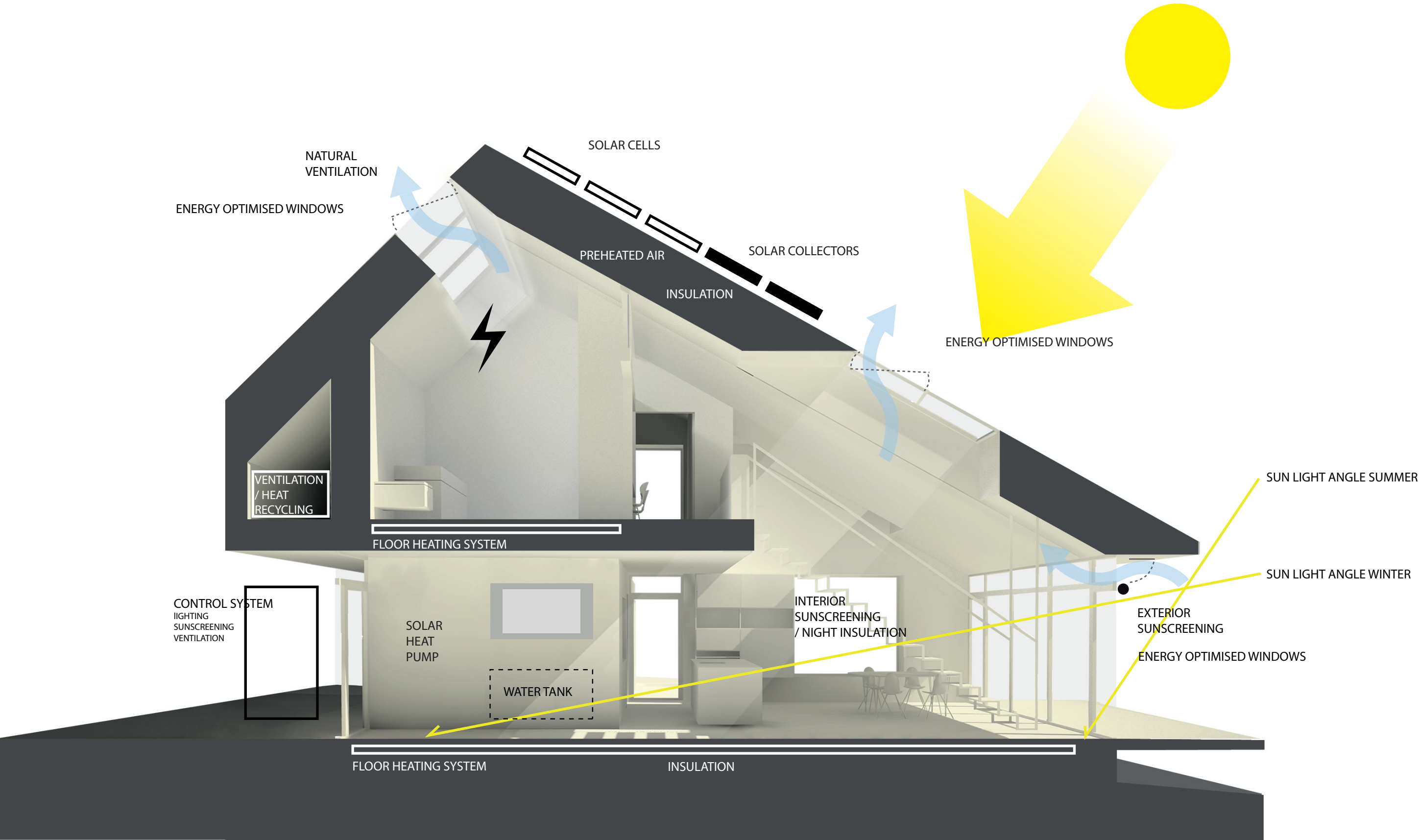


# ENERGY CONCEPT



## Elements of Active House – here from the demo house project “Home for Life”

<b>Solar collectors</b>	<p>Area: 6.7 m<sup>2</sup>.</p> <p>The solar collectors cover 50-60% of the annual cost of heating utility water while boosting room heating via the solar heating pump.</p> <p>Energy production for heated utility water: 2,100 kWh/annum.</p> <p>Energy production for home heat (solar heating pump): 4,200 kWh/annum.</p> <p>Supplied by SONNENKRAFT.</p>
<b>Solar heating pump</b>	<p>High-efficiency solar heat pump which utilises the energy from the solar collectors even when the weather is cold and overcast and supplies hot water to the floor heating system.</p> <p>Energy production: 4,200 kWh/annum.</p> <p>Supplied by SONNENKRAFT.</p>
<b>Floor heating system</b>	<p>Floor heating provides comfort and the system is supplied with hot water from the solar heating pump which offers high output efficiency even when the weather is cold and overcast. Covers the remaining home heating requirement not covered by the passive solar heat gain from the energy-optimised windows.</p>
<b>Hot water tank</b>	<p>Stores the water heated by the solar collectors and solar heating pumps and supplies it for washing, bathing and underfloor heating.</p> <p>Supplied by SONNENKRAFT.</p>
<b>Solar cells</b>	<p>Area: 50 m<sup>2</sup></p> <p>A solar cell system (polycrystalline solar cells) generates electricity for installations, household and lighting – a total of 5,500 kWh/annum. Of this, the family uses only 2,700 kWh/annum.</p>
<b>Indoor climate control</b>	<p>A centralised system controls the house in such a way that electricity and heating consumption are kept to a minimum. The system controls the natural and mechanical ventilation and the interior and exterior sunscreening, and ensures that the light is switched off when a room is vacated.</p> <p>Control of natural ventilation is by io-homecontrol® and WindowMaster solutions.</p>
<b>Roof windows</b>	<p>Energy-optimised windows with a 3-layer super low-energy pane with a U-value of just 1.0 W/m<sup>2</sup> K.</p> <p>The window area in the house covers a total 40% of the area (as against the normal 20-25%).</p> <p>Linings reduce linear thermal transmittance and allow daylight to penetrate deep into the interior.</p> <p>The windows are also used for natural ventilation.</p> <p>Supplied by VELUX.</p>
<b>Vertical windows</b>	<p>Energy-optimised windows with slender profiles and 3-layer, super low-energy pane with a U value of just 0.9 W/m<sup>2</sup> K.</p> <p>The window area in the house covers a total of 40% of the area (as against the normal 20-25%).</p> <p>The windows also employ natural ventilation.</p> <p>Linings reduce linear thermal transmittance and allow daylight to penetrate deep into the interior.</p> <p>Supplied by VELFAC (VELFAC HELO®).</p>
<b>Solar radiation, summer</b>	<p>The large eaves shield against hot summer sun and reduce the</p>

	need for air conditioning.
<b>Solar radiation, winter</b>	Approx. 50% of the room heating requirement is covered by the passive solar heat gain from the energy-optimised windows.
<b>Natural Ventilation</b>	The natural ventilation system provides fresh air for the home throughout the summer and is controlled by sensors so ventilation is optimised. The natural ventilation is in place of a mechanical ventilation system and therefore provides energy savings. Control of natural ventilation is io-homecontrol® and WindowMaster solutions.
<b>Mechanical ventilation with heat recovery</b>	In winter, fresh air is supplied by an on-demand system which recycles heat from the exhaust air. Low-speed venting into the interior to avoid draughts.
<b>Insulation</b>	Wall insulation is optimised, and cold bridges kept to a minimum. U-value of exterior walls: 0.1 W/m <sup>2</sup> K (395 mm insulation) U-value of roof: 0.07 W/m <sup>2</sup> K (540 mm insulation) U-value of exterior walls: 0.07 W/ m <sup>2</sup> K (500 mm insulation)
<b>Interior sunscreening</b>	Interior suncreening provides night insulation and enhances the window's heat-transmitting properties, while providing privacy.
<b>Exterior suncreening</b>	The exterior suncreening is part of the active facade which automatically controls the amount of light and heat transmitted through the windows. Exterior suncreening prevents passive solar heat gain from the window causing overheating in the living space.
<b>Geometry</b>	The architecture of the house is based on a traditional 1½-storey house with a saddle roof, with an off-centre roof ridge to make room for a large south-facing roof surface for maximum energy generation.