



**Lockwell HVAC**

*Honest HVAC work for the houses we live in.*

FIELD GUIDE · BIRMINGHAM, ALABAMA

# Why You Need Variable-Speed: A Homeowner's Guide

*The honest case for variable-speed HVAC — what it costs more, what it does better, and when it's actually worth the upcharge.*

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**Who this is for:** Homeowners shopping for new HVAC equipment in north Birmingham, especially 2,500+ sq ft homes, multi-story homes, or anyone with humidity complaints on existing equipment.

**What's inside:** How variable-speed differs from single and two-stage, what humidity control actually feels like, real ROI math for Birmingham, when it's a bad fit, and the 4 things that should appear on a variable-speed estimate.

**Service area:** Birmingham, AL metro — Gardendale, Fultondale, Center Point, Irondale, Bessemer, Hueytown, Pleasant Grove, Helena



# Why You Need Variable-Speed: A Homeowner's Guide

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## How HVAC Equipment Talks Differently

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Three speed types you'll see on quotes:

- Single-stage — full output or off. 100% or 0%. Loud at startup. Cycles a lot. Cheapest
- Two-stage — 65% most of the time, 100% on extreme days. Quieter. Better humidity. Mid-priced
- Variable-speed (inverter) — anywhere from 25% to 100%. Continuously adjustable. Quietest. Best humidity control. Most expensive

## What Variable-Speed Actually Feels Like

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The difference is real and noticeable:

- Constant low-volume airflow instead of blast-then-quiet cycles
- 50-65% humidity becomes 45-50% — air feels lighter, cooler, less sticky at the same thermostat setting
- Bedroom temperatures stay within 1-2 degrees of set point all night (single-stage swings 3-5 degrees as it cycles)
- Outdoor unit noise drops from ~70 dB to ~55 dB at low speed — barely audible from inside
- Conversation-volume operation indoors

## Humidity Control — The Hidden Win

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In Birmingham, humidity is half the comfort battle. Variable-speed wins because it runs LONGER at LOWER capacity. Long runtime + cool coil = more humidity pulled out. Same cooling, drier air. This is why a 73°F variable-speed room feels cooler than a 70°F single-stage room.

## The Energy Math

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Variable-speed runs at low capacity 70-80% of the time. Power draw at 25% capacity is ~10% of full draw, not 25%. That's where the efficiency gains come from:

- Typical 18 SEER variable-speed runs at effective 22-24 SEER under partial loads
- In Birmingham's 1,800-2,200 cooling hours, that's 20-30% lower summer kWh than 16 SEER single-stage
- Annual savings: \$400-\$700 on \$200/month average summer bills
- 8-12 year payback on the upcharge — within equipment lifetime

## When Variable-Speed Is Worth It

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- Home is 2,500 sq ft or larger
- Multi-story (humidity stratification is worse on single-stage)
- Current AC has noticeable humidity problems
- Anyone in the home is humidity-sensitive (allergies, asthma)
- You plan to stay 8+ years (let the energy savings pay back)
- Sleep quality matters to you (the temperature stability is real)

## When Variable-Speed Is a Bad Fit

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- Home under 1,500 sq ft — overkill, payback weak
- Plan to sell within 3-5 years — energy savings won't fully realize
- Existing ductwork is undersized — variable-speed needs proper duct static pressure to work right
- Budget tight — two-stage at the right SEER tier gets you 80% of the benefit at half the upcharge

## What Should Appear on a Variable-Speed Estimate

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- Inverter (variable-speed) compressor — confirmed in writing with model number
- ECM (electronically commutated motor) variable-speed indoor blower
- Matched AHRI certificate — variable systems are sold as paired indoor/outdoor; mismatching kills the warranty AND the efficiency rating
- Communicating thermostat — Carrier Infinity, Trane ComfortLink, Lennox iComfort, or equivalent (older non-communicating thermostats don't fully drive variable-speed)

## The Honest Bottom Line

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Variable-speed is the right call for most homes over 2,000 sq ft in Birmingham. It's overkill for small, single-zone, low-humidity homes. The deciding factor is usually comfort sensitivity — if you notice when your current AC short-cycles or when the bedroom is sticky, you'll love variable-speed. If you barely think about your AC, save the money.

# About Lockwell HVAC

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Birmingham, AL metro — Gardendale, Fultondale, Center Point, Irondale, Bessemer, Hueytown, Pleasant Grove, Helena

This guide was written by working HVAC techs, not marketing teams. Direct, honest, practical. Real Alabama numbers, real local context, no guarantees we can't back up.

If something in here saved you a service call — or saved you from a bad one — share it with a neighbor. That's the whole point.

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## **Lockwell HVAC**

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*Licensed Alabama HVAC contractor. Written estimates. No surprise bills.*