

Local project in Breda – THE NETHERLANDS



- Built in the 1950's
- Functional design by Peutz
- Apartment blocks
- WonenBreburch: subplans F1 and F2
- Preservation of Peutz' urban plan
- Apartments and single family dwellings
- Low energy performance label F/G



Heuvel refurbishment project in Breda Municipality comprises a residential area built in 1945 – 1960 with a great variety of housing blocks and local facilities. Total about 3200 dwellings with 8000 habitants.

2500 dwellings are owned by housing associations WonenBreburch and Laurentius – and 700 are private owned. Energy supply is from gas and electricity.

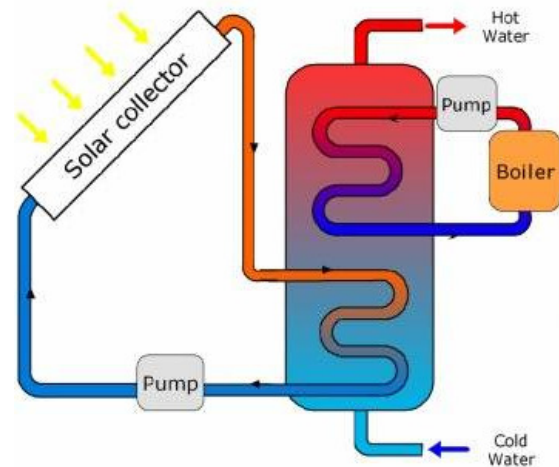
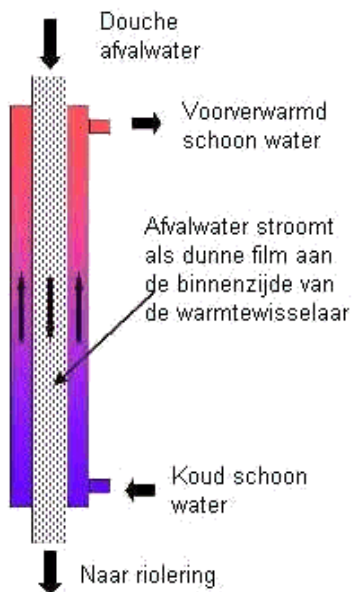
Restructuring process 2005 – 2015 will comprise demolishing of 650 houses and renovation of 650 houses – besides new built houses for total 950 dwellings. Also a new retail centre, a new school and an old monumental church changed into a multifunctional centre.

Energy-options for analysis

- Reference: EPC = 0,80; natural gas-infrastructure
- Variant 1 a & b: Energy saving or solar thermal collectors
- Variant 2 a & b: Geothermal heat pump (heat-infrastructure)
- Variant 3 a & b: variant 2 + demand-controlled natural ventilation (CO₂-concentration)
- Variant 4 a & b: variant 3 + renewable electricity production (pv + possibly urban wind turbines)
- Variant 5: Collective wood pellet boiler + solar boiler (heat-infrastructure)

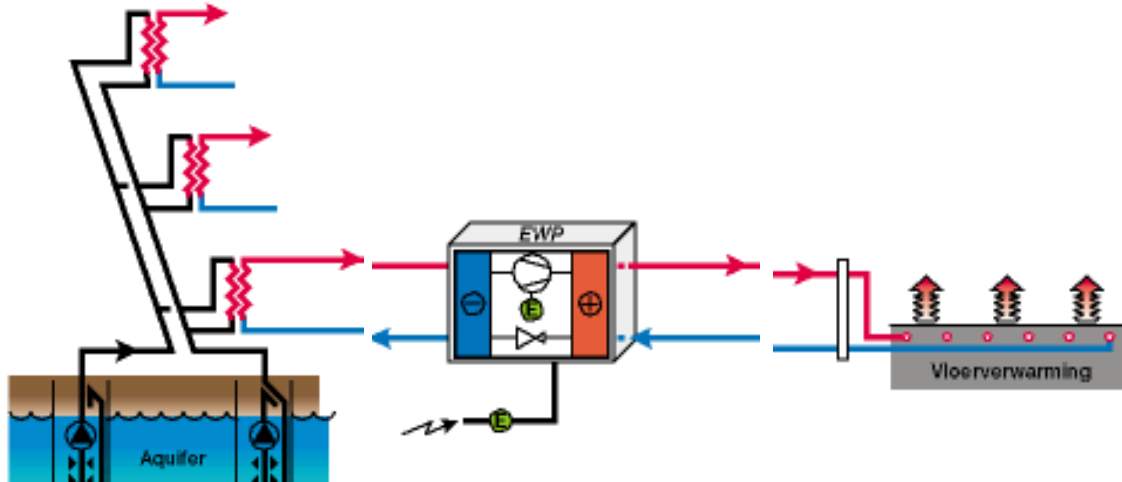
Variant 1 a & b: Energy saving or solar thermal collectors

- Better thermal insulation
- More efficient natural ventilation
- Variant 1a: Shower-drain heat-recovery
- Variant 1b: Solar thermal collector for domestic hot water



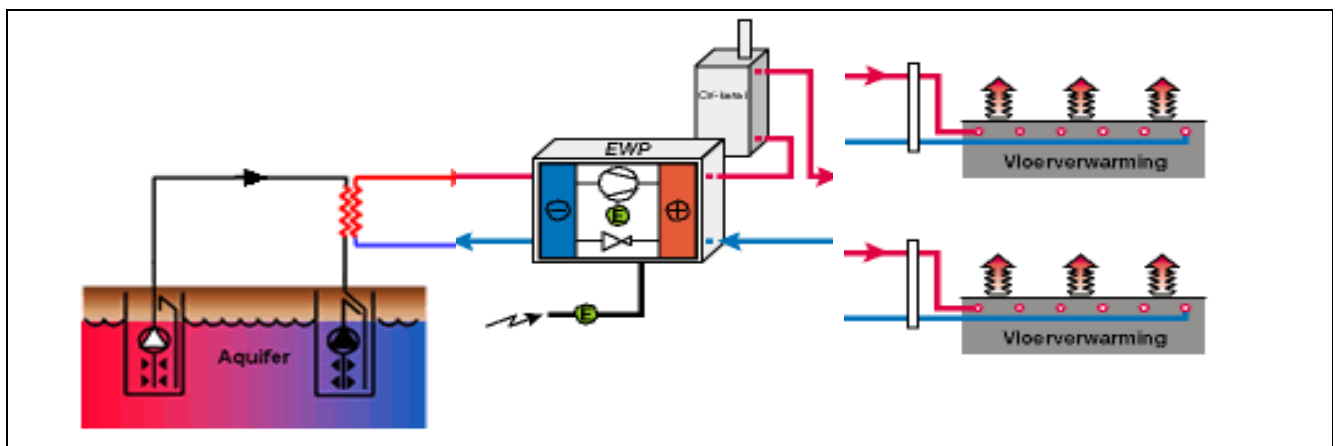
Variant 2 a: Geothermal heat pump (heat-infrastructure)

- Collective groundwater source
- Individual heat pump per residence for domestic heating, hot water and cooling



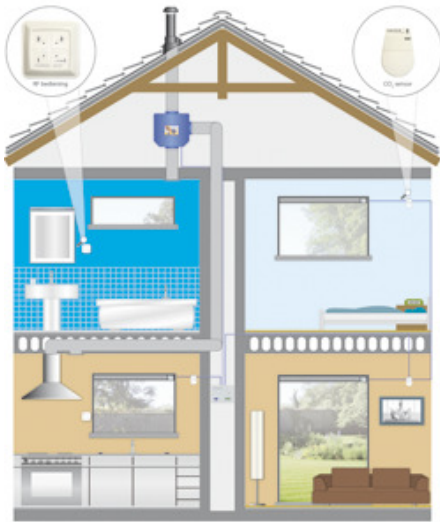
Variant 2 b: Geothermal heat pump (heat-infrastructure)

- Collective geothermal heat pump
- Heating and cooling infrastructure



Variant 3 and 4: Demand-controlled natural ventilation + possible PV

- Variants 3 a&b: 2 a&b + Demand-driven natural ventilation (CO₂-concentration)
- Variants 4 a&b: 3 a&b + Solar panels for renewable electricity



Reference projects to compare with:

- Efficient natural-gas fired condensing boiler for domestic heating and hot water
- Efficient natural ventilation
- Low-temperature underfloor heating
- Good thermal insulation

Provisional results

- Proposed measures enable significant reduction of primary energy consumption, compared to present standard building methods.
- Insulation and reduction of energy demand are necessary.
- Collective energy systems seem attractive, from environmental as well as economic perspectives.
- Collective geothermal heat pump seems attractive, but contamination of soil is a potential threat. Synergy with soil remediation might be attractive, this option is being explored.





Energy commitment

The municipality Breda and housing association WonenBregburg and neighbourhood council "Heuvelbelang" have signed an energy covenant – committing to reach 45% CO2 reduction in retrofitting/refurbishment operations before 2015.

The process of energy and urban planning is relatively new for restructuring areas in The Netherlands – most of the experiences are in new urban plans.

ENPIRE project has a considerable replication potential in 27.000 dwellings of WonenBregburg as example for other social housing companies in Breda.

WonenBregburg can utilize the sustainable energy building processes to develop a new and better rent contract combined with a contract for heat/cooling and warmwater supply – so that investments in installations will be paid back on long term – and so that housing association as well as tenants pays for the improvement and sustainable energy system / CO2 reduction.

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