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Most homeowners would avoid living within striking distance of an avalanche, but Marcell Strolz and Uli Alber embrace Alpine extremes. They built a house that could weather even the fiercest storm.



Story by Dominic Bradbury
Photos by Richard Powers

The Strolz House nestles in the winter snow at the edge of the Austrian village of Lech. Large wooden shutters help protect the windows against avalanche damage.



With its world-class skiing and picturesque Alpine setting, the Austrian village of Lech seems ripe to become a buzzing tourist destination. But due to strict regulations against second homes and a high risk of winter avalanches, very little building takes place in this small community. Marcell Strolz and Uli Alber were aware of these limitations when they set out to build a family home, and they knew their modern tastes might be contentious in the slow-changing town. The site they chose at the edge of the village afforded them creative freedom with one inherent condition: The house would have to withstand the forceful blows of sliding snow.

"It is very difficult to get land here for building," says Strolz. "Beyond us is a pasture where there will never be any other homes." Having grown up in Lech and having spent many winters volunteering in avalanche protection,

Strolz, who works year-round as a project manager for engineering and building contracts around the village, was ready to live a stone's throw from the ski runs. He and his wife, Uli, a physical therapist and sports trainer, took preparedness seriously as they designed a place to live with their young children, Felix and Emilia.

"We used some steelwork in addition to the timber frame to strengthen the house," says Strolz. "A series of sliding wooden shutters protects the building, as does specially strengthened glass around the kitchen." These shutters can be closed off to seal the windows against avalanches or during the annual "snow roll" from the nearby Omesberg mountain, when a controlled explosion shoots snow downhill past the house. There is also a retractable wooden wall, which disappears into the floor, to protect the open veranda. ▶



A sun porch off the main living room is one of the family's favorite parts of the house (top left). The kitchen is the only zone of the house without protective shutters, so the

glazing was toughened to the highest standard (bottom left). The red sofa in the living room (bottom right) is a 1960s piece originally owned by Strolz's parents.



The house was designed by Helmut Dietrich of Dietrich Untertrifaller Architects, an Austrian practice known for its sustainable and sensitive approach to design. "It was very important to all of us that the house have a relationship to the mountains rather than other buildings," says Dietrich. "It was the connections with nature—and framing the views—that interested me most. It was also important to us to be able to use timber construction, despite the avalanche risks."

Strolz worked closely with Dietrich throughout the design process, and he managed and participated in the building's construction. "I got very involved in the preparation of the site, the digging of the foundations, and the concrete base of the house," he says. "The wooden frame was prefabricated by a local construction company and went up in two days. I also did the drywalling, the floors, some of the

electrical—it was quite a lot of work."

Flexibility was a key part of the design. Two separate apartments—one for rental and one for a nanny—are integrated into the building alongside the family's two-story space. The main living area has an open plan leading out to the veranda, with bedrooms and a study on the floor above. All of the timber for the frame and cladding was sourced from sustainably managed forests.

On the roof, Strolz installed solar panels, which are cleared of snow during the winter so that they can function year-round. "The house holds heat very well," he says. In the summer, excess heat is mitigated through natural cross-ventilation. The shutters that protect the windows from damage double as sun shades, and some rooms of the house have additional internal blinds.

"Most of the new houses in the region address sustainability," says ▶

The house, which is gently pushed into the hillside, has a large basement holding a garage, ski room, storage areas, and utility spaces as well as the entrance hall.

The porch (bottom right) also has its own protective wooden shutter, which rises upwards from a recessed pocket in the floor. The solar panels on the roof often



get covered in a heavy layer of snow, but with periodic clearing, they are as effective during the sunny days of winter as they are during fairer weather.

Dietrich. "In Marcell's case it was particularly important because of the climate in Lech, where there are long winters with cold temperatures. The house had to cope with the climate while using as little energy as possible."

Their power strategy was supported by one of Strolz's earlier projects, the construction of a biomass plant for the town of Lech, which was completed ten years ago. Designed by architect Hermann Kaufmann, the plant is sited in a sleek timber-clad building on the road into the village. Its large industrial boilers supply heat and hot water to homes throughout the village.

The Strolz house is unusual in this rather conservative community, and some compromises were required in order to get the plans approved. "At first I was told that the house was too long and too high and that the shape of the roof was wrong," says Strolz. "So we redesigned it to a certain point and then they said yes." Despite the changes, the house sits well within the progressive architecture of the Vorarlberg region as a whole, which is famous for its approach to modern design.

When the weather is fair and the shades are open, one would never know that this graceful house is capable of becoming a fortress. The light-filled building and stretches of open space beyond are ideal places for the kids to play. But when cold weather comes, the family takes comfort in a design that keeps them safe even if the mountains shake loose a season's worth of snow.



Boiler Point

Rather than individual homeowners bearing the heavy costs of installing individual biomass boilers, villages, including Lech, have come together to develop their own biomass plants to help heat homes, hotels, and other buildings in their communities.

The Austrian region of Vorarlberg has been a leader in the creation of community biomass plants. These district heating plants run on similar principles to a domestic wood-fired heating boiler, but on a much larger scale and using waste material from the region's forestry industry.

At the Lech plant, piles of wood chips sit outside waiting to fuel large industrial boilers. The boilers heat water that passes through a network of highly insulated underground pipes to supply hot water and heat for floors

and radiators. The system is flexible and responsive enough to increase capacity at times of high demand.

"We connected 80 buildings to the plant at first and have added more every year," says Strolz. "Now the majority of Lech's buildings are connected to the plant and it provides around 95 percent of the village's heating capacity. It was the biggest biomass plant in Austria when it was finished, although there are now bigger ones. There are perhaps 2,000 across Austria." ■■■

To learn more about biomass as a renewable energy solution, visit nrel.gov/biomass and biomassthermal.org.

If you are interested in residential-scale biomass boilers, check out greenwoodusa.com. 