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Snug and Tight Passive houses are airtight buildings oriented to maximize winter sun and little or no extra energy for heating, houses have yet to make inroads in the same strain and same strains.	l use a heat exchanger to even in very cold climate	o warm outside air t es. While they are ir	hat circulates thr	oughout. The res	hey have thick sult is a house	that needs
At the Heart, A Heat Exchanger The most important element in keeping a passive house warm is the heat exchanger, which uses heat from inside air to warm fresh air from outside. Stale air is constantly being replaced with fresh air; about one-third of the house's air is replaced every hour.	EXHAUST AIR		ROOF INSULATION 16 INC	HES		Warming The Water, Too Many passive houses have simple solar panels on the roof or side to heat water.
HEAT EXCHANGER Fresh air from outside Stale air from inside Fresh air into rooms	BATHROO		BEDROOM		Winter sun	Summer sun Minding the Sun
Intake flow The heat exchanger contains a slowly rotating wheel made of a porous material. As outgoing air passes through it, heat and moisture are transferred to		bedro living and b it is co	air flows from the oms and the room into kitchen athrooms, where ollected and sent rough the heat anger.			By orienting the house properly and incorporating overhangs into the design, the winter sun helps warm the house and the hot summer sun stays out, keeping it cooler.
the incoming air, which also passes through it. Keeping the Heat In Exterior walls are two or three times thicker than those in a		ARRIER	LIVING ROOM			Floor A concrete slab rests on a six-inch layer of polystyrene insulation that also wraps around the slab's edges, where the floor meets the walls.
conventional house and are well insulated, with the amount of insulation varying by climate. A double-wall system is used, with a continuous air barrier between the two walls. Walls and studs are designed to minimize heat conductance. PASSIVE HOUSE WALL, 12-INCH TOTAL INSULATION			For comparison: a conventional house wall 6-INCH INSULATION	TRIPLE GLAZING, COATED GLASS		Windows Casement windows are usually used because they close tighter than other types. Coated glass helps reflect heat back inside the house in winter and keeps some heat out in summer.
Sources: Passive House Institute U.S.; UltimateAir						The New York Times