

# Ecology-minded Refurbishing



A block with 159 flats in 5 three-storyed houses built during the 50's housing rush in a central part of the city of Kalmar has been refurbished considering a wide programme of environmental aspects. The project is a part of an European cooperation for development of methods for economical and ecological sustainable refurbishing of housing estates from 1940-1970.

## Background

The block is called "Inspektoren" and was built-up in 1955-57. Discussions about refurbishment started in 1994. A great interest for environmental consideration was shown in the early stages from the municipality as well as the inhabitants. The overall goal for the refurbishing work, that started in 1995, was to create sustainable solutions and to increase the inhabitants influence on their housing environment. The cost for the refurbishment should not lead to increased rents or prolonged moving-back compared to "normal" refurbishment projects.

## Realization

The total living environment, external and internal, has been involved in the project, that started with design and evaluation of three master flats with various refurbishing grade.

All technical systems in the buildings have been subject of analysis and refurbishing actions:

- Water and waste
- Electricity and energy supply
- Ventilation
- IT system

The removed refurbishment was sorted into its different categories (metal, glass, plastic, wood, building waste, etc.) for analysis and recycling. The refurbishing material and methods had to be environmentally certified.

The energy supply comes mainly from the municipal district heating system. The houses have been equipped with heating pumps and solar collectors.

Toilets and washing machines have been replaced with low-flushing units. A separate system for urine separation has been installed. Every flat is equipped with a waste disposer.

A rainwater harvesting system is installed, that will relieve the pressure on the municipal pipe system with approximately 4.000 cu.mtrs per year. As the rainwater is filtrated in the local system, less contamination will now reach the recipient; The Baltic Sea. The rainwater is used for irrigation of surrounding gardens and is also of aesthetical value for the outdoor environment, where growing plots are available.

The inhabitants of the flats gained an important influence on the refurbishment and their attitudes and experiences of changed living habits have been evaluated. They have also been engaged in the measurement of water, heat and electrical consumption, volume and composition of waste water and waste material.



## KEY FACTS

<i>Refurbishing object</i>	<i>Block with 5 buildings, 159 flats, total living area 7.000 m<sup>2</sup></i>
<i>Management</i>	<i>Kalmarhem AB</i>
<i>Technical Consultant</i>	<i>Vatten och Samhällsteknik AB</i>

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<i>Water consumption:</i>	
<i>Goal</i>	<i>20 % reduction</i>
<i>Result</i>	<i>15 % reduction</i>

<i>Energy and electricity consumption:</i>	
<i>Goal</i>	<i>Reduction from 290 to 190 kWh / m<sup>2</sup> / year</i>
<i>Result</i>	<i>183 kWh / m<sup>2</sup> / year</i>

<i>Non-assorted waste:</i>	
<i>Goal</i>	<i>Reduction from 325 kg to 29 kg / person / year</i>
<i>Result</i>	<i>150 kg / person / year</i>

*Further improvements based on continuous evaluation and measurements are expected.*

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