

Energy-Surplus Day-care Centre for Children



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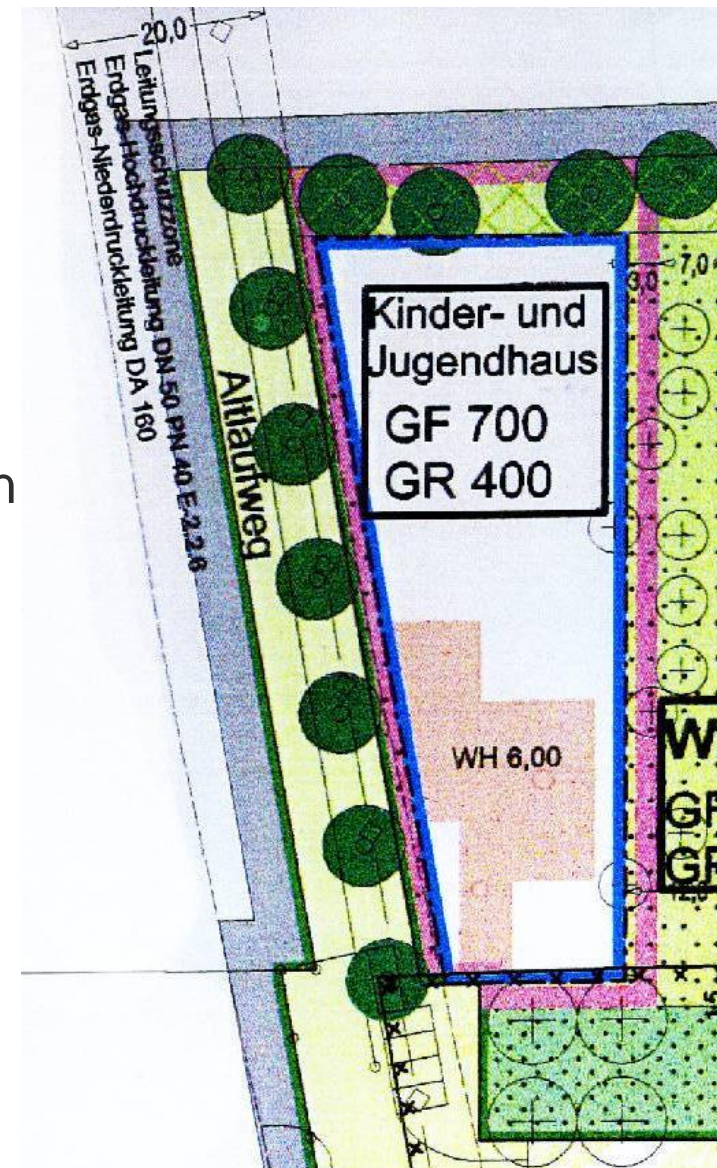


Site



Challenges

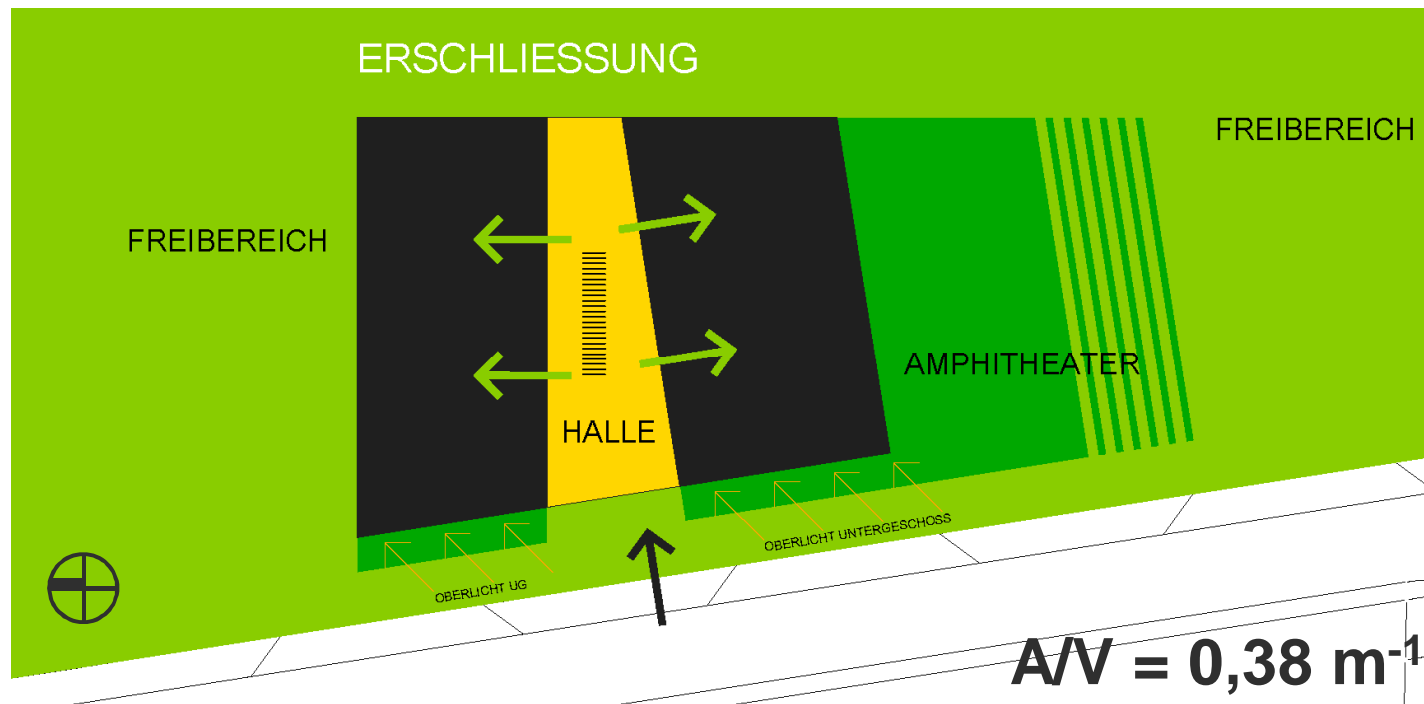
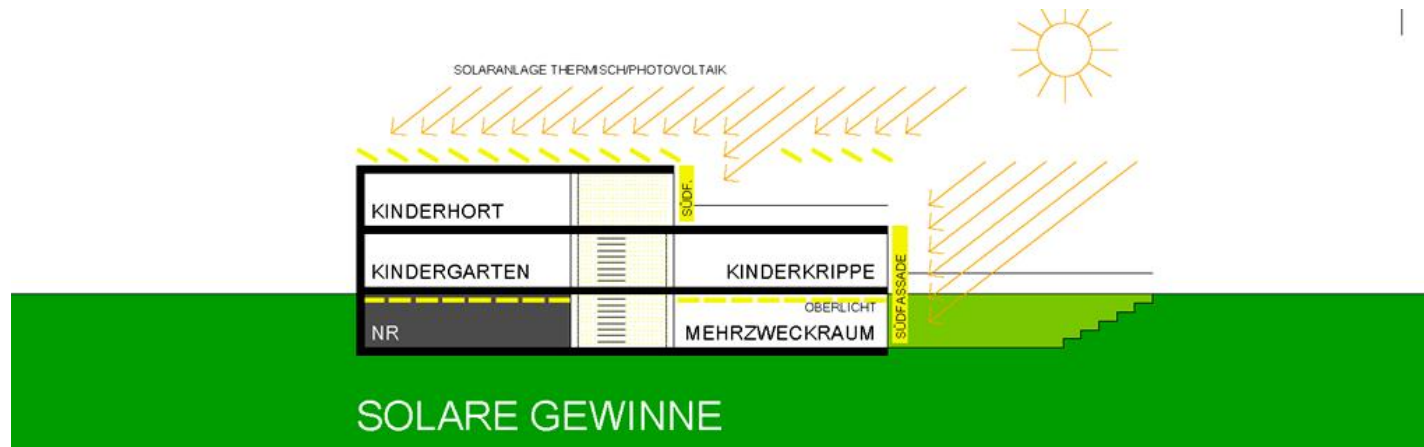
- **Building Site**
 - Narrow (length 80 m x width 30-40 m)
 - Stretching from north to south
- **Space Allocation Plan**
 - Nursery: 2 x 12 children aged 0-3
 - Preschool: 2 x 25 children aged 3-6
 - After-school Care Club: 2 x 12 children aged 6-12
 - High Flexibility



Planning Process

Phase	Design Team	Research Team
▷ Mile Stone 1: Assignment		
Design	1 Establishing the project basis	Energy Efficiency Guidelines
	2 Preliminary design	Feasibility Study
	3 Final design	Application for Support
	4 Building permission application	Mentoring
▷ Mile Stone 2: Acceptance of Application for Support		
Execution	5 Execution drawings	
	6 Preparation of contracted award	
	7 < Assisting award process >	
	8 Project supervision	Technical Mentoring
	< Acceptance Check >	
▷ Mile Stone 3: Commissioning		
Operation	Monitoring for up to 5 years (3 rd party)	

Design Concept



Design Concept

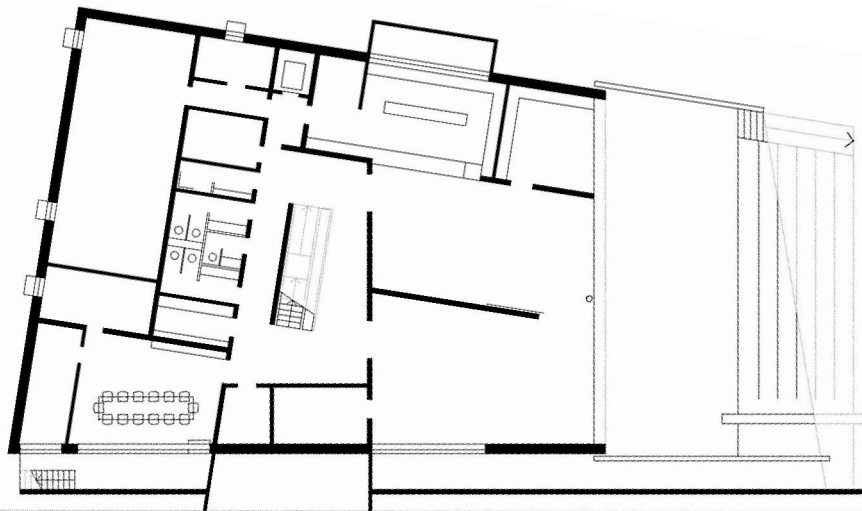
Ground Floor Plan



Design Concept

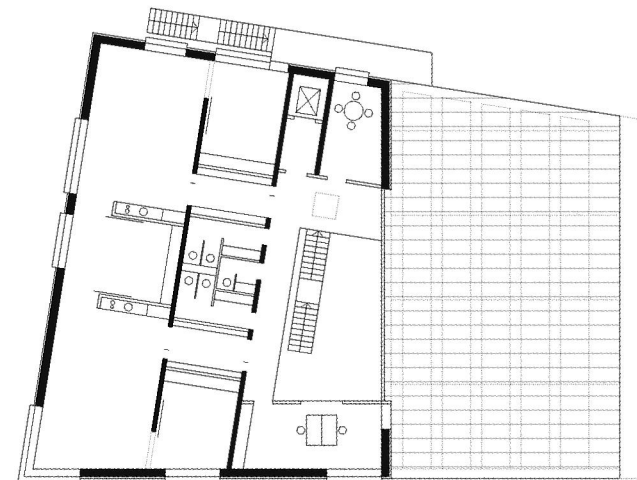


Section



Basement

Untergeschoss



Top Floor

Obergeschoss

Design Concept

Elevation



West
Ansicht West (Alllaufstrasse)

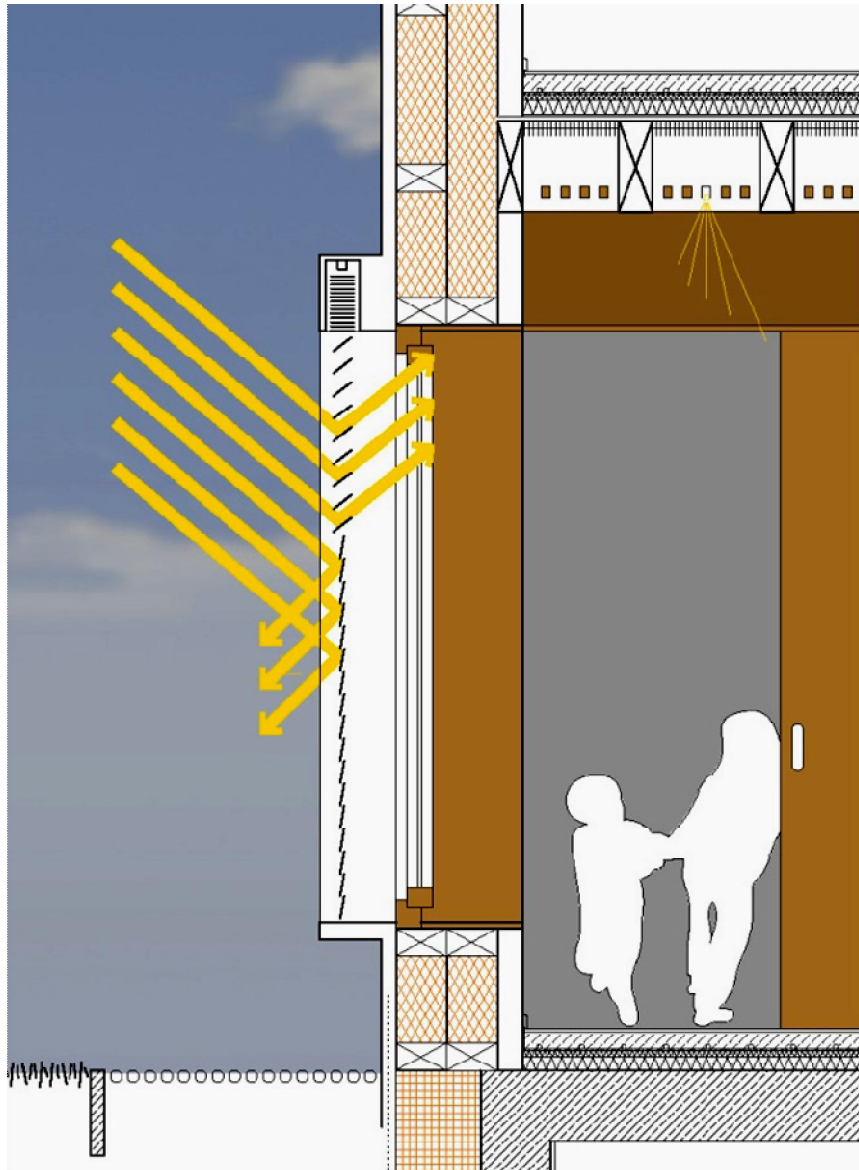


North
Ansicht Nord



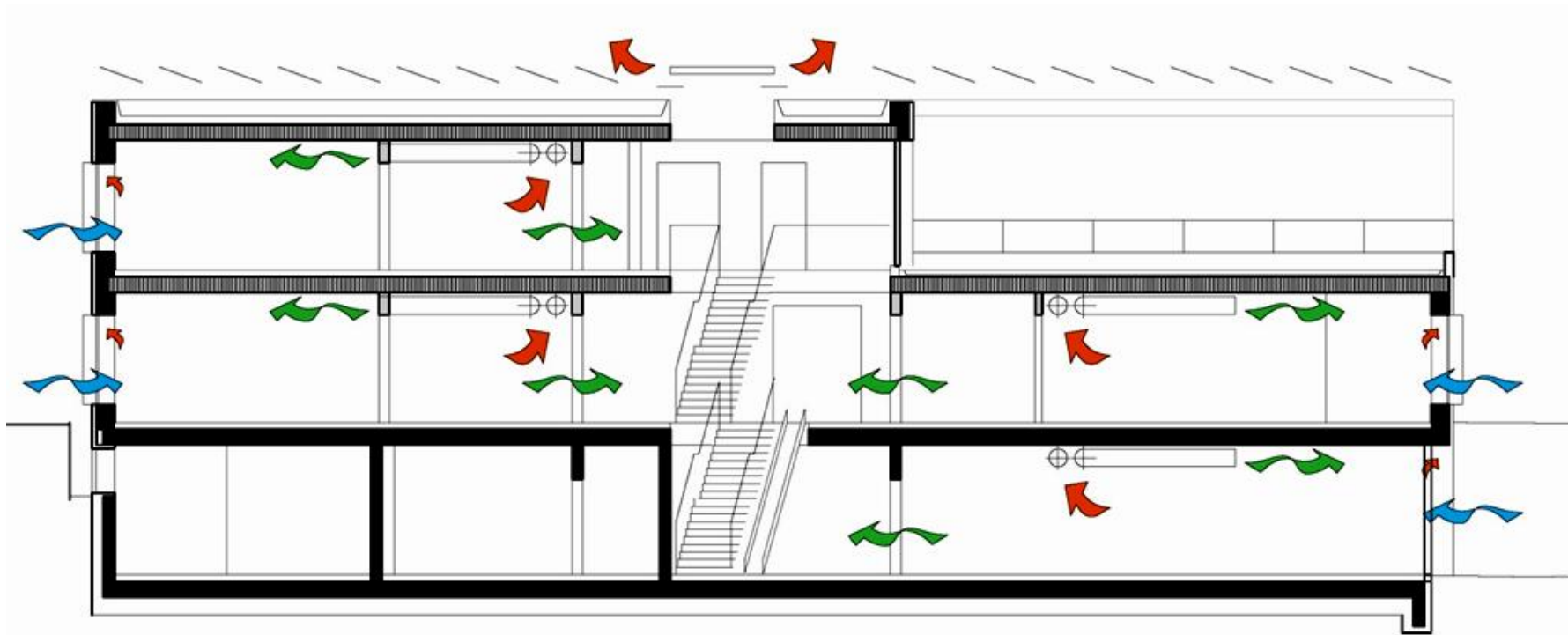
South

Control of Solar Gains

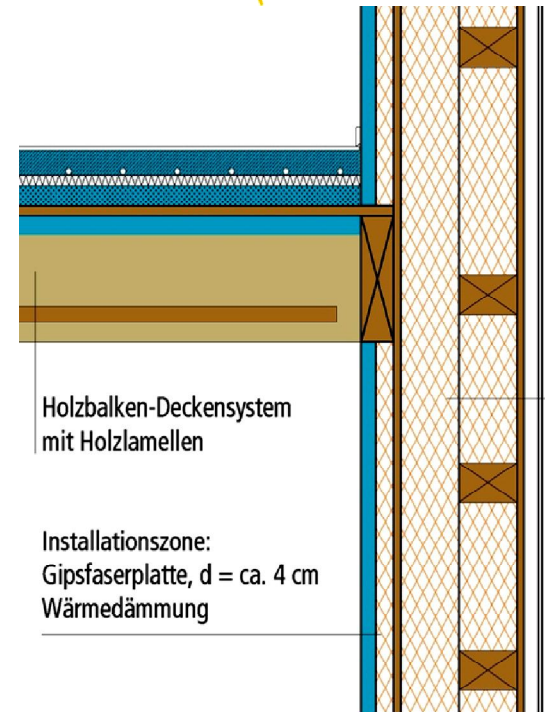
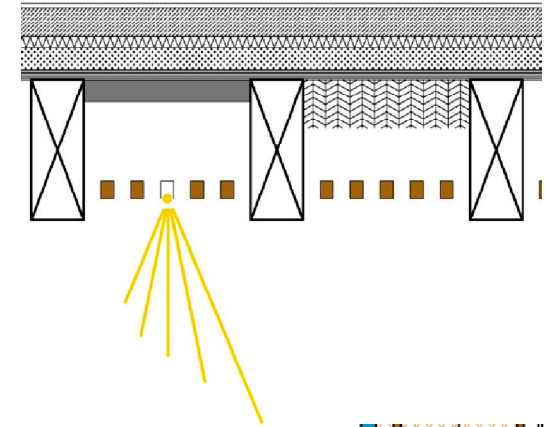
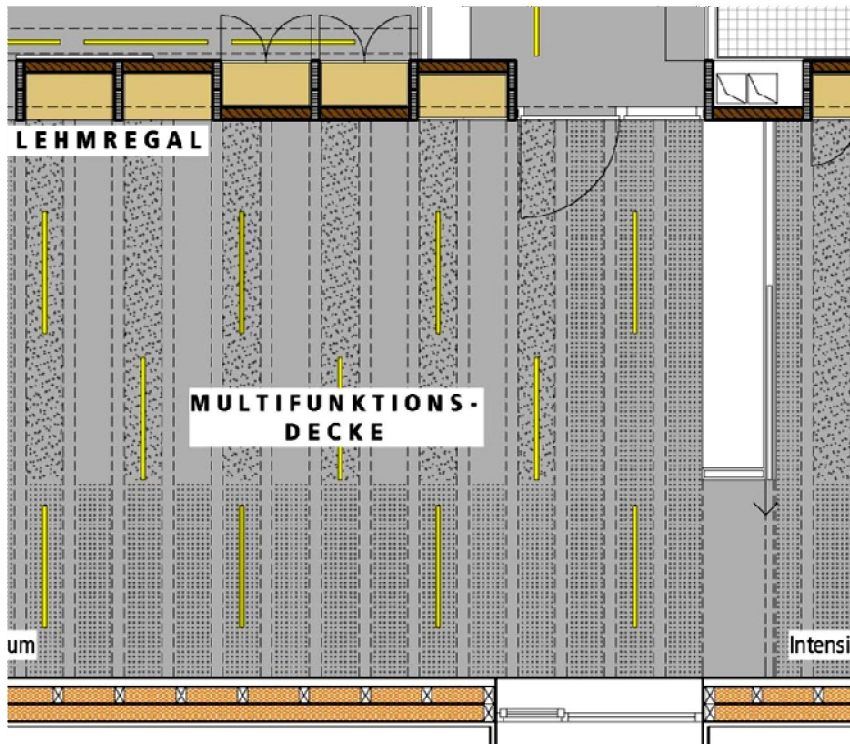
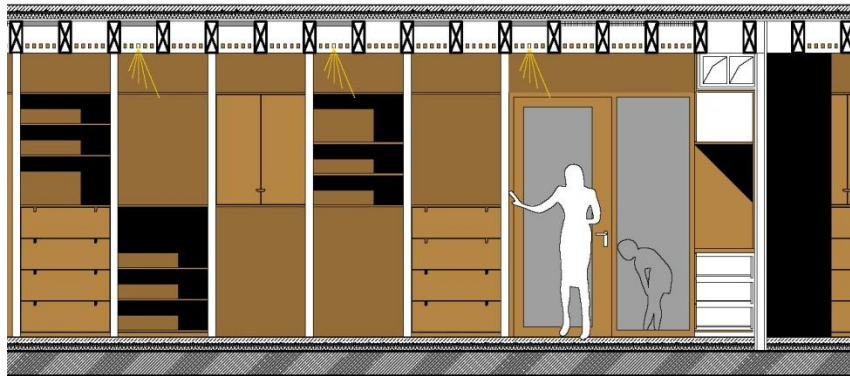


Hybrid Ventilation System

- energy recovery
- night ventilation
- solar chimney



Materiality



Energy Demand

Energy Demand [kWh/(m²a)]

Reference Building

Energy-Surplus Building

Net Energy	Heating		49,96	6,23
	DHW		9,18	9,18
	Lighting		8,64	6,68
	Ventilation		0	0

↓ This Building
60 kWh/(m²a)



↑ Reference Building
(German Energy Saving Ordinance)

Primary Energy	Heating		69,60	11,75
	TWW		13,50	6,20
	Lighting		22,47	17,37
	Ventilation		33,83	24,86
	Total		139,40	60,18

Costs

	Building meeting EnEV ¹ requirements	Energy-surplus Building (without PV)	
Construction costs			
[€]			
building construction ²	2.210.500,-	2.572.000,-	
plant facilities ²	453.500,-	847.000,-	
electrical equipment ²	158.000,-	205.500,-	
additional costs	592.000,-	800.500,-	
Total	3.414.000,-	4.425.000,-	+ 30%
Energy Costs³			
[€/a]			
electricity	3.100,-	5.300,-	
heating	7.600,-	700,-	
Total	10.700,-	5.900,-	- 45%



Research for Research for Energy Optimised Construction

www.enob.info