

Solar Tube

Vienna, Austria

2001

driendl*architects

www.driendl.at

Austria's largest city, Vienna, is the cultural, economic and political centre of the country. Approximately 2.3 million people (more than 25% of Austria's population) live within the metropolitan area. In 2001 the city centre was designated as a UNESCO World Heritage Site.

Dobling, a leafy, rather wealthy, residential area of single-family homes sits on the north-western outskirts of the city. If one of Dobling's residents had taken a five month vacation from April to August in 2001, they could have been forgiven, if upon their return, they had thought a spaceship had descended into their quiet neighbourhood.

Architect Georg Driendl was inspired to design and build the dwelling using the solar tube as his guiding principle. The solar tube is a vertical tube with a mirrored lining, which is inserted through the roof of a house to guide and diffuse natural light

from the outside, to illuminate the space within. Driendl's development of the idea was to use the entire volume of the house as a solar collector, minimising the requirement for heating, cooling and illumination. The basic shape, structure and choice of materials all stem from this guiding principle (Fig. 1 and 2)

The opportunity to successfully apply this design was provided by the nature and topography of the site in Dobling. The plot is long and narrow, 1,300 square metres in total, and slopes from south to north up and away from the street. The dwelling follows this route and is naturally ventilated as a consequence. The abundance of deciduous trees was vital to the design, proving shade in summer and increased light in the winter months when leaves are shed. Solar Tube functions only by keeping the natural resources of the plot intact.

Population | 1,680,266

Coordinates | 48° 12' 32" N
16° 22' 21" E

Elevation | 190 m (623')

Precipitation | 620.3 mm (24.42")

Temperature | Average High:
25.6 C (59.5 F)
Average Low:
-2 C (28.4 F)

Humidity | 71.4%



The space within the dwelling circulates around a glazed atrium containing the stairwells. By utilising slatted decking in these areas, light is transmitted and filtered through the central core of the building. In the summer months, heat build up is mitigated via the central stairwell chimney effect, and exhausted via the opening roof panels (Figs. 3 and 5).

The openness of the interior design succeeds through the custom designed furniture for the kitchen, bedrooms and bathrooms. The lounge, and library spaces are also carefully integrated into the architecture (Figs. 4, 6, 7, 8).

By utilising a high proportion of pre-fabricated components, the site construction phase was reduced to only five months. This policy ensured minimum impact on the heavily wooded plot (Figs. 9, 10).

The symbiotic relationship between the building and its immediate external environment provides the compound benefits of energy saving with the pleasing ambience of a simple tree house.

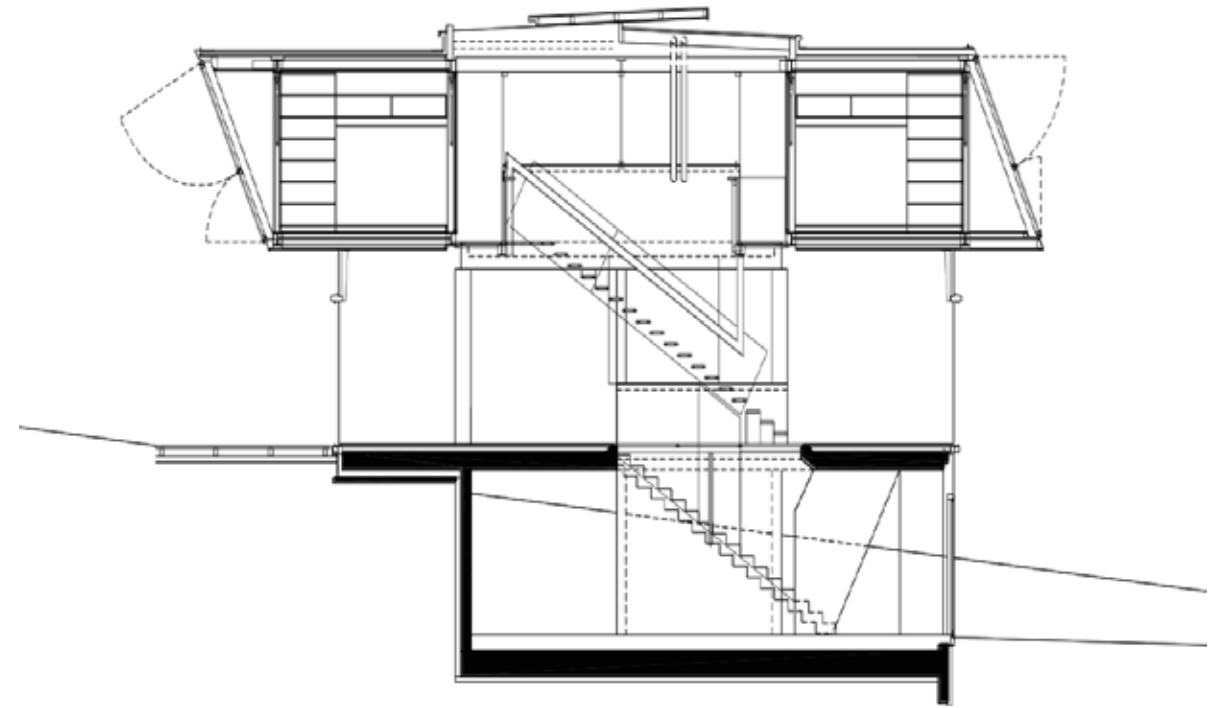
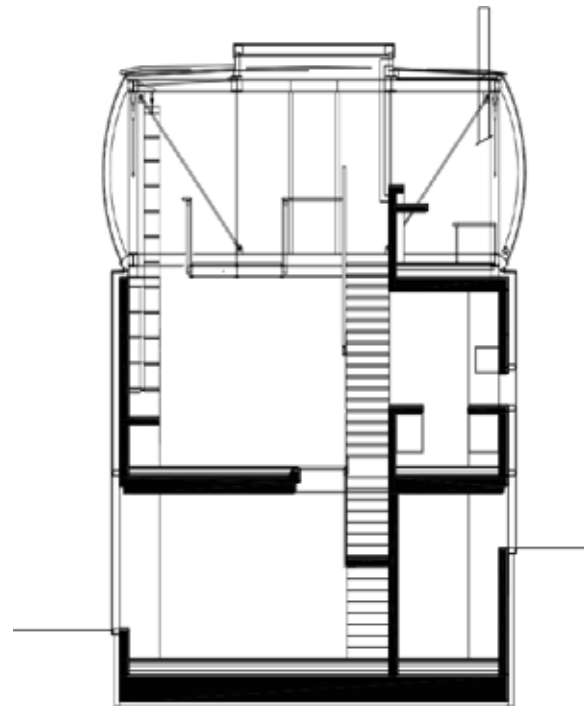


Fig. 7 below left | Fig. 8 below right

