

# main vrs tools

## Excel at Advanced Diagnostics

We take a fresh look at the classic struggle of man versus machine, or “auditor versus diagnostic tool”.

The tests you perform may not return the results you expect. We'll address common pitfalls in analysis and planning that can happen even when you're working with good data.

We'll help you achieve reliable and repeatable results in your measurement and analysis. It will help you improve your diagnostic audits by balancing the use of tools with an informed process that you adapt to each situation.

### Why We Test

Every diagnostic test requires a different approach depending on what you'll do with the information.

#### Perform a Diagnosis

Identify components, confirm condition, and make broad recommendations to improve building performance and occupant safety. Analyze known problems.

#### Develop a Scope

Test and analyze the home with sufficient detail to create a scope of work. Identify relationships among the home's components, and anticipate the effect of proposed work. Create line of communication with crews.

#### Perform Quality Control

Perform test-in procedure to set a baseline for the home or system. Determine if work performed is complete and effective. Perform test-out procedure or end-of-job analysis. Perform programmatic oversight.

### Take an Intelligent Approach

We've observed a mindset that's common to experienced practitioners. It's a combination of education, experience, and situational awareness.

#### Use Both Basic Science AND Applied Science

Learn about the principles of science, but don't ever forget about the limitations of your tools or the variability of the work environment.

#### Remember That the House is a System

Analyze each separate part of the home as needed, but keep a broad view of the home, considering how the home's components are linked to one another.

#### Synthesize the Information

Keep all your observations in play until the very end of the process. Don't discard data just because you cannot find an immediate need for it.

### Watch For These Common Pitfalls

We've seen that when the process of analysis goes wrong, it can often be attributed to a few categories of problems.

#### Perceiving the House Incorrectly

Example: You did not fully understand the impact of intermediate zones such as porches.

#### Not Accounting for Interference

Example: You did not expect that kids would play with windows, or that pets would come and go through pet doors.

### **Making Assumptions about Hidden Components**

Example: You tested airflow at a grille that's not connected to the duct. Or you checked the draft of a chimney that vents into the plumbing system.

### **Performing Tests under Different Conditions**

Example: You included a porch in the test-in process, but not in the test out.

### **Choosing the Wrong Test**

Example: You spend time testing ducts which are completely indoors, and which you could never get access to for sealing.

### **Choosing the Wrong Setting or Set-Up**

Example: You don't configure the manometer correctly to reflect the blower door set-up. Or you zero your CO monitor in a garage that's full of CO.

### **Doing Tests Out of Order, or at the Wrong Time**

Example: You do a winter blower door test that causes chimney back-drafting, thus cooling the chimney and causing it to fail a subsequent draft test. Or you IR-scan a wall in the morning shade, then re-scan it in the afternoon sun.

### **Taking Too Much Data**

Example: You waste time or get confused by doing a complete audit on each and every unit in a row house. Or you perform extensive combustion analysis on a water heater you plan to replace.

### **Doing Things the Hard Way**

Example: You make a time-consuming plywood blower-door adapter for an arched door, when you could have installed the blower door in a window.

### **Taking Too Little Data**

Example: You go back to the office to discuss a moisture problem in the crawl space before you look carefully to see if there are any plumbing leaks.

### **Relying Only on Data**

Example: You install a large exhaust fan in an apartment with shared walls. But you don't consider whether the negative pressure sucks smoke and odors through the common wall. Or you call for attic insulation without inspecting the ceiling for structural integrity.



**Technicians love to get out all their tools and start testing. But we've found blind belief in testing should never take the place of using your senses and exercising your intelligence.**

We believe that you can improve your technical analysis, and improve your situational awareness on the job, by recognizing these pitfalls and others like them.

