# The Comfort Revolution

This book will give the reader some insight into a new method of HVAC contracting coined by National Comfort Institute, Inc. as "Performance-Based Contracting™" or PBC. Written with the challenges of today's contracting industry in mind, the guide outlines the commitment you will need to make to become a Performance Based Contractor. It also focuses on the business aspects and technical information you'll need to help you decide if this form of contracting is right for you.

**Here are some of the topics covered:**

- **What is Performance-Based Contracting?**
- **Why Become A Performance-Based Contractor?**
- **12 Steps to Growing Your Performance-Based Business**
- **What's My Investment?**
- **The Right Training Makes All The Difference**
- **Educational Selling and SER™**
- **Generate Leads With Little or No Competition**
- **How To Compete in a 13 SEER World**

NCI™ National Comfort Institute, Inc.

**$29.95 US**

# The Comfort Revolution

Dominick Guarino

## Secrets of Performance Based Contracting™

# *The Comfort Revolution*

*Secrets of Performance-Based Contracting*

*Dominick S. Guarino*

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# *DEDICATION*

This book is dedicated to the memory of Jeff Forker, former publisher of Contracting Business Magazine and industry leader. Jeff died of cancer in 2004 at the age of 60 leaving a great void in the HVAC industry.

Jeff was my former boss, mentor, and second father. He was also mentor and good friend to hundreds of individuals who have made significant contributions to our industry. I am a richer person for having had the privilege of knowing him and calling him my best friend.

Jeff, I know you're watching over us wherever you are, somewhere over that rainbow. I look forward to seeing you again and standing by your side.

I also want to acknowledge my partner, Rob Falke, who inspired me and thousands of others to pursue truth and knowledge through verification. Without his vision and perseverance the HVAC industry would be a different place today.

For my wife Trish, the love of my life,
and my two wonderful children, Nick & Sarah

# *The Comfort Revolution*

## *Secrets of Performance-Based Contracting*

*Dominick S. Guarino*

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The Comfort Revolution

# Performance-Based Contracting – Join The Comfort Revolution

## PROLOGUE

This book will help you become familiar with a fairly new phenomenon that has been steadily building within the HVAC industry. A few years ago National Comfort Institute coined this approach. "Performance-Based Contracting™."

This guide was created to help you decide if Performance-Based Contracting is for you. It's not meant to be a technical manual on how to diagnose system performance, design HVAC systems, perform combustion testing, or test and balance HVAC systems. These subjects and other Performance-Based disciplines involve a substantial amount of ongoing training and require the application of reports, forms and procedures too detailed for this writing.

The Performance-Based approach didn't happen overnight. It's the result of a buildup towards delivering true system performance that began over 15 years ago. I wrote about the initial stirrings of this shift back in 1992 as chief editor of Contracting Business Magazine in an editorial titled, "The Comfort Revolution."

The editorial challenged the industry's single-minded focus on selling energy efficient equipment that resulted from the energy crisis days of the late 1970s and early 1980s.

The article called for a shift back towards what our industry was all about in the first place: to keep the indoors comfortable year-round. A predecessor to many articles written on the "Return to Comfort," it drew attention to the fact that the industry had been derailed from its focus on comfort, health and safety and became obsessed with "Energy Efficiency." Sadly, the focus was completely on "box" efficiency, namely SEER and AFUE, which only plays a part in true "delivered" efficiency.

Unfortunately the industry's "equipment efficiency" focus continued into the '90s and is still prevalent today. Manufacturers continue to produce higher and higher efficiency boxes, which is what they're expected to do, but most contractors have not stepped up their game to improve comfort systems to make the most of the better equipment.

As manufacturers strive toward higher and higher efficiency ratings, some have kept up the quality of their systems with robust motors and fans that can handle the higher static pressures created by more restrictive "high efficiency" evaporator coils and denser air cleaners and filters.

A number of manufacturers however, skimp on their air moving devices in order to keep perceived energy use down

to maintain their SEER ratings. This has made it virtually impossible for many systems to deliver optimum comfort and energy efficiency.

With 13 SEER as the minimum efficiency standard for air conditioning equipment, there's virtually no differentiation based on deliverable "box" efficiency in the eyes of the consumer. Sales pitches based on Return on Investment (ROI) and payback from higher SEER equipment will quickly go by the wayside as contractors are hard-pressed to justify the extra cost of 14-19 SEER equipment based solely on ROI. Sure, quality and workmanship can be a significant difference between contractors bidding on a job, but everyone claims they do high quality work, don't you?

## *Real Differentiation*

So how can you differentiate yourself in this fast-changing environment that threatens to make differentiation tougher than ever? What's the next frontier?

How can you prove to a customer you are truly different? By providing documented, measured performance information before you get the job and after the work is completed. After all, if you don't measure, you're just guessing!

The process is fairly simple: teach your customers about their systems in simple terms, pointing out real problems, then "prove" your work is superior through documentation.

What's interesting about measuring and delivering system performance is it allows you to truly deliver the best system, optimizing safety, comfort and energy efficiency. There's no need to compromise any of these three components of system performance to achieve one or both of the others.

As you read this book it will become clear to you that your customer can have it all, and so can you, as Performance-Based Contracting can also provide the double-digit net profit margins you deserve and need to stay in business over the long term.

**Golden Nuggets**

Throughout this book you'll find "golden nuggets" identified by a  . Each nugget contains one of several types of valuable extras like a web address where you can download a free form, marketing piece or technical report. Sometimes a nugget will indicate an important piece of information that you should read more than once.

# Prologue

Once you've finished reading this guide to Performance-Based Contracting, put it down and read it again in 24 hours. You'll be amazed at how much new information will reveal itself the second time around.

Good luck and happy mining as you begin the fulfilling and profitable journey into the rich field of Performance-Based Contracting. And remember, if you don't measure, you're just guessing!

# Chapter 1 – What Is Performance-Based Contracting?

Although many aspects of Performance-Based Contracting (PBC) involve changing the very core of how an HVAC contractor does business, the basic premise is: **Deliver Measured Performance in Every Aspect of Your Business.**

If this were all you had to know, this book would end here and you could implement this concept and become tremendously successful. If it were that easy, everyone would be doing it and it would become a commodity in no time.

Fortunately for you, it's not that simple.

Performance-Based Contracting involves a series of significant changes in how you manage and operate your contracting business. Sure, the technical aspects of delivering measured performance are important and critical, but the technical side is just one facet of this approach.

## *The Components of PBC*

Let's break down some of the basic precepts of Performance-Based Contracting so you can understand the culture change needed to effectively transform your organization into a Performance-Based business.

On the technical side, PBC requires in-depth knowledge of true HVAC system performance, from how you field-design your systems, to how you install them and test them out to make sure they safely and efficiently deliver the comfort that you promised. This applies to how you service and maintain your systems as well. To become Performance-Based you have to pull your head out of the box and look at the entire system, from the equipment to the duct system, to the grilles and registers that deliver air into the space.

### *Equipment Performance*

On the equipment side, PBC entails sizing and installing the equipment properly and understanding fan characteristics and the effects of coils and filters on air flow. It means charging the refrigerant side of the system properly **once you have corrected air side problems.** This requires checking and adjusting important readings like superheat and subcooling for optimum equipment performance.

PBC also requires a better understanding of combustion from three aspects: **Safety**, as it relates to the dangers of carbon monoxide; **Efficiency**, as it relates to getting the most BTUs from the burners transferred to the air stream; and **Comfort**, as it relates to maintaining warmer discharge temperatures.

But that's only the beginning. To become Performance-based, you need to understand that the equipment, air handlers, furnaces, and condensing units are **just components** of a system, not the **system** itself.

### *An Automotive Analogy*

Let's compare an HVAC system to an automobile. The equipment (air handler, furnace, condensing unit), is similar to the parts of the engine that powers the vehicle. The transmission can be compared to the duct system and the wheels to the grilles and registers.

Unless you have a properly working transmission, wheels and tires, you won't get the mileage and performance you expect from your car. In fact it may not work at all. The transmission is much like our air distribution system – it delivers the power from the engine to the wheels. The duct system delivers the BTUs from the equipment to the grilles and registers and ultimately into the spaces you want to make comfortable.

As you begin to truly look at system performance in a different light, you'll come to understand that our industry has missed the mark for many years, even decades, as we've been led to believe that equipment alone delivers performance and comfort. We've also been led to believe that if you design a duct system according to industry standards, it will work without testing or adjusting.

Performance-Based Contracting essentially helps you get back to the roots of what your company is in business for in the first place – to deliver optimum indoor comfort, safely and efficiently.

In the next chapters we'll break down each aspect of PBC, and how simple concepts can work together to deliver amazing results.

# Chapter 2 - Why Become Performance Based?

So maybe this concept of Performance-Based Contracting sounds pretty interesting. "But what's in it for me?" should be the next question on your mind. After all, you run a pretty good business, you're making a living, your customers seem pretty happy – at least you're not getting too many complaints. So why change? Why should you make such a radical and possibly disruptive change in your business?

There are many reasons to become Performance-Based, one being that most businesses strive to differentiate themselves from their competition. Let's look at a few reasons to consider PBC.

### *Are You Happy With Your Net Profits?*

According to the Department of Commerce, the average net pre-tax profit for our SIC (Standard Industrial Classification) code, has been hovering around 2% for a number of years - if anything it has fallen in the last decade.

Most business consultants and coaches will tell you that in order to finance your business into the next year you need to reinvest 5% of your revenues into things like vehicles, tools, computers, etc. If your net profit is 2%, where will that 5%

come from? Will you borrow it, putting your company deeper into debt, hoping that eventually you'll get caught up?

Regardless of whether your net profit is 2% or 10%, the work created through Performance-Based Contracting can bring your company-wide net profits well into the double digit range that you deserve and need to stay in business. How? By adding high margin work with virtually no competition for both installation sales and service/maintenance.

We'll get much deeper into how to do this in upcoming chapters, but first let's look at some other reasons to become Performance-Based.

### *Minimum Efficiency Standards Will Further Commoditize Our Industry*

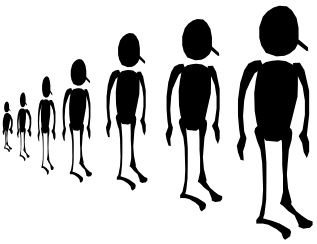
While it may not happen overnight, the new minimum SEER standards will reduce our ability to "sell up" based on ROI (Return on Investment) which the industry has hung its hat on over the past two decades.

When you compare the cost difference between a 13 SEER unit and an 18 SEER unit to the annual energy savings, you'll find very meager results with payback periods of 15 years or more – not exactly enough to get your customers excited about the money they're going to save by buying the more efficient unit.

The kicker is unless the air distribution system is renovated, and the coil is replaced along with the condensing unit, in many cases the new 18 SEER unit may only perform at 9 SEER or less! In some cases your customer will see their utility bills go up, unless the whole system is properly addressed – more on this later...

### *Differentiation*

Most industry advisors stress the importance of differentiation



and how unless you're different enough, the only thing the customer has to compare is price. I completely agree. But that's usually where the agreement ends, as most coaches and consultants will tell you that the way to differentiate is to sell up to higher efficiency boxes and offer all kinds of gizmos and accessories to improve IAQ or cut utility bills.

While there's nothing wrong with providing accessories and selling up, these things should be part of an actual solution,

not just a bunch of add-ons to bring the ticket price up. The same holds true with "warm fuzzies" like wearing booties and laying drop cloths. Here's a news flash: these things are now expected, they don't make you much different than your competitor down the street.

So what can you do to truly differentiate yourself? Let's start with the selling process.

### *Performance-Based Selling*

The Performance-Based sales call barely resembles the traditional sales process. It begins with asking comfort questions when setting up the appointment. It involves using diagnostic tools like air balancing hoods, manometers, artificial smoke puffers and infrared thermometers. Most importantly, it involves educating your potential customer about their home comfort system to the point where they are more knowledgeable than your competition.

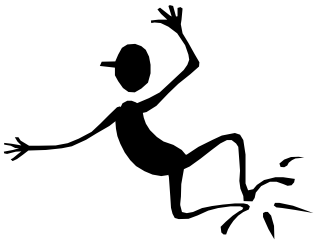
A Performance-Based salesperson rarely resorts to the traditional "closing" techniques that are widely used in our industry; rather he educates his customer through the buying process, making his company and solutions the only logical choice.

People want to make their own decisions based on their knowledge. The Performance-Based selling process provides them that knowledge, backed up with documentation.

Performance-Based Contractors literally dismiss their competition with this approach (unless the competition is also Performance-Based). The beauty of it is not only are you very different from your competitors, you have the measured, documented results to back it up. If a customer says, "well no one else said there was a problem with my ducts," you can show them your reports documenting how their system is working, and ask them if anyone else provided them with a similar report. Usually this puts any doubts about you to rest, and it raises serious doubts about the competence of the other guys.

### *Re-energize Your Employees*

Another benefit of becoming Performance-Based is the growth opportunities for your employees – particularly field personnel.



Most technicians worth their salt strive to stay on top of their game and want to learn the most current diagnostic and repair techniques. Many companies find themselves in a rut. Often there is little spark left. It's the same old, same old, every day.

Performance-Based Contracting can breathe new life into a company. I've seen owners, sales people, technicians and installers come to life with the new culture that gets built in a Performance-Based business. It's not unusual to see 20-30-year industry veterans get excited about their industry again.

### *The Industry Will Eventually Get There – Will You Lead or Follow?*

In recent years there has been a movement by both federal and local governments to crack down on poor installations. Some states like Michigan have passed legislation where a building inspector can demand an air balance report on a residential installation.

Both the Department of Energy (DOE), and the Environmental Protection Agency (EPA) have been stressing equipment efficiency for years, but now that we have a 13 SEER minimum standard they're shifting their focus to the duct system. They've finally figured out that much of the performance and energy is lost through poor distribution systems.

Up until recently these government agencies, along with utilities and "Energy Crusaders" focused on tight ducts alone to make systems more efficient. It took them a number of years to accept what some of us have been telling them all along: **Tight ducts alone don't provide efficient system performance.**

In fact, because there are so many undersized duct systems out there – particularly on the return side, just sealing the ducts can choke down the system. This can compromise performance, comfort and efficiency. Duct sealing alone can even cause safety issues by creating pressure imbalances that can cause flues to spill and produce deadly carbon monoxide.

Tight ducts are only a slice of the system performance pie. It's impossible to assure consumers energy efficency based on sealed ducts alone. Again, there's nothing wrong with sealing ductwork. It's part of any good duct renovation. But before we seal we have to make sure the ducts are big enough to handle the needed airflows.

In 2005, a number of government agencies proposed 3rd party verification of the systems you install. In California, legislation has already passed requiring a third party to test system performance and fix deficiencies any time you replace equipment, a heat exchanger, or add or replace more than 40 linear feet of duct. A battle is brewing over that as this book is being written. Will homeowners accept the government telling them they **have to** spend thousands of dollars just to further a government cause? It will be an interesting time on the West Coast as they attempt to enforce this intrusionary and possibly unconstitutional law. Stay tuned…

### *A Grass Roots Movement*

Parallel to government intervention, and I believe much more powerful, is the growing movement among quality contractors to take their companies to the next level with delivered performance. National Comfort Institute, Inc. has trained and certified nearly 7,000 professionals in nearly 3,000 companies in air diagnostics and balancing. Many have embraced this approach as their new way of doing business. These contractors tested, diagnosed, renovated and verified over 250,000 in 2004 with typical BTU output increases of 27%.

The handwriting is on the wall – look around you when you attend meetings like HVAC Comfortech and association conferences. The movement is towards measured, documented performance. It just makes sense. It's what this industry should have been doing in the first place, but lost its focus with all the attention on equipment alone.

Manufacturers have worked hard to classify you as their "dealer." And who can blame them – they need to sell equipment! They have no control over the rest of the system – that's your baby. Isn't it time we stopped being just "dealers" of equipment and got back to what we're suppose to be in the first place: **HVAC Contractors** and **Service Companies.**

You don't see many builders hanging their hat on the fact that they use Pella windows or Owens Corning insulation. Sure these

are quality names and are important components of a home, but they don't identify themselves to perspective homeowners as being Georgia Pacific lumber "dealers." The point is, while it's important to sell quality equipment, your focus with your customer needs to be on how it's going to perform in their home. Remember customers don't "want" furnaces and air conditioners, they want the comfort these appliances provide, as safely and efficiently as possible.

### *And The List Goes On...*

There are many other benefits to transforming your company into a Performance-Based business. Your thorough and unique approach will generate referral business. You'll also likely get their service business with long-term maintenance agreements. After all who else can they trust their finely tuned high-performance system to?

Bonus – By simply measuring static pressure – it takes about 7 minutes the first time and about 4 minutes when you go back – you can include the duct system in your service agreement. Simply state in your agreement that the duct system will be checked once a year for any restrictions or major leaks.

Once you have the baseline Total External Static Pressure (TESP), you simply check in the same pressure test hole every year for any change. If there is a change, you can discuss it with the homeowner and prescribe additional work like coil cleaning, duct renovation and so forth. For a free Static Pressure Procedure, log on to www.nationalcomfortinstitute.com, click on the HVAC Professionals link and register. You'll then be able to go to our "Free Downloads" area and download this valuable procedure and more.

# Chapter 3 - Twelve Steps To Becoming A Performance-Based Contractor

It's important to understand that anyone can become Performance-Based – it's not an exclusive club designed to keep people out. As the saying goes, the "rising tide raises all ships." The more contractors doing this, the better it is for everyone.

So let's take a look at the steps you'll need to take to grow into a Performance-Based business.

### *Step 1 – Explore The Commitment*

The primary barrier to entering this new realm of contracting is the level of your commitment. The more committed you are, the greater your chances of succeeding. Going to a class one time and learning a little bit about air diagnostics or balancing does not constitute the level of commitment that's necessary to succeed. It's a start, but you must follow through with getting the right training, tools and instruments to efficiently and professionally move up to the next level.

The foundation of PBC is measurement – i*f you don't measure, you're just guessing*. If you think you'll be able to learn some of the buzzwords and skip over the actual core of PBC which is testing, you'll be wasting precious time and money. If this is

your intent, there's no use in reading any further. I would put this book away – or give it to someone else who can benefit from it, and get back to business as usual. I hope you decide to read on and explore if it's a commitment worth making.

### *Step 2 – Keep An Open Mind*

PBC requires being open to the possibility that there may be a better way. Many of us have been doing things the same way for many years. It sort of works. If it ain't broke, don't fix it, right? WRONG.

There's a lot of truth to the saying, "if your mind is not growing, it's probably shrinking." So keep an open mind to the new ideas presented here and to the chance that some of the old ways were never right in the first place.

Many of us grew up in this industry with rules of thumb that have been passed on from tech to tech, father to son, to grandson. Remember the telephone game you played as a child, where you sat in a circle and whispered a phrase into the next person's ear and it would be repeated over and over until the last person spouted out words that didn't even resemble the original sentence? We've been playing the telephone game in our industry for over 50

years now, where perhaps some original rules of thumb were fairly close - others not – up until recently we really didn't have an easy way to check. Many of these rules like "a 6-inch duct can handle 100-120 CFM," don't work today. Perhaps when that rule of thumb was created, it was based on short straight runs of sheet metal with nearly perfect transitions. Is this really the kind of system our industry's been installing over the last 20 years? Not likely.

An important step here is being open to the possibility that not only are your installations not perfect, they may be a lot more screwed up than you think. As we interviewed Performance-Based Contractors across the country, we found this was one of the toughest things to come to grips with. "We thought we did high quality work," says David Richardson of Richardson's Heating & Air in Frankfort, Kentucky. "Our family business goes back 30+ years, and we always felt our systems worked. The first time we measured the performance of one of our systems, our jaws dropped. That was one of the toughest moments in our company's history," recalls Dave.

## If You Don't Measure, You're Just Guessing!

### *Step 3 – Decide If You Need To Change*

The only person that knows whether PBC is right for you is you!

Examine your current business – are you happy with how it's going? Are you moving forward, or are you in a rut? Are you making money, or are you just keeping up with the bills hoping that someday things will be different?

Be honest with yourself. Whether you're a small 2-man shop, or run a $5 million dollar business, are you making enough money to finance the company's growth and put money in the bank for yourself? If your net, pretax profit is less than 10%, there's room for improvement. If it's less than 5% you're basically in a holding pattern, and if it's less than 2% (the industry average – yuck), you're definitely going in the wrong direction.

So how do you pull out of the current rut? By making the decision today to be a different kind of contractor. Sure there are lots of opportunities out there to grow in different directions. You could start a duct cleaning division, or a separate IAQ company, but will that really change the complexion of your business? Unless you can get the prices you deserve and the profits you need for your whole business, often these other things can be huge distractions, draining energy and resources.

There's nothing wrong with organically growing your business with add-on services if your main business is strong and profitable. Unfortunately these add-on products and services often mask the real problems in a system, and hide the bleeding in your core business.

PBC is not an add-on business. Although you could add on new services like independent third party testing and balancing, the premise of Performance-Based Contracting is to change how you're doing the things you already do, and transform your core business both technically and from a profitability standpoint.

### *Step 4 – Start Your Education*

Congratulations! If you've gotten this far you've made a decision to examine PBC a little closer.

Start with getting an education on the air side of HVAC. If you're reading this book, chances are you've already mastered the equipment and refrigerant side – if not – get good training in these areas as well. True performance includes all aspects of the HVAC system and its interaction with the building. Proper design, sizing, installation, airflow, and combustion adjustment, refrigerant charging and so forth are all critical factors in system performance. This book is not meant to cover what goes on inside the equipment (with the exception of combustion), although equipment selection and sizing are critical.

**Recommended Training**

NCI provides a class in air diagnostics and balancing designed for the typical contractor, technician or installer. We keep the concepts simple and back them up with easy to follow forms, reports and procedures. While some colleges offer air balancing courses, you'll find they are typically directed at engineers and provide little guidance in terms of field diagnostics, system renovation and residential balancing. NCI's 2-day certification seminar teaches the basic principles of PBC and weaves the business, sales and marketing approach into the training.

Another key component of PBC is the combustion side of heating equipment. This is yet another area riddled with myths, legends and rules of thumb. Some of these false assumptions have even become part of our building codes, especially combustion air and venting rules. There are three key issues when it comes to combustion appliances – safety, comfort and energy usage. PBC addresses all three.

A number of years ago we recognized the need for reality-based Carbon Monoxide Safety and Combustion training. Today NCI is the world's largest combustion training and certification organization with well over 5,000 certified CO/Combustion

Analysts. NCI's Jim Davis, one of the top authorities on carbon monoxide and combustion, wrote a National CO & Combustion Diagnostics protocol which remains the most comprehensive step-by-step protocol available today. The certification class includes 2 days of classroom training and ½ day of hands on and written certification testing. The class was designed with PBC in mind so it includes much more than just the technical education.

 For detailed curriculum on NCI's training and certification seminars go to:

http://www.nationalcomfortinstitute.com/members/seminars.cfm

### *Step 5 – Get The Right Tools*

Start with getting the right tools to help you first diagnose performance issues, and then test out the system once you've installed and/or fixed it.

This is not the place to cut corners. The right tools can make all the difference in your accuracy, speed and professionalism in front of the customer. Every now and then a contractor asks us if he can make his own flow hood out of cardboard or sheet metal. My reply is **absolutely not!**

**This is critical.** Your tools can make all the difference in terms of consistency in readings. The right instruments automatically do time consuming calculations that make thorough testing feasible. They also make the difference between looking professional and looking like some nutty experimenter. Besides, if you ever had to defend your home-made instruments to an engineer, homeowner, or even a jury, what would you use for a calibration certificate – one or two-ply "comfort" paper?


Don't give in to the temptation to cut corners when it comes to instruments. It's better to invest in one or two high quality instruments than throwing money at a bunch of cheap imitations that will probably end up collecting dust on a shelf somewhere because you don't trust your readings.

In Chapter 6 we'll look at the tools you'll need to get started and what you'll need to add as you grow into a full-fledged Performance-Based Contractor.

### *Step 6 – Practice, Practice, Practice*

Any professional athlete, actor, or entertainer will tell you that what makes them look great out there is how much they practice before they hit the field or get in the spotlight. The same goes with Performance-Based diagnostics – especially on a sales call.

There's nothing more embarrassing than showing up at a customer's home with a shiny new instrument and fumbling around in front of them trying to figure out how to turn it on, let alone use it properly. Talk about performance anxiety…

So start with your own home or shop. Once you've received the training and purchased the right tools, measure your own system's performance. Next test a family member's system or better yet, one of your employees' systems.

Tip: Don't wait too long after the training to begin testing – get out there and test within a week following your training. Borrow the tools if you have to, but start right away. The danger of putting this on a shelf for a month or two or six,

is most people are not able to retain the information that long without putting it into practice. Don't waste your hard earned money and more importantly your precious time, unless you're willing to at least get out there and start testing.

### *Step 7 – Have Someone Watch Your Back*

There's nothing scarier than learning something new and unfamiliar and having to go it alone with no one to fall back on when you hit a snag or something you don't understand. It's kind of like a flight instructor putting you in the pilot's seat of a Cessna right after your first lesson and wishing you good luck as he walks away from the plane. There's bound to be something you'll forget, or something you'll run into for the very first time when you begin testing system performance.

You will make some mistakes, that's just part of what Rob Falke calls "Air Balancing Puberty." But nobody likes to crash and burn. This reality hit us several years ago as we watched some contractors fly solo right from the start while others struggled for years trying to piece together a way to make system diagnostics work in their companies. We realized someone had to be there to support them when they hit bumps in the road.

Today you don't have to go it alone as there is a comprehensive support structure designed specifically for Performance-Based Contractors. In 2002 NCI founded National Comfort Team

(NCT) – a membership organization with more than 300 contractor members in 2005 - and rapidly growing. We plan to have 1,000 members by 2007.


If you're serious about becoming Performance-Based, NCT can cut out a huge part of the learning curve for you.

In addition to unlimited technical support from the NCI staff, you'll have access to literally thousands of pages of technical materials, marketing pieces and ideas, sales materials, internal training lessons, hundreds of articles and tips, a growing knowledge base of frequently asked questions, member forums

where you can seek advice from hundreds of other members, and much, much more. As of this writing there were more than 5,000 pages on NCT's website.

NCT membership can help take the fear and the sting out of going it alone. There are business coaches out there to help with some of the management aspects of the culture change PBC demands, but there is no other place to my knowledge that approaches the specialized support you get from NCT.


Learn more about NCT membership by going to: www.nationalcomfortinstitute.com/members/membership.cfm

### *Step 8 – Progress To The Next Level*

Once you've gotten the basics down and have had a chance to work with some of the tools, forms, procedures, etc., it's time to graduate to the next level of your PBC education.

Since 2002, NCI has been offering an extensive management training event at our headquarters near Cleveland, Ohio. Several times a year, contractors ready to take the next step travel there to attend NCI's week-long **PBC University.**

This intensive event combines both classroom and field training. It covers the technical, business, sales and marketing aspects of building a Performance-Based business. Because classes are limited to small groups of 10 or less, you'll have the opportunity to get help on specific areas you need reinforcement on. For some companies technical issues are a major concern, for others the obstacles are employee and culture related.

Some of the passages in this book refer to specific products and services provided exclusively through NCI. Whenever possible, I will mention other sources, but because so many of the processes and approaches were created by NCI, it's often impossible to offer alternate resources. I hope this doesn't deter you from reading this book as it contains decades of experience, research, testing and development that you'll benefit from regardless of where you get your education and training.

### *Step 9 – Get Everyone on Board*

The next step is to get your employees on board. It starts with getting them trained and certified in air diagnostics, balancing, carbon monoxide analysis and combustion diagnostics. If you have 10 employees or more it might make sense to bring the training onsite with private classes for your company. An

additional benefit of onsite training is the extra time that can be spent in the field before and after the formal training. If you have fewer than 10 employees it might make sense to travel to a regularly scheduled seminar, or get together with another company to bring the training to you. You may need to send employees to class a few at a time. In some cases it means sending them to other cities overnight.

Once your people see you are serious about the change and begin to understand how different PBC is, you'll find your company evolving into something very different. Wayne Borkowski, Alpine Heating & Air in Hanover Park Illinois exclaimed in a boot camp a few years ago, "I can never look at a system the same way again." He added that he could never in good conscience go back to selling boxes the way he used to. Many others feel the same way.

### *Step 10 – Update Your Internal Systems*

Once you've begun to implement PBC at all levels of your company, you'll need to re-evaluate some of your systems to work with the new approach. You may need to change your service procedures, forms, invoices and service agreements to properly reflect the changes and capture important new information about your customers and their systems. You'll also begin to effect changes in your hiring practices, installation methods, compensation methods, and other key cultural elements of your business.

### *Step 11 – Rethink Your Personnel Needs*

As you begin to grow the system renovation side of your Performance-Based company, you'll soon identify the need for specialists within your organization in two areas: Air Diagnostic and Balancing Specialists, and Duct Renovation Specialists. You'll quickly notice with these positions that your materials-to-labor ratio is significantly different than it is on equipment replacement and demand service.

Simply put, most of what you're selling is direct labor with little material to place a markup on. This is one of the reasons you need a more aggressive labor factor. You should price this labor higher so your contribution profit is higher, making up for low material revenues. The other, perhaps more important factor to consider is to make sure you're pricing your remediation work based on what it's worth and your investment in the tools and education, not just a marked-up labor rate.

As you hire and train diagnostic and duct renovation specialists you don't need to pull from the same skilled labor pool of full-fledged service technicians. After all, these specialists won't be dealing with refrigerants, equipment diagnostics and repair, electrical or controls. With the proper training, an individual with good mechanical aptitude and great people skills can be trained to measure system performance, perform final test and balance and/or do duct renovations and repairs.

The beauty of this approach is you have a much larger labor pool to pull from in a tough labor market, and since they have fewer skills and less formal education your hourly labor costs can be significantly lower. Another major benefit of growing your duct renovation business is there's little additional overhead.

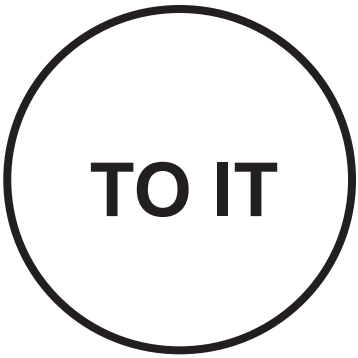
### *Step 12 – Just Do It!*

There is much truth and wisdom to the catchy marketing slogan that a well-known athletic shoe manufacturer is now easily recognized for.

Procrastination is the number one barrier to any major change in a company. It's the number one reason contractors who've looked at PBC never quite implemented it. "We're too busy right now, but when we get around to it, we'll get started." Or just as soon as I fix our _____ (fill in the blank), I'm going to get going on this."

These procrastination statements are just a few of dozens we've heard in putting off getting started. Many of the contractors who put it off year after year with these very excuses later told us they could kick themselves for losing two, three, or more years they'll never get back.


So, for all those folks who said they would start just as soon as they got "a-round to it," here's my gift to you: your very own round "To It."




A journey of a thousand miles begins with the very first step. If you want to reap the benefits of Performance-Based Contracting, you have to take that first step, no matter how small or how big.

The good news is it's much easier and less scary than it was five or ten years ago. Know that many pioneers have walked those steps before you, scraping their knees and pulling arrows out of their backs along the way. While it's no longer the Wild West, the path to PBC is still at best a dirt road. By getting on that path today, you'll be many miles ahead of those who will be driving down its four lane highway in 5, 10 or 20 years.

# Chapter 4 - Your Investment In PBC

Any major change in a company's business model usually requires an associated investment in time, money and resources. Transforming your business with PBC requires all three, but your returns will be fast and plentiful.

There are a number of variables in terms of your investment in PBC including the size of your company, your current mix of service versus replacement, how much new construction you do and so forth. This chapter lays out the typical investment based on a medium size service/replacement company with 10-12 employees. You should be able to adjust the numbers based on your company size and type using this information.

There are three areas that require an investment of time, money and resources:

***1. Training***

***2. Tools and Instruments***

***3. Time***

In this chapter we'll take a look at each investment and examine how each relates to the bigger picture.

### *1 – Training Investment*

The investment you make in training goes well beyond the cost of going to a seminar or bringing in a trainer for an onsite class. You'll also need to consider the time investment; your time, your employees' time, and the cost of what didn't get done while you were in training.

High quality training usually runs between $200-$350 per day per person. Believe it or not, this is not your biggest expense. One of the biggest costs related to training is loss of income for that time invested. I bring this up not to deter you from sending people to training, but to get a realistic picture of your training investment.

Why is this important? Because as a good business person, you should be looking at your return on any training investment, and how long it will take to pay for itself. Sure there are many intangible, often tough to quantify benefits of training, but when comparing one training class to another, you have to be able to evaluate the tangible, quantifiable returns for that investment – the rest is gravy.

The benefit of Performance-Based training is your returns can be immediate and tangible. Rick Rohrbacher, Insight Air, Phoenix, Arizona recently emailed me that he's selling air diagnostics at $295 and setting up duct renovation jobs 2-3 months out, filling in his slower times with high margin

work. He writes, "Since I got the flow hood and began using it as a diagnostic tool, things are exploding for me. I have fixed many problems the other contractors said cannot be fixed and have gained customers for life as a result." Now there's some tangible, quantifiable returns on his investment! Not only is he getting paid well for his time to do the diagnostic, he's essentially getting paid $295 to perform a sales call!

When's the last time a customer called you and asked if he could pay you to give him an estimate? Make no mistake, Rick is providing real value with documented testing and suggested corrective actions. The difference is he's **getting paid for what he knows.**

Typically a company with 10-12 field employees will invest between ten and fifteen thousand dollars a year in Performance-Based training and education. This number includes attending seminars, management training in NCI's Advanced Performance University, and onsite training for field employees.

Training is a never ending process. In addition to attending outside training classes, it's important to set up internal classes on an ongoing basis – preferably weekly. It can be as basic as a half hour Friday morning class reviewing static pressure testing or as involved as a half day in the field with 3-4 techs. The secret is to develop a culture of ongoing improvement through education.

### *2. Your Investment in Tools and Instruments*

A full set of quality diagnostic tools including a flow hood, high quality digital anemometer, manometers, infrared thermometers, etc., will cost about $5,000. There's no way around making this investment. You can start by borrowing or renting some tools to generate cash flow, but you'll soon find it impossible to conduct a performance-based sales call without the right tools.

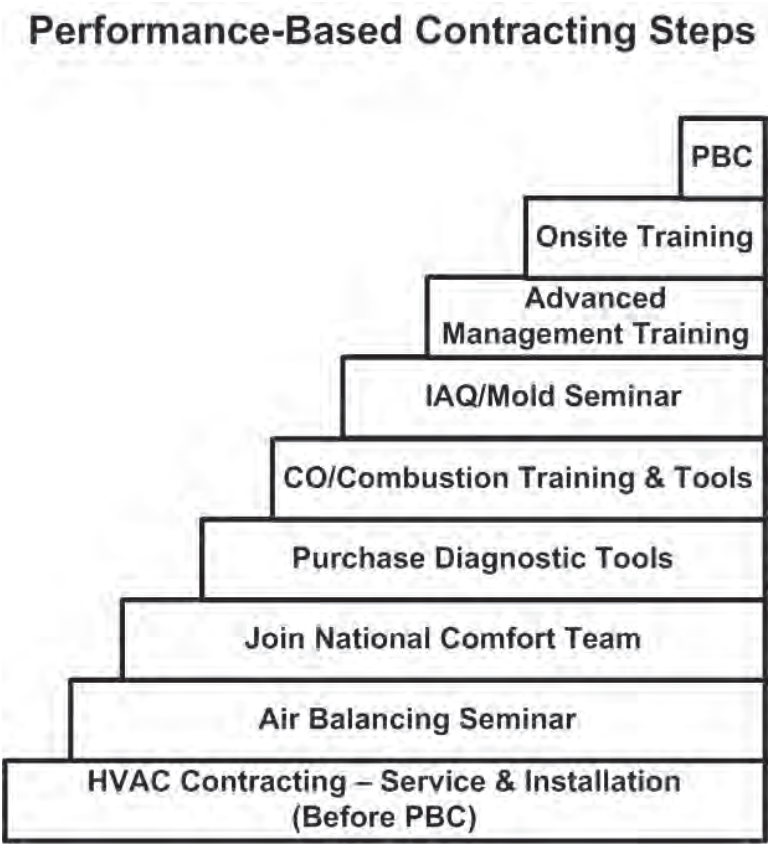
As you begin spreading diagnostics through your company your investment in new tools and instruments will increase, but your payback will be quick.

In Chapter 6 you'll learn about the tools and instruments you'll need, along with typical costs.

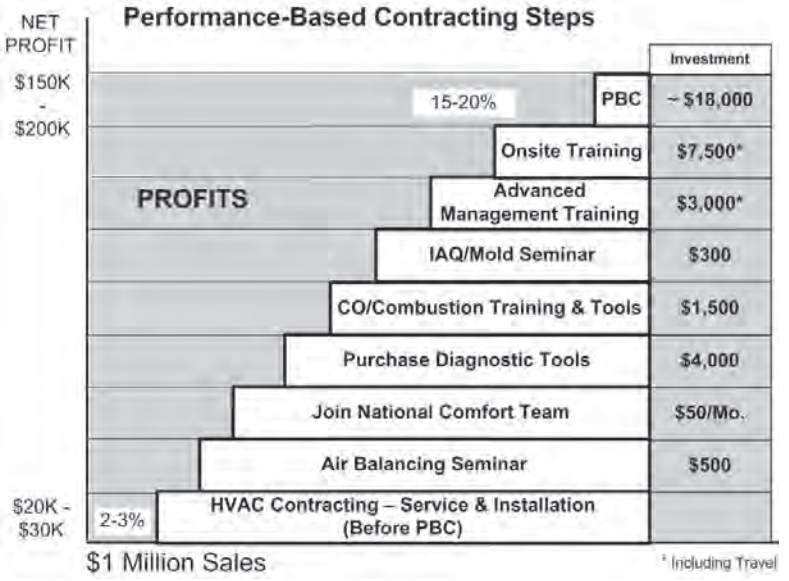
### *3. Investment in Personal and Employee Time*

This is by far the largest investment you'll make in PBC, but it's also the most important and valuable one. Tools can always be purchased, seminars will always be there (at least as long as NCI has anything to do with it), but knowledgeable people are hard to attract and keep, and they're by far your most precious asset. Continuous investment and encouragement to grow their knowledge and skills is vital to your success not only in PBC, but in all aspects of your business.

Below is a diagram that shows the typical steps a contractor takes as he progresses up the path of PBC. Some contractors have been able to take these steps slightly out of sequence, but they're basically moving in the same direction.



This next diagram shows the approximate investment involved in each step of the process and potential increase in net profits as you move up the PBC steps to higher and higher net profits. This example is based on a company doing $1 Million in annual sales.



# Chapter 5 – Getting The Right Training

Training is an ongoing process. Since NCI created the Performance-Based approach it has the most comprehensive training available on both the technical and sales/marketing aspects of PBC as well as the implementation steps.

There are various levels of training. It's always best to use a third party resource when it comes to training in new, unfamiliar areas. It's unfair to expect an employee going to a 2 or 3-day seminar to come back and train everyone else in the company. He or she just won't be able to absorb enough to do it justice. In fact, there's a good chance of creating a new "telephone game" if the information becomes third and fourth-hand. Once a good foundation of basic knowledge is set up, in-house reinforcement training will keep the fire burning and your focus sharp.

### *Educate Yourself First - Leadership*

One of the most important things you can do as an owner or top manager in your company is to attend the training first yourself. This isn't always possible due to time commitments, but it's important that you go through basic air diagnostics and balancing training and CO/Combustion Analysis training as early as possible in the process.

Why? Because you'll do a better job facilitating the implementation of the new approach and understand what needs to happen, in what sequence. More importantly, the fact that you'll recognize the business opportunities with the PBC approach that a technician or installer will likely miss.

As an entrepreneur or manager you'll look at things from a very different perspective. We've had hundreds of owners attend classes six months or a year after they sent a tech to training, wishing they'd paid closer attention to the opportunity. They often tell us that they could kick themselves for not going first or at the same time.

Another good reason to get the training yourself first is to make sure you also hold the certifications. There's nothing worse than marketing yourself as "certified" and having your certified tech leave the company. Now you have to scramble to get the training yourself or send someone else right away.

Look for a seminar that covers more than just the technical aspects of system performance. It can sometimes be very "painful" to go to a technical seminar and listen to an "instructor" drone on for two days! If you're a really technical person who enjoys "book learning," you might be able to stay focused and interested. Most entrepreneurs will get quickly bored and want to cut to the chase of how to make it work and benefit the business.

One of the unique aspects of NCI's training is it weaves technical information with selling techniques, marketing and the business opportunity aspects of the PBC approach. This was done by design because we believe that unless you can make significantly more money doing performance testing and duct renovations, you won't be able to justify the investment in implementing PBC.

### *Train Key Employees*

The next step is to get one or two (or more depending on the size of your company) employees trained and certified so they can get out in the field as soon as possible and get comfortable with the testing and diagnostics.

Your installation manager, service manager and sales person would all be good choices as each brings a different perspective to the picture. If you have all three, sending them to the training together might eliminate the "not invented here" syndrome where one of them is really excited about the opportunity after attending the class, but one or more of the others shoot him down because they don't get it.

### *Advanced Management Training*

Once you've established that you're serious about being Performance-Based and have brought some key employees

on board with the approach, it's a good time to take some advanced training with a strong focus on the business side and on implementation. NCI designed its **Advanced Performance University** for this very purpose.

If you have more than 5-6 employees, you will likely have some resistance to change. People are creatures of habit, and if they've gotten comfortable in their positions, change is hard. The first question that comes to their minds is usually, 'I wonder if this is just another crazy idea the boss came back with from some seminar?" This usually followed by, "It'll probably blow over if I just ride it out..."

By demonstrating your commitment and involving everyone in the company early on, you can put some of those questions and fears to rest. It won't be easy. If it were, there would be a lot more companies out there doing this right now. This hurdle is just one more benefit for those who are serious about PBC. It raises the bar and most of your competition won't be willing to step up to the challenge.

### *Training The Troops*

Once your key people are on board and your implementation plan in place, you're ready to mainstream it in your company.

Depending on how many employees you need to have trained, you can choose to send people to scheduled seminars or bring the training onsite. A good rule of thumb is if you have 6 or more field people, it makes sense to bring the training onsite. With 6 or more field people you can usually include at least 10 people in various parts of the training. It's extremely beneficial to include dispatchers, customer service people, shop employees and other inside personnel in the training. Things go a lot smoother when everyone is on the same page.

If you own or manage a larger company with 20-50 employees you may need to set up more than one onsite training. Our experience is if a class exceeds much more than 20, the training begins to lose its effectiveness.

If you have fewer than 6 field employees it might make more sense to have them attend a scheduled class in your area or send a few at a time even if it means traveling to other cities. Another option is to get together with a few "friendly" competitors and share an onsite class.

The two core disciplines you'll need to train your technical staff on are "Air Diagnostics and Balancing" and "CO/Combustion Analysis." These are the foundations of Performance-Based Contracting. As your knowledge in PBC grows, you'll begin to apply the principles to other disciplines including the refrigerant side of systems, controls, Indoor Air Quality and more.


For a full listing of NCI's classes and certification seminars go to www.nationalcomfortinstitute.com/members/seminars.cfm

## Ongoing Internal Training

While attending a two or three day seminar will put your people far ahead of the curve, few have the ability to retain everything they've learned in such a short time. That's why it's important to establish ongoing internal training to reinforce their knowledge and keep it fresh. Part of this ongoing program should be regular short training sessions on very specific topics.

Weekly training is ideal for reinforcing specific areas like interpreting static pressure readings, design basics, duct installation techniques, understanding friction rates – proper flex duct installation, etc. There are literally hundreds of topics you could cover in 30 minute to 1 hour mini training sessions.

Nearly all the NCI test procedures can be easily adapted as curriculum for these sessions. NCT also offers a number of self-training sessions classes that include a lesson plan and student material.

One of the key premises of training is that it must never stop. It needs to become part of your culture if you are to become a true Performance-Based Contractor. Make sure it's a budgeted, well thought out part of your business plan.

Download a free in-house training session on measuring static pressure by going to:

www.nationalcomfortinstitute.com/members/staticpressurelesson.cfm

# Chapter 6 - The Right Tools For The Job

This chapter will introduce you to most of the specialized tools and instruments used in Performance-Based Testing and Diagnostics. I've included price ranges to help you budget your instrument purchases. Later in the chapter you'll find suggested tool lists for typical positions in a residential/light commercial HVAC company.

The exact tools will vary based on factors that are unique to your company. For example, your needs will vary with whether your technicians perform full diagnostics or just pass on leads from basic testing, or whether your installers start up their own systems.

## *Recommended PBC Diagnostic Tools*

### *Air Flow Hood*

A quality flow hood will cost between $2,000 and $2,500. There are so-called residential or low flow hoods on the market for $1500 or less, but they typically lack repeatability and accuracy. This is the one instrument you shouldn't cut corners on. It will become your go-to instrument and you'll need to trust your readings. Hoods typically come with a 2 ft. X 2 ft. skirt (opening size). Other skirts are usually available in three other sizes:1 ft. X 4 ft., 2 ft. X 4 ft. and

3 ft. X 3 ft. While some hoods offer lots of bells and whistles like data-logging, download capabilities, etc., there's a lot to be said for keeping it simple with a good digital hood that can consistently and quickly measure from 30 to 2,000 CFM on both supply and return grilles.

***Digital Anemometer***

There are numerous digital anemometers on the market from a variety of manufacturers. Prices range from $300 to over $2,000 depending on accuracy, repeatability and features. The tool of choice here is a hot wire anemometer as opposed to a rotating vane model. They stay calibrated longer since there are no moving parts to wear. It's also easier to perform accurate traverses with a hot wire as the measurement is taking place over a smaller area with little or no interference from the instrument. I recommend using a digital multi-meter like the TSI Velocicalc Plus which incorporates a highly accurate anemometer, a digital manometer and an accurate humidity sensor. This instrument can quickly pay for itself by taking hours of work out of traversing ducts and grilles since it does all of the tedious calculations for you at the push of a button.

***Analog or Digital Manometer***

Liquid-filled manometers have been around for literally centuries. These devices are very accurate and stay calibrated virtually forever, but they are cumbersome and can be messy to use. They're still used on commercial work, especially in stationary applications.

Other analog manometers also known as Magnehelic® Gauges have been around for decades. They're very durable, they hold their calibration well, and provide a very direct static pressure reading through a needle gauge. The down side is they need to be perfectly level to get accurate readings – often difficult to do in an attic or crawl space. The 0-1" wc model is ideal for static pressure readings. Expect to pay between $150 and $200 for a good Magnehelic® kit with the accessories you'll need to create test holes and check static pressures at key places in a system.


High quality digital manometers have recently come on the scene. Some are extremely accurate, have multiple pressure ranges and are very durable. Digital gauges do not need leveling – a

plus in tight spaces. A digital manometer kit will run between $150 and $250 depending on what's included. Whatever manometer you buy, make sure you have the right pressure tip, drilling accessories and hole plugs with your gauge at all times.

### ***Artificial Smoke Puffers***

These devices are the ultimate way to make air visible for you and your customers. Puffers range from around $20 each for silica based types, up to $70 each for the better titanium tetrachloride models.

The silica type puffers, while less expensive and less hazardous, do not work nearly as well as their chemical counterpart. They have very little "hang time" in an air stream and leave a white powder residue - not the best thing to leave behind on expensive drapes or carpets…

Titanium Tetrachloride puffers produce a realistic smoke that stays visible and buoyant for a long time making it easier to trace air patterns, find leaks, etc. The downside is the chemical is highly corrosive and toxic and should be used sparingly. Be careful not to place in contact with eyes or breathing in the smoke. Keep them in an airtight container as the corrosive chemical is very harmful to electronic instruments.

### *Infrared Thermometer*

An infrared thermometer is a must-have tool for diagnosing system performance. It can be used for a variety of diagnostics tests including measuring grille temperatures, calculating wall and ceiling R-values, finding missing insulation, identifying thermal bypasses, and more.

The quality of infrared thermometers can vary with prices ranging from $100 to over $500. Prices typically depend on the field of view. Field of views vary from 4:1 to 30:1. The higher the number, the tighter the circle the infrared sensor will focus on. This is very important when you're shooting a grille 18 feet up in the air on a cathedral ceiling. The higher the field of view, the more likely you'll be measuring just the grille surface temperature. Make sure the thermometer has a laser pointer so you can precisely target the spot you're trying to measure.

### *Digital Hygrometer*

A digital hygrometer is very handy for measuring wet bulb temperatures. As you learn to test enthalpy change when calculating CSER™ you'll find accurate wet bulb measurements are critical. Digital hygrometers typically range from $100 to $200.

Some hygrometers lack accuracy and cannot be calibrated. Most NCI tests require wet-bulb readings to be recorded to the nearest tenth of a degree. Testo's Humidity Stick is an accurate and durable instrument that displays temperature, RH and wet-bulb temperature. Air multi-meters like the TSI Velocicalc Plus have built in high quality humidity sensors.

### *Digital Distance Measuring Device*

While you can measure rooms with a tape measure to calculate heating and cooling loads, this device, typically available with a laser target for less than $100, speeds up the process and helps you project a more professional image with your customers. They take practice to get reliable numbers, but allow quick, reliable room measurement.

### *Digital Tachometer*


If you're installing or servicing commercial equipment or belt-driven residential rooftop equipment, a digital non-contact tachometer allows you to accurately measure and adjust fan speed. Digital tachometers can be purchased for $200 to $300.

### *Remote Clamp-on Amp Meter*

When adjusting pulleys to increase airflow on belt driven blowers, it's critical to check amp draw so as not to overload the motor. In order to get accurate airflows and amp draw, this must be done with the blower compartment door on. A one-piece clamp-on meter won't work in this scenario. A clamp with a 3 ft. lead is needed to perform the test. Remote clamps come as plug-ins or standalone units ranging from $100 to $300. Fluke makes several models that will do the job.

### *CO/Combustion Analyzer*

While a carbon monoxide analyzer is a good instrument for CO safety, a high quality combustion analyzer can be used for safety checks, combustion diagnostics and precision burner adjustments. Residential/light commercial combustion analyzers range from $600 to $1,500, depending on quality and accessories. Some of the important features to look for in a combustion analyzer are fast response

to CO level changes and a back light (handy in crawls, attics and dimly lit basements). Other features to look for are data-logging and printing capabilities (to provide date-stamped documentation).

Fast response is critical in performance diagnostics. A built-in draft gauge usually adds $100 or more to the price and is rarely used since in most testing situations draft should be checked with a separate instrument. The TSI 6130 analyzer meets all of the above criteria.

### ***Draft Gauge***

Draft gauges are important instruments for troubleshooting combustion systems. While there are digital gauges available, an inexpensive, extremely durable Dwyer 460 Air Meter does the best job at a cost of less than $40. Every service technician should carry one of these on their truck. Remember, blowing smoke up a flue bonnet does not verify adequate draft or venting.

## ***The Right Tools For Each Field Role***

Depending on their role in the PBC process, each of your field-based people will need a different set of tools and instruments. The following is a breakdown by typical industry title:

### *Salesperson/Comfort Consultant*

Your salesperson (or yourself if you're selling for your company), will need nearly a full set of instruments in order to properly test and diagnose air distribution issues. Here's a list of tools and instruments to take on a diagnostic sales call:

- Manometer kit with pressure tip, drill bit and stop, and hole plugs
- Air Balancing Hood
- Digital Anemometer/Multi-meter
- Digital Hygrometer (If not using a Multi-meter)
- Smoke Puffer
- Infrared Thermometer
- Pocket Thermometers
- Distance Measurement Device
- CO Analyzer or Low-Level Monitor
- Cordless Drill
- Basic Hand Tools

### *Service Technician*

A service tech should carry the following instruments and tools to identify and diagnose performance, comfort, and safety issues:

- Manometer kit with pressure tip, drill bit and stop, and hole plugs
- Digital Hygrometer
- Smoke Puffer
- Infrared Thermometer
- Pocket Thermometer
- Remote Amp Meter Clamp
- Digital Tachometer (light commercial)
- Combustion Analyzer
- Draft Gauge
- Cordless Drill
- Basic Hand Tools

### *Installer*

Depending on whether your installers perform their own startups, they should carry some or all of the following instruments and tools to test their installations:

- Manometer kit with pressure tip, drill bit and stop, and hole plugs

- Smoke Puffer
- Remote Amp Meter Clamp
- Digital Tachometer (light commercial)
- Combustion Analyzer
- Draft Gauge
- Cordless Drill
- Basic Hand Tools

### *Diagnostic/Test and Balance Technician*

Whoever does the final testing and balancing of your residential and light commercial installations should carry the following tools and instruments:

- Manometer kit with pressure tip, drill bit and stop, and hole plugs
- Flow Hood
- Digital Anemometer/Multi-meter
- Digital Hygrometer (If not using a Multi-meter)
- Smoke Puffer
- Infrared Thermometer
- Pocket Thermometer
- Remote Amp Meter Clamp
- Digital Tachometer (light commercial)
- CO Analyzer or Low-Level Monitor
- Cordless Drill
- Basic Hand Tools

The most important tools in each of your employees' arsenals are the forms, reports and procedures to guide them and help them document their work and the final performance results. This is where the rubber meets the road. It's what makes Performance-Based Contractors different from other typical contractors. Documented results are what sets you apart from the box-sellers and parts changers out there. Every one of your field-based people should carry an accordian file with the basic test reports.

The tools and instruments mentioned in this chapter are available from a number of sources. NCI has taken a lot of the guesswork out of buying the right tools that are durable enough for everyday use and will pay for themselves quickly. We make most of these tools available through our website and catalog.

Don't buy any tools or instruments until you've been through the training. Once you truly understand how an instrument will be used, you'll be able to make a more informed buying decision on the best tools for your specific needs. Take it from us, we have a closet full of tools we thought would be great but turned out to be unusable in day-to-day real field testing. Avoid the temptation to buy cheap tools. You'll pay the price over and over in lost time and frustration.

# Chapter 7 - Educational Selling

## *What is Performance-Based Selling?*

Performance-Based Selling, also known as educational selling, is the process of:

- *Interviewing the customer to better understand their comfort concerns, needs and short-term and long-term objectives*

- *Testing and analyzing their system's performance to identify strengths and weaknesses*

- *Prescribing the best solutions to meet the customer's needs and objectives*

If done right, the sale will occur long before a proposal is ever written or presented. A typical Performance-Based sales call can be broken down into 6 essential steps. These steps are not cast in stone, but the basic premises are consistent among most Performance-Based Contractors.

Let's take a look at each of the six basic steps and how they compare to the typical selling process in our industry.

## Six Steps To Performance-Based Selling

### *Step 1 – Customer Interview*

This step is similar to what happens on a typical "sales call." It involves establishing rapport with your customer and learning about their expectations and needs. But that's where the similarities stop.

The Performance-Based interview delves deeper into getting a real picture of what they like and don't like about their comfort system. It involves asking probing questions to help uncover often forgotten comfort issues they've just learned to live with. Maybe they've been told for so long that nothing could be done they've just learned to ignore problems like uneven temperatures, high utility bills, noisy systems, drafts, constant dusting or stuffy rooms.

Our job is to uncover these issues and explain that we now have the knowledge and tools to diagnose and solve these types of issues. It's often a good idea to focus on the one or two most critical concerns rather than overwhelm them with too much.

A comfort survey can help keep the interview on track and hone in on the customer's hot buttons. Remember, if the customer has no "pain" associated with their comfort system, it's hard to make a case for improvements. Your goal is to uncover that pain and offer ways to alleviate it.

The interview also draws attention away from the "box" and further differentiates you from the competition.

### *Step 2 – Evaluate The System*

This step is critical in the educational selling approach. Whenever possible, be sure to involve your customer as you move through the house evaluating their system. Many comfort consultants begin by handing the customer the hood and asking them to help take readings while they write them down. This level of involvement truly begins the process of getting hooked on your company as the go-to contractor.

Next, measure static pressures explaining that these readings are the "blood pressure" of their system. If the system is in the attic or crawl it might be best to take some digital pictures and quickly download them to your laptop.

Depending on the situation, other steps in the process will include more air flow measurements, taking room temperature readings, checking insulation with an infrared thermometer, and performing an SER™ (System Efficiency Rating). This test will depend on whether you're checking in cooling or heating mode, and whether the current equipment is still working.

By measuring system CSER™ (Cooling System Efficiency Rating) or HSER™ (Heating System Efficiency Rating) you can show your customer a one page evaluation of their system's current performance and explain what they can expect if all they do is replace the equipment.

Be sure to read Chapter 9 for a more detailed description of the SER Evaluation Method.

### *Step 3 – Review Existing System's Shortcomings with Your Customer and Prioritize Their Needs*

One of the benefits of measuring real system performance is you can immediately share some of your findings with the customer to help them understand their system's deficiencies.

This step reinforces that you're different from your competition who just quotes high SEER replacement boxes, but doesn't address existing problems. This is a good time to explain how a high SEER box doesn't guarantee energy savings or comfort. In fact they may see no savings at all and be less comfortable if you don't address the whole system.

At this point you can offer to put together some different options that address the issues that are important to them. When done properly, this step is one of the keys to the customer's decision to give you the job.

Be careful not to leave behind too much information. Some people can't resist the temptation to "shop" your findings and solutions out to other contractors. What you should leave them with is a solid education about their system and its poor operating condition.

When another contractor comes in to make his pitch, the customer will likely know more about the system than your competition. The danger of leaving your test data is a slick competitior may know enough to make it look like he'll do the same things you recommended.

This is a good time to explain to the customer that not giving him your information is a great way for them to evaluate that company's competence. What other criteria do they have to do this with – Price? They said they do great work? Who's going to tell you they do lousy work?

### *Step 4 – Prepare the proposal*

There are basically two schools of thought about sales calls in our industry. One camp believes that everything should be

done in one visit. They believe you can do this with either check-the-box proposals, or by bringing in your laptop and printer and spitting out what is often a boiler-plate looking proposal with some customization.

The second camp believes that once you've collected all the information it's important to go back to the office, think through and custom design the solutions and present a formal proposal on a second visit.

I've seen both approaches work well, so it's difficult to recommend one over the other. On a home with serious air distribution issues, further evaluation and design might be necessary. In these cases it's not a good idea to rush it or tie the customer up for an extra hour while you work on their solutions.

I personally have had great success with the two call sales process. If I've done a good job teaching the customer on the first call and completely differentiated myself, the customer is willing to wait for my proposal. If the A/C is down and it's 100F degrees outside, avoid the temptation to save a half hour and just quote an equipment change-out. This approach may backfire because once they have cooling, the priority is greatly

diminished and they can always "wait till next year" to do that other stuff.

Here's a great way to avoid this trap: Keep some old working condensing units at the shop. Paint them bright orange or paint a giant orange X on them, and temporarily install one to get the cooling back on so your prospect doesn't jump on the first guy who can schedule the job right away. The garish paint job will assure they want to get the unit out of their yard as soon as possible.

As you prepare the proposal, be sure to address what is most important to the customer, not just what you think they need. There are some exceptions to this. For example if the home has a unit that is already grossly oversized and the customer wants an even bigger one, you'll need to make a professional decision to not give in, but rather do your best to educate them about all the dangers of over-sizing.

In some cases you'll decide to walk away rather than do a job that will come back to bite you or that you know is absolutely the wrong thing to do.

The beauty of the educational selling process is you have the opportunity to make the customer a lot smarter about their system. They'll often know more about their system than your competitors are capable of finding out! What a great position to be in!

It's always best to offer at least two options – three is ideal, more than three is usually too many. In Performance-Based Selling "Good, Better, Best" takes on a whole new meaning. It's not about which equipment to buy, but the various levels of system renovation you can include along with pros and cons of each.

Be sure to frequently refer to your test reports and load calculations throughout your proposal. This establishes how different your company is, and the attention to detail you're including. The lowest first cost or "Good" option should point out which issues will be addressed and what cannot be solved at that level.

Some contractors have had success offering only one option with all the corrections and give the customer the ability to decline certain aspects of the job with the understanding of what they're not opting for. This could work, but it tends to be somewhat negative.

According to consumer research, when given three options, most customers tend to pick the middle one. With that in mind try to make that the one that will give the customer the most bang for their buck. Remember, the key to success in PBC is doing the right thing – always!

### *Step 5 – Present the Proposal*

At this point, if you've done everything correctly, there's a good chance the customer has already made the decision to go with you. The presentation of the proposal is more of a formality and a step to determine which option best fits their needs and budget. Present each option carefully, referring frequently to the test results as your basis for each decision.

You should not need to apply typical "closing" techniques at this point. If you've won the customer over they will refer to the job as yours and all you're doing at this point is working out the details.

Once the customer has decided which options to go with, it's time to explain the process of what will happen next. You can go over what happens next, how long it will take, what provisions need to be made for security, pets, children, etc.

This is also a good time to talk about details that may be important to the customer like thermostat placement, new registers, condensing unit placement (if these are being moved or added) and so forth.

Typically, the last point of discussion before a proposal is accepted is payment terms. Explain that payment is due on the day of completion of the work. You'll find this statement to be invaluable. If financing is involved, be sure to get approval

well in advance and have funding released immediately upon completion.

### *Step 6. – Finish Out The Job And Follow Up*

The typical job will include new equipment, a duct renovation, added returns, etc. Once the work is completed, tested out, and documented, it's a good idea to go back for a final visit. This visit allows you to answer questions, teach them about their new system, and inspect to make sure the job was done as promised. Make sure you have a neat copy of the final test results. This is the final proof that you did what you said you were going to do.

This closure to the job is what will generate referrals for you. This is also a good time to ask for referrals. "Is there someone else who you feel could use our services?" Even if their sister, brother, parents, cousins, etc., don't need a replacement system, why not ask if they could refer you to them to do their service work – these are terrific future leads.

These folks will be likely to spend time in your customer's house and experience the comfort your new system is providing. The bottom line is if you ask for a referral, there's a good chance you'll get some.

# Chapter 8 - Generating Leads With Little or No Competition

Imagine if you had the option to create your ideal lead. What would it look like? Would it be a qualified lead that has comfort issues and is looking for solutions? What if you had little or no competition on that lead and the total inside track?

What if the potential customer was already aware that you might be the only contractor with the solution to their problem. What would that lead be worth to you?? $100? $200? More?

## *No Cost Leads*

With PBC you can generate leads like this every day with little or no cost. In many cases, you can get paid to go on those calls!

Your service department is the key to generating these ideal leads. With the right tools and training your techs can become lead machines, and your customers will love you for it.

By taking a few measurements (he or she should be taking anyway), your service tech can uncover often long-standing problems that

affect comfort, energy use, even safety. By checking Total External Static Pressure (TESP) at the equipment, along with a couple of other pressure drops, he can uncover high static pressure issues, airflow problems, choked returns, charging issues, leaky ducts and more.

By checking combustion and draft he can unveil serious safety issues stemming from venting and combustion air deficiencies, even mechanical problems. He can also find serious efficiency problems resulting from improperly adjusted burners and other defects.

### *Leads Through Diagnostics*

There are a couple of ways Performance-Based Contractors are generating leads through service. One way is to have your tech go over their findings with the customer, give them the opportunity to schedule a full diagnostic, and leave behind some literature on what can be done to improve their system's performance. This can be followed by a letter explaining the benefits of a diagnostic, inviting the customer to schedule one, and following up the letter with a phone call.

Depending on the time of year, backlog of work, etc., your tech can offer a more thorough analysis of their system at a price ranging from free to $500 or more. Done right, this in-depth testing and documentation is worth every penny - even at $500. Some offer discount coupons to generate leads during slower times of the year.


Another approach is to simply have your technician collect the data mentioned above and take it back to you or your comfort consultant to follow up with a phone call to the customer.

### *The Follow-up*

You can keep things low pressure by explaining that you were reviewing the service ticket and noticed the system's pressures seem higher than they should be, and you would like to come out to take a closer look – just to be sure there won't be long-term consequences of running the system that way.

Contractors who use this approach have reported tremendous success with closing rates over 80% - usually with no competition.

Sam Pardue of Sam's Service in Lancaster, South Carolina has been using this approach for over a year now with phenomenal success. "When I follow up a service ticket showing high statics, 90% of the time the customer welcomes a visit from me," says Sam. "So far I've closed sales ranging from a simple duct renovation to a complete change out and total duct makeover at very nice margins. In all the years I've been doing this I've never seen an approach that generates new replacement business out of thin air like this one does," he adds.

# Chapter 9 - How To Compete In A 13 SEER World – The SER™ Advantage

In 2005, the news of 13 SEER becoming the minimum NAECA air conditioning efficiency standard starting in 2006 sent shockwaves throughout the HVAC industry. As contractors, consultants, even some manufacturers began to review the current approach of selling return on invest (ROI) and payback they found the argument would be difficult under the new standard.

## *ROI and Payback Don't Cut It*

When upgrading from a 10 to say a 14 SEER, you could show a reasonable ROI, and payback periods of less than 5 years for the difference in cost. With 13 SEER minimum equipment, the expense to jump to a 17 SEER is much more than it was to go from 10 SEER to 14 SEER. The higher the rating, the less the savings per additional SEER point.

With equipment efficiency becoming more of a commodity than ever, contractors have to find new ways to differentiate themselves. The kicker is if the air distribution system isn't addressed and higher SEER equipment is installed, many customers will see little or no reduction in their energy costs. One reason is the higher efficiency equipment is more sensitive than ever to poor airflow, improper charging and coil mismatches.

### *More Sensitive Systems*

Variable speed furnaces and air handlers tend to run longer at lower blower speeds in an attempt to improve comfort and increase dehumidification. This is great when you have a well-designed tight, balanced duct system. When you begin to test, you'll find this energy savings is only a fantasy on 8 out of 10 systems.

Leaky attic and crawl space ducts can easily pull in more heat and moisture than the system can handle – especially when the air handler is running almost continuously on low speeds. The result is uncomfortable, humid spaces with lots of indoor air quality issues and sometimes higher energy bills!

This is the exact opposite of what manufacturers claim their equipment will do! Is it the manufacturer's fault? Not really. They have no control over the installation. The equipment works fine in a lab with controlled near perfect conditions, but can fail miserably when improperly installed and charged on bad duct systems.

### *Condenser-only Swap Outs Could Spell Disaster*

Another big issue on the horizon is when 13 SEER or higher units are installed without changing out the coil. In most cases

the coils will be extremely mismatched and have no chance of performing at ARI conditions to deliver the stated equipment efficiency.

In worst case scenarios we'll end up with a lot of premature compressor failures and a lot of angry customers. Besides being angry at the contractor who did the condenser swap out, you can bet those homeowners will be going after the manufacturers.

The first decade in this new millennium will prove to be an interesting one for our industry. I'm sure we'll survive it, but there will be many casualties along the way – contractors, distributors and manufacturers.

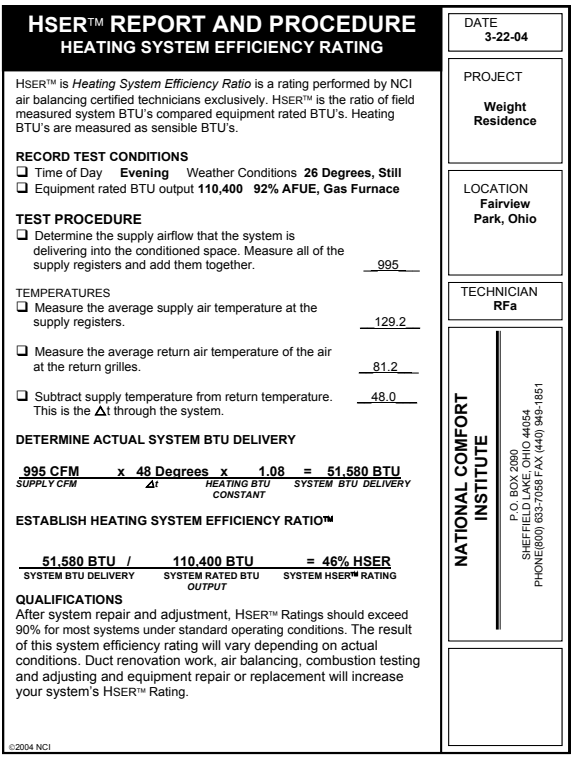
Several years ago NCI began to look at the differences between equipment efficiency versus real operating system efficiency based on delivered BTUs. The more we tested actual BTU delivery into the space, the more we learned about the huge gap between what the equipment was supposed to be delivering and what it was actually putting into the space to cool or heat the home.

### *SER™ - A New Standard For Field Efficiency*

Our research led to the development of a new system efficiency rating NCI coined SER™. SER stands for System Efficiency

Rating and is based on field measurement of delivered BTUs versus what the equipment is rated to move. NCI developed both a Cooling System Efficiency Rating (CSER™) and Heating System Efficiency Rating (HSER™).

The HSER rating is calculated based on delivered sensible BTUs. It's done on a simple one page form and provides an amazing snapshot of how the home's heating system is performing. It quickly exposes both duct system problems and combustion inefficiencies that can be readily corrected.



**HSER™ REPORT AND PROCEDURE**
**HEATING SYSTEM EFFICIENCY RATING**

DATE **3-22-04**

PROJECT **Weight Residence**

LOCATION **Fairview Park, Ohio**

TECHNICIAN **RFa**

HSER™ is *Heating System Efficiency Ratio* is a rating performed by NCI air balancing certified technicians exclusively. HSER™ is the ratio of field measured system BTU's compared equipment rated BTU's. Heating BTU's are measured as sensible BTU's.

**RECORD TEST CONDITIONS**
- ❑ Time of Day **Evening** Weather Conditions **26 Degrees, Still**
- ❑ Equipment rated BTU output **110,400 92% AFUE, Gas Furnace**

**TEST PROCEDURE**
- ❑ Determine the supply airflow that the system is delivering into the conditioned space. Measure all of the supply registers and add them together. 995

TEMPERATURES
- ❑ Measure the average supply air temperature at the supply registers. 129.2
- ❑ Measure the average return air temperature of the air at the return grilles. 81.2
- ❑ Subtract supply temperature from return temperature. This is the Δt through the system. 48.0

**DETERMINE ACTUAL SYSTEM BTU DELIVERY**

| 995 CFM | x | 48 Degrees | x | 1.08 | = | 51,580 BTU |
|---|---|---|---|---|---|---|
| *SUPPLY CFM* | | *Δt* | | *HEATING BTU CONSTANT* | | *SYSTEM BTU DELIVERY* |

**ESTABLISH HEATING SYSTEM EFFICIENCY RATIO™**

| 51,580 BTU | / | 110,400 BTU | = | 46% HSER |
|---|---|---|---|---|
| SYSTEM BTU DELIVERY | | SYSTEM RATED BTU *OUTPUT* | | SYSTEM HSER™ RATING |

**QUALIFICATIONS**
After system repair and adjustment, HSER™ Ratings should exceed 90% for most systems under standard operating conditions. The result of this system efficiency rating will vary depending on actual conditions. Duct renovation work, air balancing, combustion testing and adjusting and equipment repair or replacement will increase your system's HSER™ Rating.

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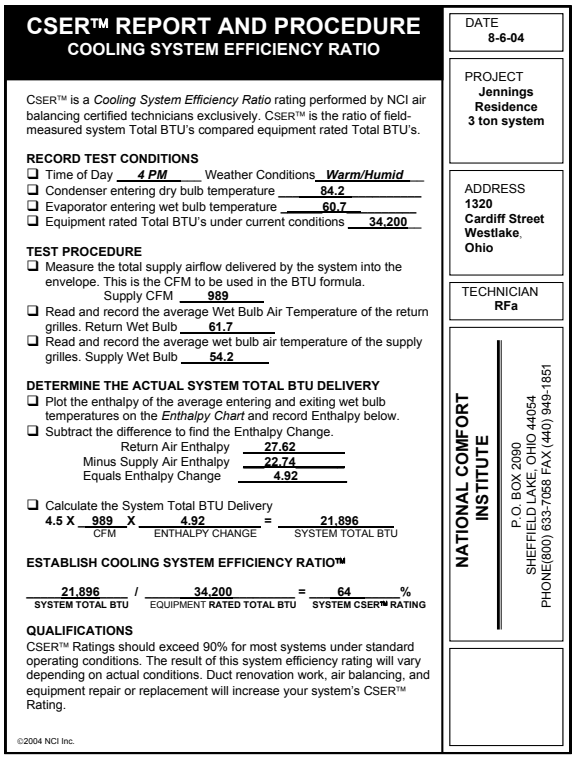
CSER provides a similar rating, but also takes into account the latent BTUs for a true picture of system performance. When you begin to use the testing associated with CSER you'll often find temperatures that are off the ARI charts due to large amounts of hot, humid outside air drawn in through the HVAC system.

Both HSER and CSER are terrific educational tools for the customer. They cut to the chase when it comes to giving them a true evaluation of their system, and puts you in a league of your own as the contractor of choice.



**CSER™ REPORT AND PROCEDURE**
**COOLING SYSTEM EFFICIENCY RATIO**

DATE
**8-6-04**

PROJECT
**Jennings Residence**
**3 ton system**

ADDRESS
**1320 Cardiff Street Westlake, Ohio**

TECHNICIAN
**RFa**

CSER™ is a *Cooling System Efficiency Ratio* rating performed by NCI air balancing certified technicians exclusively. CSER™ is the ratio of field-measured system Total BTU's compared equipment rated Total BTU's.

**RECORD TEST CONDITIONS**

- ❑ Time of Day ***4 PM*** Weather Conditions ***Warm/Humid***
- ❑ Condenser entering dry bulb temperature **84.2**
- ❑ Evaporator entering wet bulb temperature **60.7**
- ❑ Equipment rated Total BTU's under current conditions **34,200**

**TEST PROCEDURE**

- ❑ Measure the total supply airflow delivered by the system into the envelope. This is the CFM to be used in the BTU formula.
  Supply CFM **989**
- ❑ Read and record the average Wet Bulb Air Temperature of the return grilles. Return Wet Bulb **61.7**
- ❑ Read and record the average wet bulb air temperature of the supply grilles. Supply Wet Bulb **54.2**

**DETERMINE THE ACTUAL SYSTEM TOTAL BTU DELIVERY**

- ❑ Plot the enthalpy of the average entering and exiting wet bulb temperatures on the *Enthalpy Chart* and record Enthalpy below.
- ❑ Subtract the difference to find the Enthalpy Change.
  Return Air Enthalpy **27.62**
  Minus Supply Air Enthalpy **22.74**
  Equals Enthalpy Change **4.92**

- ❑ Calculate the System Total BTU Delivery
  **4.5 X** **989** (CFM) **X** **4.92** (ENTHALPY CHANGE) **=** **21,896** (SYSTEM TOTAL BTU)

**ESTABLISH COOLING SYSTEM EFFICIENCY RATIO™**

**21,896** (SYSTEM TOTAL BTU) / **34,200** (EQUIPMENT **RATED TOTAL BTU**) = **64** % (**SYSTEM CSER™ RATING**)

**QUALIFICATIONS**

CSER™ Ratings should exceed 90% for most systems under standard operating conditions. The result of this system efficiency rating will vary depending on actual conditions. Duct renovation work, air balancing, and equipment repair or replacement will increase your system's CSER™ Rating.



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### *A True Field Performance Snapshot*

It's important to remember that both HSER™ and CSER™ ratings are a snapshot of performance, not absolute laboratory tested numbers. It's virtually impossible to come up with absolute performance numbers in the field due to the ever-changing conditions including outside temperatures and humidity, wind, internal loads and so forth.

The bottom line is we don't need to get that picky, we're looking for a baseline performance on the day we're testing, and once we fix the system, replace equipment, etc., we test out the system under similar, but not exact conditions. The goal is to come up with a 90% or better SER rating, so there's no need to split hairs.

Across the country, the measured HSER of an unimproved system on a cold day averages 50-60%. CSER ratings on a hot day will typically come in at 55-65%. Yes, our industry is in trouble - thank goodness we finally have a diagnosis and a cure!

SER testing is now an integral part of NCI's training, and is fast becoming the field standard for measured HVAC system performance.

Many contractors are using SER testing as their go-to sales tool for quickly winning the customer over and getting them

thinking about their system's performance. While the form is very simple to fill out in the field it does require good knowledge of air diagnostics and testing to accurately collect the information needed.

# Chapter 10 - Getting Started

Any journey begins with the first step. You've taken it by reading this book. You may want to read through the book again to get a fuller grasp of the bigger picture and the opportunities that come with becoming a Performance-Based Contractor.

Start by attending a class on air diagnostics and balancing – it will open up your mind to all the possibilities.

### *Talk to other Performance-Based Contractors*

NCI has an online forum where you can talk to hundreds of National Comfort Team members who are at stages in the learning curve. Some are further down the path and some are just starting like you.

You'll find an amazing community on the forum with a common goal of becoming a different breed of contractor. It's a great place to ask questions and look at what other Performance-Based Contractors are talking about.

The key here is progression. Commit to doing something every week that moves you further up the path. Baby steps are better than procrastination. The worst thing you can do is lie to yourself by saying that when you have time you'll get started. If you're a typical HVAC contractor, I can almost guarantee you that you'll never have that "spare" time.

### *Turn Your People Into Airheads*


Many Performance-Based Contractors jokingly refer to themselves as airheads as they look at the air side of HVAC systems very differently than most.

Part of changing the culture in a company is mixing things up a little. Try to create a sense of fun with the changes that you'll be making. Start a highest Static Pressure contest where the tech who finds the highest Total External Static Pressure in a given month wins a dinner for two or a gift certificate.

Reward the people that take the lead toward changing the way they perform maintenance. Sometimes trying to effect change is like pushing on a rope. Look for "champions" within your organization that will help "pull" the others with them.

One way to get your field and office employees excited about PBC is to test and fix the systems in their homes. If they experience the benefits first hand you can bet they'll get excited about what you're doing when they interact with your customers.

Make it fun! When you're ready to roll out each new phase of your program, create an air of excitement and fanfare.

**Warning:** Do not make a big announcement about how "everything is going to change around here starting immediately," unless you're prepared to deal with some major resistance. You're much better off introducing some of the PBC concepts one at a time. Then when everyone is on the same page, they feel like they're part of the "new approach," and you'll encounter much less resistance along the way.

### *Implementation Is The Key*

The biggest challenge to becoming Performance-Based is implementation. NCI has made a commitment to work with contractors that are willing to commit to implementing PBC in their companies. We do this through National Comfort Team (NCT), our contractor membership organization.

One of the most valuable benefits of NCT membership is unlimited phone support. Members can call in to 1-800-633-7058 and talk to our knowledgeable staff about anything ranging from technical questions, sales and marketing issues, to implementation, winning over employees, and other business-related barriers.

Should you decide to join the growing ranks of Performance-Based Contractors, the entire staff at NCI is here to support you. Together we can build a new and better HVAC industry. We're ready for you if you're up to the challenge.

Every day NCI works hard to improve and simplify the methods, forms, procedures and training curriculum to help contractors become more successful and distinguish themselves from their competition.

You have my pledge as NCI chairman and CEO that our primary focus will always be on helping contractors and improving our industry. It's why our organization was created. We will always strive to maintain the highest standards, morals and ethics among our employees and our members.

I hope you've enjoyed reading this guide to Performance-Based Contracting and look forward to working with your organization when you decide to join us in Leading the Comfort Revolution!