



What Makes a Home Comfortable

Everyone has their own ideas of what makes a home comfortable. For some, it's a place furnished to their liking with plush chairs and wall-to-wall carpeting. For others, a comfortable home is a quiet home—one that shuts out traffic and city sounds and keeps indoor noise at a gentle hum. Although preferences vary for how a home should look and feel to be comfortable, we all agree on thermal comfort—nobody wants a home that's excessively hot or cold. Thermal comfort is achieved when the indoor conditions of a home are just the right temperature for all occupants.

To create a comfortable environment for homeowners, builders need to focus their attention on the HVAC system, insulation, and air sealing. The HVAC system conditions and circulates the air, while insulation and air sealing reduce heat transfer through the building envelope.

HVAC

One crucial aspect of creating a comfortable home is to properly size the HVAC system, particularly the cooling equipment. If the air conditioner is sized properly for the home, it will run for longer intervals, helping to mix the air and maintain a more uniform temperature; it will also remove moisture from the air, making occupants feel cooler. Alternatively, an oversized air conditioner will run for short, vigorous cycles, creating spikes in temperature. Also, it won't run long enough to remove moisture from the air, so homeowners will feel hotter, because the air is more humid. An oversized system wastes energy instead of providing more cooling.

Good duct design also contributes to thermal comfort. If a home has well-designed ductwork and registers, the right amount of conditioned air will circulate in the home without creating drafts or temperature swings. Also, sealing ducts with mastic helps keep the air inside the ducts at a consistent temperature.

Insulation and air sealing

Because the air inside a home is usually cooled or heated, the indoor temperature rarely matches the outdoor temperature. When temperature differences exist, heat always moves from warmer to cooler areas. On a winter day, heat will escape outside; on a summer day when the air conditioning is running, heat will move indoors. Insulation is the solution to this issue, helping to slow heat transfer between the home and the outdoors in order to maintain a comfortable indoor temperature.

Just as important as insulation, air sealing lends to thermal comfort by preventing air from leaking through cracks, gaps, and porous materials in the home. If a home doesn't have adequate insulation and air sealing, the HVAC system is forced to work harder to replace the heat that leaks through the building envelope. Improving the insulation and air sealing also reduces the amount of air each room needs, allowing HVAC contractors to run fewer, smaller ducts to each room.

Thermal Comfort

When you build a home with efficient HVAC sizing, properly installed insulation, and an airtight seal, you create a thermally comfortable home. To reap the full benefits of thermal comfort, as well as energy efficiency, it's important to verify that HVAC equipment and insulation are installed properly and that air sealing is adequate. Insulation shouldn't have gaps or compressions but should fill cavities completely. The duct system should be tested for air leakage. An airtight home minimizes temperature fluctuations and keeps homeowners from having to constantly adjust their thermostats to find their comfort zone.

To learn more about what makes a home comfortable, visit:
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