



Technical Bulletin

QIV for 2011: *EnergyMeasure™ HVAC*

Complete Analysis for Better AC Service

The COOL SMART program has introduced the most complete AC analysis tool on the market, *EnergyMeasure™ HVAC*, to perform QIV testing in 2011 and beyond.

With *EnergyMeasure™ HVAC*, QIV is not just refrigerant charge and airflow anymore. It is a complete **Quality Installation Verification** procedure.

Six top benefits to contractors and their customers:

- 1) Bad metering devices are being identified
- 2) System restrictions are also identified
- 3) Low Airflow is calculated without measurement tools
- 4) The actual Cooling Output is provided, identifying Low Cooling Capacity
- 5) Dedicated, experienced, full time Tech Support Mon-Fri 9am-5pm — just a phone call away
- 6) And Charge conditions for TXVs and Fixed Metering Devices are being calculated and reported.

Take the time to read the Technical Bulletin, and consider what would make your techs comfortable and productive.

COOL SMART staff are available to work with technicians and speak at service meetings to get everyone comfortable, productive, and profitable in 2011.

c/o Conservation Services Group (508) 365-3260

 *Clip and save*



Technical Reference

Indoors

Return Air Dry Bulb 65°F+
Return Air Wet Bulb 55°F+

Outdoors

Condenser Entering
Dry Bulb 60°F+

QIV (877) 303-1015 ■ Chris Morin (508) 400-6454



Technical Reference

For TXV

Subcooling +/- 3°F
of OEM Goal

Superheat +/- 7°F
of TXV SH Goal

For Fixed Orifice

Subcooling > 6°F

Superheat +/- 5°F
of SH Goal (From Chart)



Walk this Way *EnergyMeasure™ HVAC*

by Christopher Morin, *HVAC Technical Field Representative*

You may find it helpful to review the recommended testing procedure for the **EnergyMeasure™ HVAC**.

- 1) Greet the customer, and turn their thermostat down so the unit runs for at least (10) minutes.
- 2) Meanwhile, set up your gauges, pipe clamps, and thermometer used to measure the Condensing Entering Ambient.
- 3) Fill in the *EnergyMeasure HVAC™* Data Sheet with Contractor Information (Tech ID), Site Information, and Equipment data.
- 4) After (10) minutes of operation, enter the attic or basement with your clipboard, an approved thermometer used to measure wet-bulb and dry-bulb simultaneously, a cordless drill with a uni-bit, your multimeter, and other necessary hand tools.
- 5) If this is a new installation, or a safe condition on a service call, enter your electrical readings for the Air Handler. This is Ground to L1 and Ground to L2 for Voltage, and total amps for each leg. For 208/230 indoor units only, L1 to L2 volts are acceptable since there should be no difference in amperage readings.
- 6) If the service switch appears old, I recommend taking the measurement after the unit refrigerant charge is adjusted – the readings inside will not change unless you clean a coil or blower wheel. It should be possible to remove the blower compartment door and gently pull a lead out of the cabinet, replace the door loosely, and measure amps. If needed, turn the breaker to the air handler off, remove the service switch, and return power to the unit. If this is completed last, then you do not need to wait another (10) minutes for the system to re-stabilize.
- 7) Enter Return Air Wet/Dry Bulb readings first. This is especially important if using the cotton sock method. Although approved, this method isn't recommended. Consider instead the Testo 605-H2 digital thermometer; the cost is minimal and it can save as much as ten minutes per QIV. Be sure to include the tenths in all temperature measurements (i.e. 98.6F).
- 8) Then, record your Supply Air Wet/Dry Bulb readings. If using the sock method, be sure to wet the sock again!
- 9) Immediately go to the condensing unit for a snapshot of the system operating conditions. Record your Condenser Entering Ambient, Liquid Line Pressure, Suction Line Pressure, Liquid Line Temperature, and Vapor Line Temperature.
- 10) Record your Voltage and Amperage readings for L1 and L2 (separate) using the same method as indoors.
- 11) Now you can properly diagnose the system using the Refrigerant Charge and Airflow Analysis Worksheet.

Need help with the QIV platform?

If you would like to schedule an appointment for us to meet your technicians at a jobsite or a service meeting, contact Chris at: Christopher.Morin@csggrp.com. Also, please provide feedback regarding the QIV platform – your opinion is important to us!

c/o Conservation Services Group (508) 365-3260





Technical Bulletin

Asking the SEER: *Vital Information Pays Off*

by Christopher Morin, *HVAC Technical Field Representative*

The Seasonal Energy Efficiency Ratio (SEER) is a tested efficiency often used to sell equipment to consumers so they can compare “apples to apples.” The AHRI test conditions for SEER are 80°F and 50% RH Indoor / 82°F Outdoor. When using EnergyMeasure™ HVAC for QIV, the properly identified AHRI SEER of the matched system can make the difference in failing or passing capacity.

Avoid self-sabotage

Don't inadvertently sabotage your test results by improperly identifying the SEER of the equipment. For instance:

- 1) A technician identified 16 SEER equipment as 13 SEER, so EnergyMeasure™ HVAC used the compressor map (and default charging goals) for that 13 SEER condenser. Equipment can often be operating as high as 130% of the BTU/hr Capacity Goal. Since COOL SMART allows +/- 20%, this system failed, not because of the installation or commissioning, but because of inaccurate benchmarking information.
- 2) A technician assumed the nominal rating of the condenser (i.e., Allegiance 15) was a 15 SEER, but the AHRI rating for the matched system is only 14 SEER; the equipment (as is typical) failed for low capacity, just outside the passing parameter.

In both cases, I was able to identify the proper SEER on the AHRI website and recalculate the capacity using the correct compressor map and goals. Neither instance required any further testing, so technicians could quickly move on to their next job.

Cool Card recommended

On a COOL SMART rebate-eligible job, the Contractor's office personnel usually know the AHRI Rating and Reference number. This information can be vital to your technicians in the field, in properly benchmarking the installed equipment that needs to pass capacity. I highly recommend asking your distributor for a “Cool Card,” where they will fill in this information for you at time of equipment purchase. Communication with your technicians in the field is the key to ensuring that you do not stumble on this hurdle.

Need help with the new QIV platform?

COOL SMART staff are available to work with technicians and speak at service meetings. Contact Chris at: Christopher.Morin@csggrp.com. Also, please provide EnergyMeasure HVAC™ platform and program feedback — your opinion is important to us!

