

# Pilot project 'Information Centre', Riga

## LATVIA



## 1 Project description

The investigated building is located in the historic city centre of Riga (state urban monument protection No. 7442) and also listed in the UNESCO World Cultural and Natural Heritage Site – Historic Centre of the Riga (protection No. 852) territory. Originally built as a public restroom it was without any use and unheated for the last years and therefore in bad state, a.o. cracks in the walls.



**Address:** Maskavas street 8, Riga

**Building type:** silicate brick building

**Architect:** unknown

**Year of construction:** 1930

**Owner:** Riga City Council

**Used as:** not used

**Number of floors:** 1

**Façade:** painted silicate brick

**Floor space:** 64.8 m<sup>2</sup>

**Heated area:** 61.8 m<sup>2</sup>

**Cost of refurbishment:** ~ 150,000 €



## Refurbishment

*Start:* 2012

*End:* 2013

*Architect:* na

## Material

*Façade:* brick

*Roof:* metal

*Windows:* wooden frames triple glazing

*Shading system:* between the glazing

*Floor:* tiles

*Ceiling:* wooden

*Inner Walls:* wall board

## Heating system / - production

*Old:* Electric heating

*New:* District heating, electric heating

## Building services

*Electricity:* new

*Building automation:* partly automated

*Water / waste water:* new installation

## Energy consumption

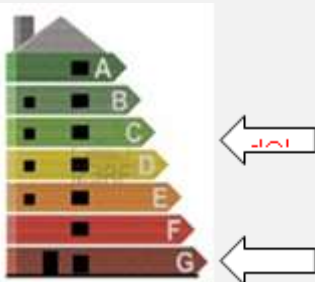
*Before, calculated:*

671 kWh/m<sup>2</sup>/a

*After, calculated:*

134 kWh/m<sup>2</sup>/a

*Energy saving:* 80%



## 2 Initial situation

The building has not been used for some years. Originally it was built as public toilet. In recent years it was used as storage for a nearby market. The building was in a very bad state before the renovation. All building shell elements have been damaged in one or the other way; for example cracking walls, disintegrating brick masonry, and windows with broken glass panes.

## 3 Possible technical solutions

The possible energy efficiency measures include new windows and doors, thermal insulation on inner walls, the floor and ground and the ceiling/roof. Furthermore energy efficient lighting and electrical equipment have to be installed.

## 4 Motivation for the chosen measures

The aim is to decrease the energy consumption of buildings with historical value and to show different materials for energy efficiency improvements. Therefore state of the art materials for refurbishing building, like aerogel mat and vacuum insulation panels for wall insulation, were chosen. Also windows with triple glazing and integrated shading have been installed.

## 5 Planned measures

The following measures are implemented in the building:

- Walls insulation from inside using aerogel mat, PIR, VIP
- New windows with integrated shading
- Insulation of floor and ceiling
- Artificial lighting with LED
- Self-cleaning paint on outer façade

## 6 Explanation of the process

The aim of this project is to show the technical possibilities for building renovation. After renovation the building will be used as an example for reconstruction of brick buildings and as a tourism, culture and information centre. Therefore all the implemented measures will be visible through glass panes.

## 7 Costs & financing

| <b>1. Costs</b>                         |                              | <b>total costs</b><br>(in €)                                   |
|---|------------------------------|--|
| Site preparation-maintenance costs      |                              | 3,262.85   |
| Dismantling works                       |                              | 4,885.24   |
| Foundation, waterproofing reinforcement |                              | 22,624.46  |
| Floor plate                             |                              | 7,880.28   |
| Wooden floors                           |                              | 4,696.29   |
| Roof, roofing                           |                              | 6,709.28   |
| Walls, partitions                       |                              | 9,605.88   |
| Internal decoration                     |                              | 8,547.89   |
| Facade renovation                       |                              | 8,722.34   |
| Windows, doors                          |                              | 14,873.34  |
| Miscellaneous works                     |                              | 1,756.44   |
| Equipment                               |                              | 5,112.89   |
| <i>Internal installation</i>            |                              |  |
| Heating                                 |                              | 3,125.26   |
| Heat pump                               |                              | 10,681.97  |
| Ventilation system                      |                              | 7,281.62   |
| Water sewerage                          |                              | 2,132.28   |
| Electrical installation works           |                              | 10,809.95  |
| Alarm system                            |                              | 567.71   |
| Computer network                        |                              | 618,19   |
| <b>sum 1</b>                            |                              | <b>133,894.16</b>  |
| <b>2. Financing</b>                     |                              | <b>internal rate of return,</b><br><b>interest rate (in %)</b> |
|   | <b>funding sum</b><br>(in €) |  |
| Own money                               | 20,084.12                    |  |
| Bank credit                             |                              |  |

|   |   |   |  |
|---|---|---|--|
| Public funding  | 113,810.04  | 0   |  |
| <b>sum 2</b>  | <b>133,894.16</b>                                   |   |  |
| <b>3. Amortisation</b>  |   |   |  |
| <b>Heating cost before refurbishment</b>                              | <b>energy use p.a.<br/>(in kwh)</b>                 | <b>cost per kwh<br/>(in €)</b>            | <b>total cost p.a.<br/>(in €)</b>      |
| Gas   | -   | -   | -                                      |
| Oil   | -   | -   | -                                      |
| Electricity   | -   | -   | -                                      |
| Calculated energy consumption from district heating                   | 37,830  | 0.0706                                    | 2,670.8                                |
| <b>Heating cost after refurbishment</b>                               | <b>energy use p.a.<br/>(in kwh)<br/>(estimated)</b> | <b>cost per kwh<br/>(estimated)</b>       | <b>total cost p.a.<br/>(estimated)</b> |
| Gas   | -   | -   | -                                      |
| Oil   | -   | -   | -                                      |
| Electricity   | -   | -   | -                                      |
| Estimated use of electricity for powering air-water heat pump (COP=3) | 2,522   | 0.152                                     | 383.3                                  |
| <b>Payback period for the refurbishment</b>                           | <b>cost savings<br/>p.a. in €</b>                   | <b>amortisation period<br/>(in years)</b> |  |
|   | 2,287.5   | 58.5                                      |  |

The payback time of the pilot project is very long and exceeds the lifetime of the implemented energy efficiency measures. We think that it is appropriate for this kind of a project because it is not a simple project where the only thing that is taken into account is the economic feasibility. The aim of this project is to provide new knowledge on refurbishing historical buildings. The knowledge gained in this project can be used in further building renovation projects as well as for the improvement of the competences of owners and craftsmen. The usage of the building will be changed after the refurbishment and the energy consumption is based on calculated figures. Until now the main and only use of the building was as a public toilet. After the refurbishment the building will be used as an example for brick façade building's reconstruction and as a tourism, culture and recreation information centre with facilities for the visitors.

## 8 History and historical value

The investigated building is located within the Spikeru block between Maskavas, Turgeneva and Krasta Street and it is located in the historic city centre of Riga (State urban monument protection No. 7442). The site is also listed in the UNESCO World

Cultural and Natural Heritage Site - Historic Centre of the Riga (protection No. 852) territory.

The Spikeru block is located in the area where the Riga Central Market has been installed in the sixties, seventies and eighties of the 19<sup>th</sup> century after the removal of the Riga fortress. The warehouses block was built after the plans developed by the most prominent architects in the Riga at that time - Roberts Augusts Pflugs, Karlis Johans Felsko, Janis Fridrihs Baumanis and Reinholds Georgs Smelings. Today only 13 of those buildings have remained.

The building of the pilot project at Maskavas Street 8 was erected in 1930 just after the completion of the most modern market place in Europe at that time. At the beginning it was used as the post for the policemen and the market's local control, but very soon the building's functions were changed to a toilet and a small technical warehouse. From the architectural point of view it has a very important historical value because it is considered to be one of the first silicate brick buildings in Riga. No other significant silicate brick building has been found in Riga's historical centre so far. After the 2<sup>nd</sup> WW the building was rebuilt for the use as a public toilet in the Central market (1948-1950) and used until 2000. Then, because of pure technical reasons, it was closed and conserved in a basic manner. Demolition was rejected by the state heritage preservers but the reconstruction was postponed till the reconstruction of whole Spikeri warehouse district started.



Urban development plan (source: Riga City Development department, Architect: Ltd."ARPLAN")

After the Ministry of Environmental Protection and Regional Development Board had approved the financing of the reconstruction of the Spikeri warehouse district (in 2009)

the City Council approved the co-financing for the reconstruction of the Maskavas 8. At that time it was meant to comprise the reconstruction of a brick façade building for the purposes of an information point. Later the idea was supplemented with the concept of servicing as an information centre for culture, tourism and recreation within the warehouse district – similar to the wooden building reconstruction and tourism information point in the newly renovated wooden building in the historical centre of Riga.