Commercial Air Balancing I

Course Outline (8 hours)

SECTION ONE – Commercial Air Balancing Overview*– 8:00 am – 9:00 am*

- The history and purposes of commercial air balancing
- What is testing, adjusting and balancing
- Require balancing tools and instruments, and their specifications
- Components and purpose of an NCI commercial submittal package
- The National Balancing Council
- Commercial Air Balancing Overview Knowledge Review

SECTION TWO – Project Specifications and Plan Takeoff *– 9:00 am – 10:15 am*

- NCI Commercial Air Balancing Specifications
- Determining the cost of a balancing project
- Completing a balancing proposal
- Project Specifications and Plan Takeoff Knowledge Review

SECTION THREE – Preparing for a Balancing Project*– 10:30 am – 12:00 pm*

- Pre-project preparation and NCI forms
- Essential job documents
- Preparing a preliminary balancing report
- Gathering essential field information and data
- Preparing for a Balancing Project Knowledge Review

SECTION FOUR – Static Pressure Testing *– 12:45 pm – 3:00 pm*

- Introduction to Static Pressure
- Required Test Instruments
- Measuring total external static pressure
- Measuring component pressure drops
- Using static pressure budgets
- Static Pressure Testing Knowledge Review

Commercial Air Balancing I

Course Outline (continued)

SECTION FIVE – Traversing Airflow*– 3:15 pm – 5:00 pm*

- Airflow traverse principles
- Required test instruments
- Where to preform duct traverses
- Converting velocity pressure to velocity
- Round and rectangular duct and grille traverses
- Traversing Airflow Knowledge Review

Commercial Air Balancing II

Course Outline (8 hours)

***SECTION SIX** – **RPM and Electrical Testing**– 8:00 am – 9:00 am*

- Electrical test instruments
- Adjusting fan speed settings
- Non-contact tachometer usage tips
- Measuring blower motor amperage
- 3-phase voltage measurement
- RPM and Electrical Testing Knowledge Review

***SECTION SEVEN – Fan Laws** – 9:00 am – 10:00 am*

- Setting fan airflow
- Plotting fan airflow
- Power transmission and adjustable pulleys
- Adjusting belt tension
- Using fan laws
- Fan Laws and Pulley Adjustment Knowledge Review

***SECTION EIGHT** – **Measure Register and Grille Airflow**– 10:15– 12:00 pm*

- How a balancing hood works
- Using the balancing hood in different applications
- Traversing return grilles
- Supply register correction factors
- Traversing supply registers
- Measure Register and Grille Airflow Knowledge Review

Commercial Air Balancing II

Course Outline (continued)

SECTION NINE – Balancing Register and Grille Airflow*– 12:45 pm – 2:00 pm*

- The NCI air balance procedure
- Proportional air balancing
- Balancing variable speed fans
- Air density correction factors
- What to do when airflow is high or low
- Typical system and equipment defects

SECTION TEN – Temperature and Final Testing*– 2:00 pm – 3:00 pm*

- Final Testing and final outside air adjustment
- Equipment temperature testing
- Measuring and calculating system static pressures
- Identifying and recording equipment nameplate data
- Temperature and Final Testing Knowledge Review

SECTION ELEVEN – Field and Final Balancing Reports*– 3:15 pm – 5:00 pm*

- Project field report
- Checklist Prior to Air Balance
- Final balancing reports
- The importance of copyrighting material
- Field and Final Balancing Reports Knowledge Review

Commercial Air Balancing III

Course Outline (8 hours)

***SECTION TWELVE** – **Economizer Fundamentals**– 8:00 am – 10:00 am*

- Economizer testing and reporting
- Components of an economizer
- Manufacturer's engineering data and installation instruction
- Economizer inspection task list
- Measuring economizer temperatures
- Economizer testing and reporting task list
- Economizer Fundamentals Knowledge Review

***SECTION THIRTEEN – Economizer Commissioning–** 10:15 am – 12:00 pm*

- Basics of economizer airflow traverse
- Airflow adjustments and obstacles
- Preparing for economizer commissioning
- Required steps in economizer commissioning
- Economizer Commissioning Knowledge Review

***SECTION FOURTEEN** – **Kitchen Exhaust System Fundamentals**– 12:45 pm– 2:45 pm*

- Kitchen exhaust balancing basics
- Components of kitchen exhaust systems
- Types and functions of exhaust hoods
- Required hood airflows
- Joe's Deli sample kitchen exhaust system
- Kitchen Exhaust System Fundamentals Knowledge Review

Commercial Air Balancing III

Course Outline (Continued)

SECTION FIFTEEN*– *Kitchen Exhaust System Balancing and Reporting*– *3:00 pm– 5:00 pm

- Exhaust hood airflow measurement
- Using a velocity grid
- Measuring makeup air unit airflow
- Plotting fan airflow
- Kitchen Exhaust Balancing Procedure and Report
- Kitchen Exhaust System Balancing and Reporting Knowledge Review