



after refurbishment



before refurbishment



GENERAL INFORMATION	
Building owner	Gesellschaft für Bauen und Wohnen Hannover mbG (GBH)
Address	Magdeburger Str. 2 and 4 in the Hanover district Vahrenheide
Architect, source of plans and photographs	lindener baukontor, Lichtenbergplatz 5, 30449 Hannover
Number of dwellings	54 dwellings before refurbishment 36 dwellings after refurbishment
Number of floors	4-storey building with access balconies
Average size of the dwellings	<ul style="list-style-type: none"> <li>before refurbishment: mostly small two bedroom flats</li> <li>after refurbishment: family-friendly maisonette flats in the ground and first floor and 4 to 5-bedroom flats in the second and third floor</li> </ul>
Total heated floor area	2,770 m <sup>2</sup> (before and after refurbishment)
Year of construction	1962
Year of refurbishment	2005/2006
Has the refurbishment been carried out while the dwelling was occupied?	The complete refurbishment measures have been carried out while the flats were occupied.
Has an independent quality assurance been carried out?	no
Total building costs	approx. 3,800,000 € in total
Building costs concerning energy recovery	–

<b>INITIAL SITUATION/LOCAL CONDITION</b>	<ul style="list-style-type: none"> <li>54 small living units in both of the four storey buildings</li> <li>both buildings in the complex need to be refurbished in terms of energy efficiency. Furthermore, spacier and more family-friendly flats are planned, reducing the number of living units from once 54 to 36.</li> </ul>
<b>TYPE OF REFURBISHMENT (MEASURES WHICH HAVE BEEN CARRIED OUT)</b>	<ul style="list-style-type: none"> <li>changes to the floor plans and general set-up allow for new space and new activities.</li> <li>spacier and more family-friendly flats are created by changing the floor plans and designing maisonette flats expanding over two storeys.</li> <li>flats on the ground floor get a new entrance.</li> <li>all flats get new bathrooms and kitchen.</li> <li>energy-efficient refurbishment measures include building shell insulation, installation of a solar plant and wood pellet boiler which are connected to the central heating system.</li> </ul>
<b>WHY HAVE THE MENTIONED MEASURES BEEN CARRIED OUT?</b>	The object had not been refurbished yet. Refurbishment measures aimed at raising the building's attractiveness and conducting energy-efficient optimisation. Next to that, better tenant satisfaction was an important issue. In the city district of Vahrenheide only very few family-friendly and spacy flats existed. With the new maisonette flats created in the refurbishment process this gap was filled.

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ENERGY RELATED ACTIVITIES			
Exterior components	<ul style="list-style-type: none"> <li>• building shell insulation</li> <li>• installation of new windows</li> </ul>		
Systems engineering	<ul style="list-style-type: none"> <li>• pellet boiler</li> <li>• solar plant</li> </ul>		
ENERGY RELATED INDICATORS			
	Initial situation	After refurbishment	Reduction
Energy performance	kWh/m <sup>2</sup> a	20 kWh/m <sup>2</sup> a	%
Energy consumption	kWh/a	24,678 kWh/a	
CO <sub>2</sub> -emission			kg/m <sup>2</sup> a
Heating system		wood pellet boiler in combination with a solar plant	
DHW-system			
Monitoring system			
Regional energy costs			

**STATEMENT** Margret Hornbostel:  
Reconstructing an access balcony building with mostly 2-bedroom flats into family-friendly maisonette flats requires statical changes. Installing a solar plant and wood pellet boiler for the central heating system is an additional challenge. Only careful planning can guarantee economically sound implementation.

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