

‘Villa Inox’ in Tuusula, Finland



'VILLA INOX' IN TUUSULA, FINLAND

This remarkable house was built as part of a housing exhibition in Tuusula in Finland. It is designed as a single-family house, and stands on a relatively small urban plot. From the outside the timber-clad building is reminiscent of traditional Finnish architecture, but on the inside is an innovative core. Modern construction methods and a careful choice of materials and surface finishes combine to create a distinctive and inspired design. Stainless steel is the star of the piece, and it has also lent its name to the house.

Laid out on a semi-open ground plan, this two-storey home has well-defined areas for family activities and for individual retreat. Close by the main door is the kitchen, centrally located on the ground floor. This position, and its bay window projecting beyond the rectangular ground plan, mark the line between the communal zones on the one side and the ground-floor bedroom wing at the rear. A staircase leads up to the other bedrooms on the upper storey. The south- and west-facing living room extends over both floors, creating

A glass-covered walkway links the car port to the house.

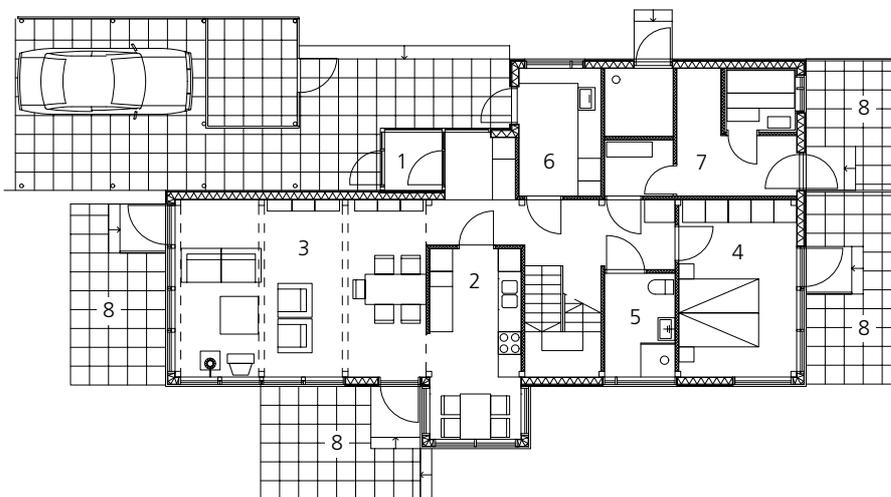
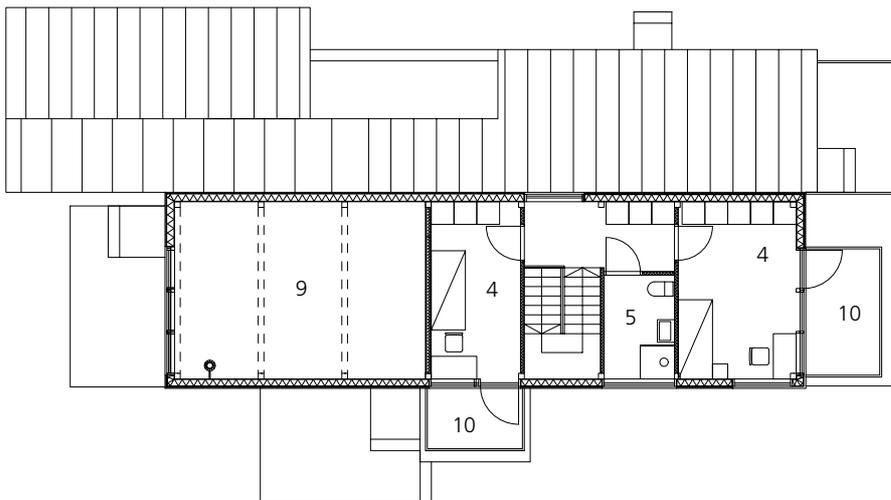


a space flooded with daylight. Contained in a single-storey annexe adjacent to the entrance hall are sauna facilities, a laundry and a room to house the heating technology.

The occupants have access to the outside from each room in the house – on the ground floor leading onto terraces or the garden, and on the upper storey onto balconies. Fully glazed patio doors, and storey-high windows in the living room and the draught lobby, maintain the connection between the inside and the natural surroundings outside.



Generous glazing allows light to flood into the double-height lounge and dining room.



Plans of ground floor and 1st floor
scale 1:200

- 1 draught lobby
- 2 kitchen
- 3 living room
- 4 bedroom
- 5 bathroom
- 6 laundry
- 7 sauna
- 8 terrace
- 9 void above living room
- 10 balcony

Construction

The house has a stainless steel load-bearing structure which was manufactured as a series of whole frames at the factory and transported to the site. Once the expanded clay concrete strip footings and a reinforced concrete floor slab were in place, fitting together of the frame could proceed rapidly. The individual frames were welded together using standard stainless steel sections measuring 150 x 150 x 3 mm. In the double-storey part of the house additional beams of

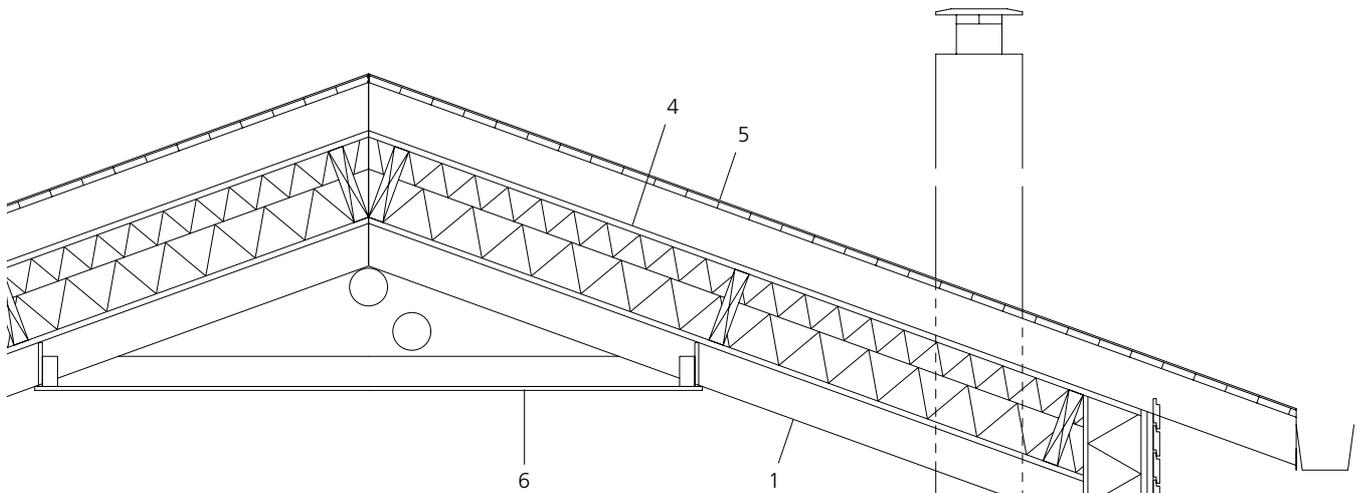
Assembly of wall units (right) and the intermediate floor (below).



stainless steel hollow sections support the intermediate floor.

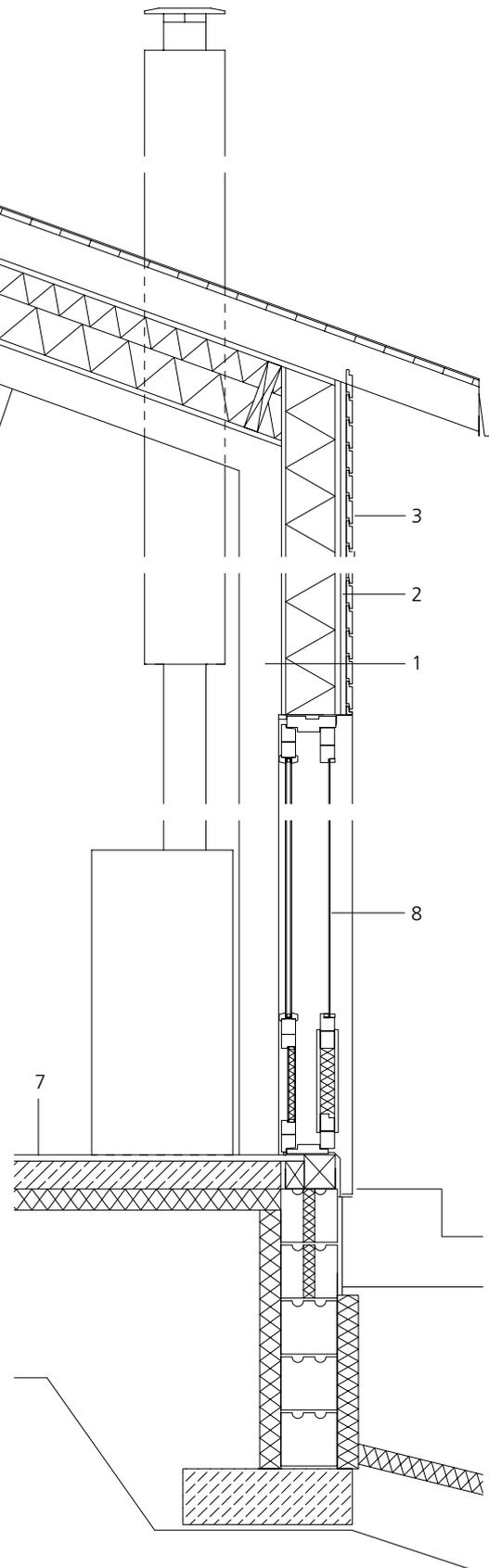
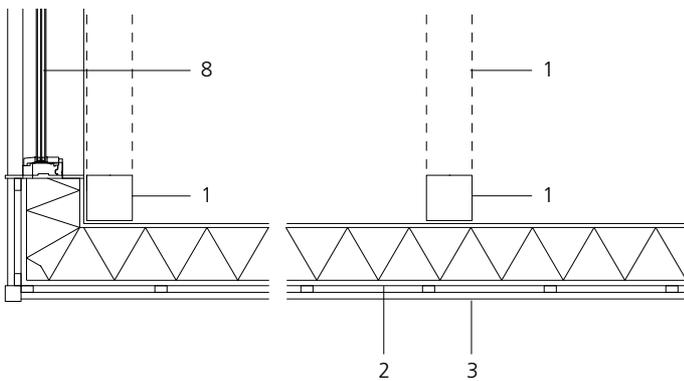
On the outer walls and roof, too, prefabricated components were used. These also serve to brace the structure. The wall units consist of slotted lightweight steel sections with insulation and planking on both sides; on the roof, the units are timber-framed.

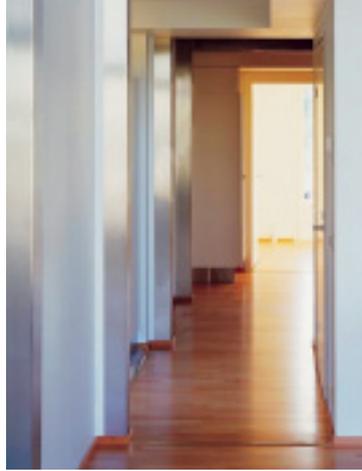
The frame used for the car port is also of stainless steel, but here the steel surfaces are mill-finished, not polished as in the interior. The house was constructed in just three months, thanks to the advantages of prefabrication: the load-bearing stainless steel frames and the wall and roof units were all made in the factory and assembled on site. Good use was also made of standard sections and building components, such as for staircases, balconies, windows and doors.



Façade sections scale 1:25

- 1 stainless steel frame sections 150 x 150 x 3 mm, grade: EN 1.4301, visible surfaces polished
- 2 prefabricated wall units 2200 x 2500 mm and 1100 x 2500 mm: plasterboard, moisture barrier, 175 mm insulation between lightweight steel sections, wood fibreboard as windproofing
- 3 horizontal timber cladding on battens, profiled spruce, 100 x 20 mm, coated with oil-based paint
- 4 prefabricated roof units: wood fibreboard as windproofing, timber purlins with 50 mm and 200 mm insulation, moisture barrier, beech veneered finishing board
- 5 copper sheeting on roof boards and 50 x 150 mm rafters
- 6 beech ceiling panels
- 7 floor construction: beech parquet, 100 mm reinforced concrete floor with underfloor heating, 75 mm insulation, Ø 6 - 18 mm compacted gravel
- 8 wooden window components





Materials and surfaces

One very important aspect of building in Northern countries like Finland is to maximise the amount of daylight reaching the interior. In 'Villa Inox', therefore, the windows are particularly generously sized. Also, in the interior, much use has been made of light-coloured, reflecting surfaces which magnify the effect of daylight entering the space.

The overall impression in the interior is enhanced by careful use of a few, selected materials.



The shimmering reflection of light on the exposed parts of the stainless steel frame is achieved by polishing the surfaces (grit size 220).

The white-painted plasterboard and, the floors of beech parquet and ceramic tiles, set up an effective contrast to the semi-exposed stainless steel frame, the draught lobby made of stainless steel sections and the staircase construction.

Outside, the material that dominates is wood. Horizontal timber cladding, fitted on site, avoids the kind of junction that typically results when using prefabricated wall units. The finely sawn, 100 x 20 mm profiled spruce boards were coated with oil-based paint, in the manner of traditional timber houses. Copper sheet was used for the roofing and the window sills.

By choosing stainless steel for the load-bearing components, such as the building's frame, an almost maintenance-free structure is produced. And, by extending this material to the frame for the car port, the support structure for the outside staircase, the draught



The stainless steel panels on the façade contrast with the horizontal spruce cladding.

lobby, entrance doors, fence posts and down-pipes, maintenance is also kept to an absolute minimum, even on components exposed to the elements.

Because of the rural setting, its relative distance from the sea and the smooth surface finishes, all of the stainless steel components were produced in grade EN 1.4301.



Building data

Total floor space: 178 m²

Living space: 159 m²

Plot size: 722 m²

Construction time: 1.4. to 30.6.2000

Costs: approx. 333,000 euros (including plot)

The extensively glazed draught lobby framed with stainless steel profiles looks bright and spacious.



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