



**Building with the sun.**  
50 solar energy housing estates in  
North Rhine-Westphalia



- completed
- under construction
- planning stage



- \* Köln-Bilderstöckchen
- \* Köln-Bocklemünd
- \* Köln-Deutz
- \* Köln-Mülheim
- \* Köln-Nippes
- \* Köln-Ossendorf
- \* Köln-Riehl
- \* Köln-Zollstock
- \* Köln-Niehl
- \* Köln-Friedrich-Karl-Höfe
- \* Köln-Wahn



## The project:

The project „50 solar energy housing estates in North Rhine-Westphalia“ aims at combining energy efficiency and the use of renewable energies in housing construction. The solar-powered estates show on the level of housing estates the possibilities of active and passive solar energy use and thus give support to the broad-based introduction of solar-based and energy-saving building.

Energy requirements for building in solar housing estates:

### 1. Passive or three-litre house:

Annual heating demand 15 kWh/m<sup>2</sup>a max. (passive house) and 35 kWh/m<sup>2</sup>a (3-litre house) respectively

### 2. Hot service water treatment:

Thermal solar installation with coverage of at least 60 %

### 3. Power generation:

Photovoltaic installation with at least 1 kWp per dwelling unit.

Of these three requirements at least two must be fulfilled in the construction of new housing.

In the case of stock renewal use of an active solar system (requirement 2 or 3) is sufficient combined with an improvement in heat insulation.

Furthermore, for solar housing estates a limitation of CO<sub>2</sub> emissions from heating, hot water and domestic power was fixed at a maximum of 33 kg CO<sub>2</sub>/m<sup>2</sup>a for new buildings and 40 kg CO<sub>2</sub>/m<sup>2</sup>a for refurbished buildings.

### Current situation:

27 housing estates with more than 2,500 dwellings have already been erected as solar estates consisting of new buildings and existing stock. A further 26 projects are currently under construction or are at the planning stage.

**Example: new building sector**  
**Düsseldorf-Medienhafen**

Residential and office building with solar thermal system

- new building with 101 dwellings, 1 office building, 2 shops
- heating demand: 20 kWh/m<sup>2</sup>a, ventilation with heat recovery, district heating from power-heat co-generation
- hot water obtained 60% using thermal solar installation (260 m<sup>2</sup>)
- 3 kW<sub>p</sub> facade-integrated PV system
- cooling (commercial areas) using geothermal probe
- housing association: Rheinwohnungsbau GmbH, Düsseldorf



**Example: redevelopment of existing stock**  
**Schwerte, Märkische Straße**

Refurbishment measures with biomass heating and solar thermal system

- 5 multi-family houses from the 1960s
- previously 90 dwelling units, after refurbishment with attic conversion 95 dwelling units
- hot water obtained 60% using solar thermal collectors (5 installations, total 280 m<sup>2</sup>)
- CO<sub>2</sub> savings: 90% or 380 t/a
- housing association: GWG Schwerte eG



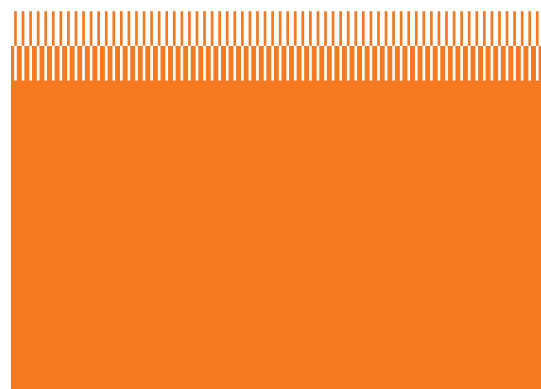
**Imprint**

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