



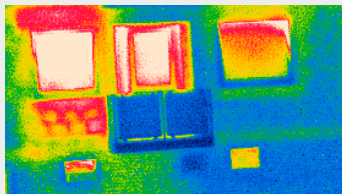
after refurbishment



before refurbishment

GENERAL INFORMATION	
Building owner	GEWOBA, Aktiengesellschaft Wohnen und Bauen Bremen
Address	Steffensweg 97–101, Bremen-Walle
Number of dwellings	18 Social housing units (before and after refurbishment)
Number of floors	3
Average size of the dwellings	dwelling/flat with approx. 3 rooms, floor area of about 49 m <sup>2</sup> (before and after refurbishment)
Total heated floor area	888 m <sup>2</sup> (before and after refurbishment)
Year of construction	1955
Year of refurbishment	2005
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. 685,535 € in total
Building costs concerning energy recovery	approx. 433,914 € in total



<b>INITIAL SITUATION/LOCAL CONDITION</b>	Next to technical and energy recovering aspects (thermal insulation, ventilation system, solar plant) higher attractiveness of the building has to be achieved in particular. Newly installed balconies as well as optional living room extensions are important parts of the concept. Further modification of the floor plans are not planned.
<b>TYPE OF REFURBISHMENT (MEASURES WHICH HAVE BEEN CARRIED OUT)</b>	 <ul style="list-style-type: none"> <li>• thermal insulation facade</li> <li>• thermal insulation top level</li> <li>• thermal insulation ceiling of the basement</li> <li>• installation of new windows appropriate to passive house standard</li> <li>• construction of new balconies</li> <li>• installation of a new condensing boiler</li> <li>• installation of a „solar energy centre“ with solar plants</li> </ul>
<b>WHY HAVE THE MENTIONED MEASURES BEEN CARRIED OUT?</b>	<p>This project's aim is to apply innovative and amortizable building techniques in order to establish them in the field of refurbishment. Hence, an intelligent mixture of physical building improvement as well as application of building services have been essential for developing the refurbishment concept.</p> <p>The chosen objects have predominantly not been refurbished yet and correspond to the type of building that is mainly to be found in the GEWOBA. These exemplary buildings demonstrate the transferability of planned refurbishment measures on further buildings within the GEWOBA.</p>

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**PLANS**



<b>ENERGY RELATED ACTIVITIES</b>			
Exterior components	<ul style="list-style-type: none"> <li>• thermal insulation exterior wall</li> <li>• thermal insulation roof</li> <li>• thermal insulation basement</li> <li>• windows appropriate to passive house standard</li> </ul>		
Systems engineering	<ul style="list-style-type: none"> <li>• heating system/heated surfaces/distribution</li> <li>• heating system/hot water tank</li> <li>• solar collection/collector</li> <li>• decentral ventilation</li> </ul>		
<b>ENERGY RELATED INDICATORS</b>			
Energy performance	Initial situation	After refurbishment	Reduction
	289.7 kWh/m <sup>2</sup> a	39 kWh/m <sup>2</sup> a	87 %
Energy consumption	196,392 kWh/a		
CO <sub>2</sub> -emission			58 kg/m <sup>2</sup> a
Heating system	gas central heating system	gas central heating system (condensing boiler)	
DHW-system	hot water warmed up by heating system	„solar energy centre“ with solar plants	
Monitoring system	yes, quality assurance is accomplished by collections of data over a period of 2 years after refurbishment		
Regional energy costs			

<b>PROMOTION</b>	<p>After having been audited positively by the „Institut für Erhaltung und Modernisierung von Bauwerken“ (IEMB), the building design will be submitted to the „Kreditanstalt für Wiederaufbau“ (KfW).</p> <p>Based on the design of energy efficient modernisation, an application for higher promotion (600 €/m<sup>2</sup> living space) will be made.</p> <p>In addition, the modernisation will be promoted with a grant by „Bremer Energie-Konsens“ (Bremer energy consensus). After successful accomplishment, the GEWOBA will be granted an extra partial debt release by the KfW, amounting to 20 % of the KfW-benefit.</p>
<b>SUBSIDIES</b>	<ul style="list-style-type: none"> <li>• KfW credit – 600 €/m<sup>2</sup> living space partial debt release – 20 % (120 €/m<sup>2</sup>)</li> <li>• Bremer Energie-Konsens</li> </ul>
<b>STATEMENT</b>	<p>Stefan Fölsch:</p> <p>In order to modernise social housing in an efficient (economical) way, benefits from the Federal Republic and the Federal States will still be needed in the future.</p> <p>However, there are sizeable saving potentials in the field of building services.</p> <p>Due to a lack of building standards, this project required an almost daily attendance of the site management.</p>
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