

CASE 2

Skawen Residential with in combination of Geothermal energy and House HP

Enhanced Skawen Residential System Overview

The Skawen Residential system operates on a principle of self-sufficiency, functioning within a building without requiring external energy inputs for its core warm water supply operations (excluding the use of R290 refrigerant). This system is engineered to deliver a baseline of warm water, ranging between 8 and 12 degrees Celsius, directly to the basement level of the building.

Within the basement, this pre-warmed water from the Skawen Residential system undergoes a crucial blending process with geothermal energy, which is typically sourced at a colder temperature range of 0 to 3 degrees Celsius. This strategic mixing of water sources results in a combined water temperature of approximately 5 to 6 degrees Celsius, which is then optimally prepared for use by the central heat pump system. The pre-warming of water through the Skawen Residential system significantly alleviates the workload of the central heat pump, thereby substantially increasing its overall efficiency.

In warmer seasons, specifically during the summer and transitional periods when heating demand is low, the system intelligently prioritizes exhaust air heat recovery as the primary energy source. This adaptive approach prevents the excessive cooling of the geothermal soil, which could negatively impact the system's efficiency in colder months.

Further, during the summer period when the central heat pump is effectively dormant, the system redirects the energy harvested from the exhaust air. This redirected heat is utilized to warm the surrounding ground, effectively charging and preparing the geothermal soil for the subsequent winter heating season. This proactive management of ground temperature ensures that the system operates at peak efficiency when heating demands are highest.

