



POLITECNICO
DI TORINO

Honors thesis

COURSE OF ARCHITECTURE CONSTRUCTION CITY

Abstract

**Bengt Warne's Naturhus: sustainable living in a
Northern European climate**

Tutor

Andrea Bocco

by

Andrea Antolloni

March 2018

The first part of this thesis introduces Bengt Warne and his Naturhus (Nature House), evolved for over 40 years. Living in the first Naturhus allowed Warne to fulfil his “Symbio Housing” philosophy (growing plants to clean the air and to obtain food, using the Sun to save energy, recycling grey water and organic waste). Warne’s Wastewater Aquaculture provided research for the recovery of wastewater and for John Todd’s Living Machines. Warne’s book På akacians villkor convinced Charles Sacilotto and Anders Solvarm to build their own Naturhus (the second is the subject of specific study in chapter 3).

The Naturhus is an ordinary log house, enclosed by a greenhouse. A microclimate with spaces for activity and cultivation is created in the buffer space. The temperature in the buffer space is higher than outside (4-5 ° in Solvarm Naturhus demonstrated by Liban Usman – paragraph 3.4). In a Northern European climate, this allows from March to October good conditions for growing Mediterranean flowers, fruits and vegetables, protected by the greenhouse from snow, rain, and wind. Here, it is possible to produce food in summer (75% self-sufficiency for fruit and vegetables in Solvarm Naturhus, 30% for Sacilotto). Furthermore, Solvarm and Sacilotto Naturhus have a wastewater recovery system. In Sacilotto system water cannot be drunk; grey water is used to water edible plants and black water non-edible ones. In Solvarm system, 300 l of daily grey and black water are filtered and used for the watering. The results obtained in the thesis confirm that Warne's ideas of the 70s were valid. However, the bills of quantities show that Solvarm Naturhus is not a fully ecological building since is made of 28% concrete, 3% galvanized steel, and a total of 31% Leca block and bricks.

Solvarm is part of the GreenHouse Living company that resumes Warne’s ideas and builds more and more efficient Naturhus.

Keywords: Nature House, Naturhus, Bengt Warne, Greenhouse Living, wastewater.



Sacilotto *Naturhus*, Andrea Antolloni (22nd May 2017)



Solvarm *Naturhus*, Andrea Antolloni (1st June 2017)

For further information please contact:
Andrea Antolloni, andrea_a.92@hotmail.it