

Designing Residential HVAC Systems

This workshop will teach you how to design a residential heating and air conditioning system from the ground up using Wrightsoft's Right Suite™ Residential software. You will learn how to calculate heating and cooling loads for proper sizing of equipment, select the right equipment for the loads and correctly design and size a ducting system. You'll also learn when and how to use multiple zones and how to use a blower door to measure air leakage for more accurate load calculations.

What is Right Suite™ Residential?

Right Suite™ Residential is a comprehensive HVAC design tool that makes the design of heating and cooling systems for residential buildings easier, faster and more accurate. The software is the result of more than 12 years of feedback from thousands of HVAC designers throughout the United States and many other countries.

Right Suite™ Residential contains tools for load calculation, duct sizing, sales presentation and job cost quotation all in a single program. The duct design and sales presentation functions are linked to the load calculations so that every change in the building data automatically changes the duct system and the sales presentation. Templates make it easy to set up time-saving default files. Combined with many other automatic features, Right Suite™ greatly simplifies the design of residential heating and air conditioning systems.

Who should attend

This workshop is designed for heating and air conditioning contractors, HVAC estimators and designers, utility customer service representatives, building designers, architects and engineers.

What you will learn

- What's new in ACCA's 8th Edition of Manual J
- How to determine heating and air conditioning loads
- When and how to use multiple zones
- How to select the right equipment
- How to design and size a ducting system
- How to use a blower door to measure air leakage
- How to efficiently use Right Suite™ Residential for complete system design

Your instructors

- **Doug Walter** is president of KBSI. He has taught building energy principles for more than 20 years and is certified by the Air Conditioning Contractors of America (ACCA) to teach residential HVAC system design.
- **Gene Meyer, P.E.** is Director of Training for KBSI. He teaches and conducts workshops dealing with many aspects of building performance, including building codes and standards and life-cycle costing. He is certified by ACCA to teach commercial HVAC system design.

Workshop Agenda

Day One

- Principles of HVAC system design
- Energy flows and the house system
- *Manual J* heat flow principles
- *Manual J8 vs. J7*
- Introduction to Right Suite™
- Using Right Draw to describe a whole house – Example Problem #1
- Using Right Draw to describe individual rooms – Example Problem #2
- Complex room shapes, multiples levels, multiple wall types, special floors and ceilings, split levels – Example Problem #3
- Blower door and Duct Blaster™ demonstration (optional evening session)



Day Two

- Principles of equipment selection
- Using Right Suite for heating, cooling and heat pump equipment selection
- Comparing operating costs
- Case study in equipment selection and run-time
- Principles of air side design and fan performance
- Using Right-D to lay out and size duct systems
- Duct design and sizing example problem
- Measuring fan flow, register flow and room pressurization (optional evening session)

KBSI operates a dedicated building science training facility consisting of a 3,000 square foot training center, an attached two-story residential structure and an adjacent furnace lab.

The training center houses a spacious multi-media classroom featuring computer work stations and comfortable executive style chairs for each student. Meals are served on-site in the training center's banquet room. The facility is situated in a relaxing, wooded setting.

The residential structure serves as KBSI's full-scale building science laboratory. Typical of early 1900's construction, the balloon-framed structure is used for hands-on blower door training, pressure diagnostics and general energy auditing. The house demonstrates many building thermal flaws.



Day Three

- Air distribution basics
- Sizing and selecting supply and return registers
- Sizing jump ducts and transfer grills
- Whole-house design problem
- 3:00 pm Adjourn

What you will receive



- Course handouts and lecture notes.
- ACCA certificate upon successful completion and submission of take-home exam.
- Complete Right Suite™ Residential demo software.
- Five percent discount on Minneapolis Blower Door equipment purchased from The Energy Conservatory.

Registration

Attendance is limited to 14, so please register early. Registration fee is refunded only if notice is received 48 hours before the workshop. Substitutions may be made.

Lunch and refreshments are included in your registration fee. Dress is casual.

Students are required to bring a laptop computer. KBSI has a limited number of laptop computers available for use. There is a charge of \$50 to use a KBSI laptop.

How to get to KBSI

The training is conducted at the KBSI Training Center, 200 Zeandale Rd., Manhattan, Kansas. Sessions begin at 8:00 a.m. each day.

KBSI's participants come from all over the United States and Canada, making our central location one of our greatest advantages. The Kansas City International Airport (KCI) with 277 daily flights is an easy connection from most U.S. hub airports. KCI is served by every airline in the United States except Alaska Air.

- USAir Express provides daily air service between KCI and Manhattan.
- The KCI Roadrunner (1-800-747-2524) provides 11 daily van shuttles between KCI and Manhattan.
- Most of KBSI's participants fly to KCI, rent a car and drive to Manhattan.

For further travel and lodging information, visit KBSI's web site at www.kansasbuildingscience.com and click on the "links" page, or call our toll-free number:

877-537-2425

Kansas Building Science Institute is committed to making services, activities and programs accessible to all participants. If you have special requirements due to disabilities or dietary restrictions, please contact KBSI at least two weeks before the start of the workshop.

Registration Form - Designing Residential HVAC Systems with Right Suite™

Only one registration per form. For additional registrations, please copy this form.

Or fax to: **785-537-2440**

Name	Job Title	
Company/Agency		
Address		
City	State	Zip
Work Phone	Work Fax	
Cell Phone (for emergency contact only)		
e-mail address		

Register by returning this form to:
Kansas Building Science Institute
PO Box 1264
Manhattan, KS 66505-1264

Feb. 26-28, 2008
 Sept. 30 – Oct. 2, 2008

Registration fee:
 \$650
 Request KBSI laptop computer (\$50)

Please indicate method of payment:
 Check enclosed payable to KBSI
 Send invoice*
 Charge to: VISA MC Amex Disc.

Cardholder's Printed Name as it appears on card

Cardholder's Signature

Card Number Expiration Date

* If e-mail address is provided, invoice will be sent electronically.