops as well as builds timber basements in the position of prime contractor.

Timber Finance

The Timber Finance AG introduces the resource wood to the banking industry and thus enables sustainable investments to take place.

Our companies and offices

1997	2001	2006	2014	2015	2019	2020	2021	2022
<ul style="list-style-type: none"> Timbatec founded as a sole proprietorship 	<ul style="list-style-type: none"> Thun office founded 	<ul style="list-style-type: none"> Zurich office founded 	<ul style="list-style-type: none"> TS3 AG founded Bern office founded 	<ul style="list-style-type: none"> Vienna office founded 	<ul style="list-style-type: none"> Management passed on to Andreas Burgherr 	<ul style="list-style-type: none"> Delémont office founded 	<ul style="list-style-type: none"> Timber Finance founded 	<ul style="list-style-type: none"> Timbatec 25-year anniversary Scrimber CSC and Timbase founded

Pioneering projects

				2015	2019	2020	2021	
				<ul style="list-style-type: none"> First TS3 project, MFH Berger, Thun 	<ul style="list-style-type: none"> First MFH with over 300 apartments, MFH Sue&Til 	<ul style="list-style-type: none"> First wildlife overpass in timber 	<ul style="list-style-type: none"> First timber basement 	



First TS3 project



MFH Sue&Til



Wildlife overpass Rynetel



MFH Blümlimattweg Thun



First timber basement



www.timbatec.com

TS3
Timber Structures 3.0

Timbase
Timber Basements

Timbatec
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