

BUILDING GOOD PRACTICE

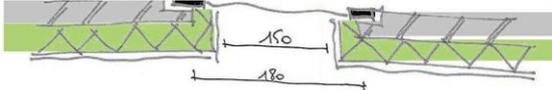
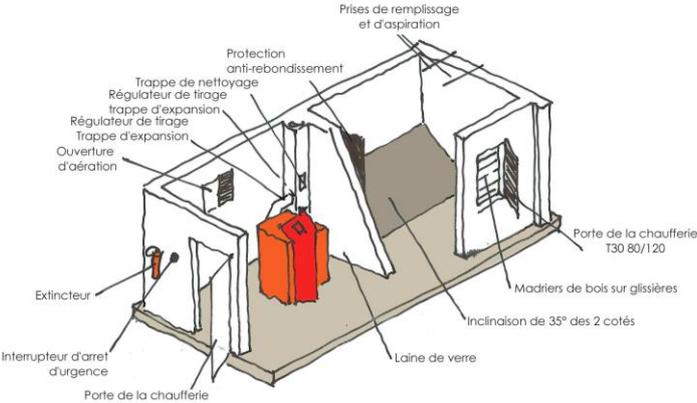
Atelier Mommaerts – Bruxelles, Belgium

Name of the public building renovation:		Atelier Mommaerts - Bruxelles
Index of Building Good Practice (ex. BGP n°1 – IT)		BGP n°1 - BE
Sub-group		social housing, historical buildings
Description	Photo	
	Address	Rue du Comte de Flandre, 45-51 - 1080 BRUXELLES
	Public sector contractor	Administration Communale de Molenbeek-Saint-Jean
	Architects	CERAU Architects Partners
	Engineering consulting firms	R.&J. Matriche SPRL (stability) Bureau 3E (renewable energy and energy efficiency) MK Engineering SPRL, Brussels (technical advices: heating, ventilation...)
	Date of construction	1930
	Legal aspects (e.g.: protected property)	Protection areas near two listed buildings (Town hall of Molenbeek” and “38 Comte de Flandre street ”)
	Date of renovation	2011
	Nature of the work (short description)	Heavy renovation of a building that contained 15 flats and 2 shops before work and turned into 13 flats et 2 shops after.
	Budget and financing source	1.715.000€ without VAT Brussels-Capital Region: District Contracts

		Brussels Environment: Model Building Contest
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AVAILABLE RESULTS	
What were the big problems (in terms of energy efficiency) to tackle?	<p>This social housing project built for the municipality of Molenbeek-Saint-Jean aimed to set the building in accordance with standards in force, principally in habitability and fire safety. The second objective was to make the building efficient in energy consumption and rainwater catchment.</p>
Has this building been already analysed and certified?	<p>The project was awarded "Model Building" by the Brussels Institute of Environmental Management (IBGE) in February 2008, which helped to set up an "energetic guidance" lead by "Brussels Environment".</p> <p>The energy renovation project was certified with a computer modelling software PHPP. The project meets the low energy standard (less than 60 kWh/m²a).</p>
What are the key innovative energy efficiency measures undertaken through the renovation?	<p>The energy approach: the "Trias Energeticas"</p> <p>The energy concepts proposed by the Bureau 3E aimed to give to the project a sustainable characteristic following the "Trias Energeticas". The three steps of this approach were:</p> <ol style="list-style-type: none"> 1. Minimization of operational energy demand, energy demand reduction and efficient use of energy. 2. To resort to renewable energy sources. 3. Supply of efficient energy; minimization of primary energy use and pollutant emissions. <p>Individual components of "Trias Energeticas" have an important influence on the overall energy performance of the project.</p> <p>Dynamic thermal simulation tools have been used to estimate the heat demand of the building. This software also allowed evaluating the comfort inside the building and comparing the temperatures of different areas on the chosen periods.</p>
What are the measurable improvements in terms of energy efficiency (kWh saved)?	<p>According to the persons in charge of the project, all measures should reduce by over 50% energy consumption of tenants (Specific Heat Space Requirement After renovation = 51 kWh / (m²a) according PHPP calculation included in the file).</p> <p>Note: There is no record of energy consumption of the flats before renovation. If these records existed, they could anyway not be compared to energy consumptions after work because the configuration of housing has been completely changed (heavy renovation).</p>

ENERGY EFFICIENT MEASURES

<p>Energy efficient measures of the building envelope</p>	<p>Insulation measures</p> <p>Among the planned renovations, the easiest item to act on was the thermal insulation of the envelope:</p> <ul style="list-style-type: none"> • Outside insulation of 12 cm covered with a coating for the back façade  <ul style="list-style-type: none"> • Double glazed window, with low emissivity ($U = 1,1 \text{ W/m}^2 \cdot \text{K}$) • 18 cm of mineral insulation for the roof, causing a large part of total wastes • Installation of a white roofing watertightness that reflects sunlight and reduces heat gain at the flats under the roof. <p><u>Struggle against air infiltration</u></p> <ul style="list-style-type: none"> • The air infiltration wastes are limited to a 0,7 changes per hour flux. A "blower door test" was proposed to control this value and to identify certain defects.
<p>Energy efficient measures of the heating system</p>	<p><u>Efficient heat production</u></p> <p>Heating plant equipped with a pellet boiler whose stock is in a closed room next door. An auger feeds the boiler from stock as the fuel is needed. The boiler comes as an extra of the production of hot water by thermal solar panels.</p>  <p>Labels in the diagram include: Prises de remplissage et d'aspiration, Protection anti-rebondissement, Trappe de nettoyage, Régulateur de tirage, trappe d'expansion, Régulateur de tirage, Trappe d'expansion, Ouverture d'aération, Extincteur, Interrupteur d'arrêt d'urgence, Porte de la chaufferie, Laine de verre, Inclinaison de 35° des 2 cotés, Madriers de bois sur glissières, Porte de la chaufferie T30 80/120.</p>

	<p><u>Thermal solar system</u></p> <ul style="list-style-type: none"> • The power needed to heat the hot water is produced by solar panels placed on the roof. Hot water from these panels is directed to the boiler where it heats a tank. • The needed extra is made by a circuit connected to the pellet boiler. The flat roof of the building permitted to position the panel in an optimal way, facing south, with a tilt of 35° from the horizontal. • The solar water heater ensuring about 30% of the production of hot water, the extra heat has to cover the remaining 70% in addition to maintaining the temperature of the dispatch loop. 
<p>Energy efficient measures of monitoring energy</p>	<p>Each apartment is equipped with an individual heating counter system (hot water and heating)</p> 
<p>Energy efficient measures regarding behaviour</p>	<p>An accompaniment the new tenants is planned by the municipality, particularly regarding the management of ventilation with heat recovery (cleaning and replacing filters...).</p>

<p>Others?</p>	<p><u>Ventilation measures</u></p> <p>Minimization of heat loss through ventilation. The system is equipped with a heat exchanger that is used to preheat new air entering the building from the outgoing vitiated air.</p> <p>The ventilation of the apartments is mechanically controlled. The extracted air, except one from kitchen hoods, which contains greases and could clog up the exchanger, passes through a high efficiency collector and the recovered energy preheats the air blown into the rooms. This enables to provide a hygienic air change. The system has the advantage over the placement of grids in the chassis, to pulsate in the rooms a preheated air, instead of air at outside temperature, that is to say, very cold in winter. A probe placed in the return duct, with a minimum imposed by the NBN D50-001, controls the flow of the group: Ventilation systems in residential buildings.</p> <p>This solution, more expensive than conventional ventilation, guarantees a much better result in terms of quality of indoor air and energy performance. Moreover, the air entering the housings being preheated, the phenomena of cold draught are neutralized and we avoid shutting up the system and sealing air intakes by the occupants. It also provides a solution to the condensation problems.</p>  
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SUSTAINABILITY OF THE RENOVATION	
Design and choice of sustainable materials?	<p>The outlines advocated low environmental and health impact materials. These products should have benefited from an agreed eco-label (NF Environment, European Ecolabel, White Swan, Blue Angel or other). In the offer, the companies specified the references to products that have been proposed in response to the recommendations of the eco-guidance. As far as possible, fact sheets of environmental and health report of the used products have been joined to the offer.</p> <ul style="list-style-type: none"> • Use of certified wood • Wood fiber insulation on the rear façade instead of the originally planned polystyrene
Sustainable building site management? (sorting waste, water...)	<p>The <u>"Green Site Charter"</u></p> <p>During construction, the company has given a commitment to be attentive to:</p> <ul style="list-style-type: none"> • Save natural resources: energy, water, soil, raw materials • Reduce pollution of air, water, soil • Reduce noise pollution • Favour a better consideration between the building and its immediate environment • Conserve biodiversity and ecological balance <p>The waste sorting during construction was required by the general specifications and was controlled throughout the construction period.</p> 
Application of a valuation method (BREAM? HQE? Others?)	<p>The architects have incorporated 12 target points of the HQE (High Environmental Quality) reasoning in their architectural thinking.</p>

BUILDING MAINTENANCE: life of the building after the renovation	
Is the building object of an energy monitoring? Is there a responsible manager?	
Who is in charge of the maintenance of the heating system of the building?	
Who is in charge of the day-to-day energy management?	
Are there some specific measures to raise energy awareness and to implicate users in energy efficiency?	

TRANSFERABILITY	
Transferable aspects according to the partner in charge of this example of good practice	Transferability of planning (forming a partnership, choosing priorities, setting up a renovation building team, etc.)?
	Transferability of the process of renovation (management structure, monitoring system, implication of end users, participation, etc.)?
	Transferability of results (good solutions, adaptability, change of behaviour, etc.)?
Transferable aspects according to the partner in charge of this example of good practice	The other partners will analyse and validate these good practices. During the process of validation the partners will take on the role of auditors because they will assess and improve the effectiveness and portability of good practices in their context.
	The validation process will promote a systemic approach in local competent public administrations. Moreover, this process of selection and validation is a peer review and entails the mutual role of experts and auditors depending on typology of buildings and partner's expertise.

SOURCES	
Publications	CERAU Architects Partners, <i>Ateliers Mommaerts</i> , 2011.
	Bruxelles-Environnement, <i>Ateliers Mommaerts</i> , Info fiche bâtiments exemplaires, 2007.
Web Site	www.cerau.be
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Interviews	Bureau CERAU
	Administration communale Molenbeek Saint-Jean: Mme France Baudinne