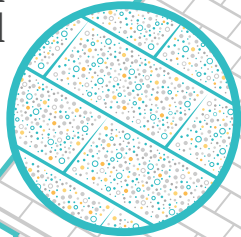


Envelope Advances

Improving a building's efficiency can usually be accomplished with simple methods like caulking, sealants and insulation. But the movement toward ultra-efficient homes and businesses has brought amazing innovations to the building envelope—walls, windows, roof and foundation—that minimize the energy it takes to keep the inside space conditioned and comfortable. Here are some of the latest advances in this growing field.

Cooling roof material

Highly reflective granules reduce solar heat entering the building



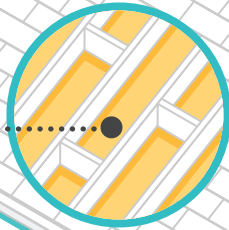
Metal roofing

Effective at reflecting heat away from the building



Radiant barrier

Foil-lined foam insulation board covering interior side of the roof



Conditioned attic space

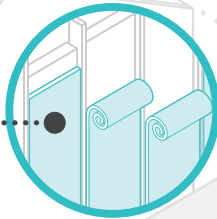
Attic insulation

High-R fiberglass batting reduces heat/cold loss



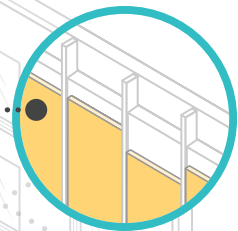
Aerogels

Thin, porous material; flexible and extremely efficient insulator



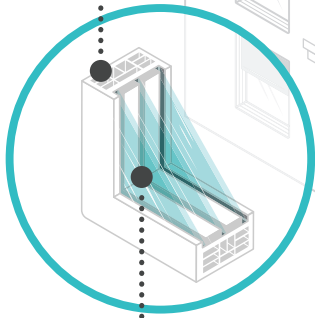
Vacuum insulation panels

Thin, porous sheet wrapped in aluminum to reduce heat transfer



High-performance window frames

Vinyl or fiberglass frames with multiple insulation-filled cavities



Automated window shades

Exterior or internal blinds that adjust automatically to block sunlight in summer and admit it in winter



Insulated glass door

Durable fiberglass door with foam insulation and treated, multiple-paned window



Highly insulated glass

Multiple panes with transparent, insulative inserts like aerogels or inert gas

Conditioned living space

Reflective glass

Low-emissivity coatings to control heat transfer

