

## TRACE 700 Training

Welcome to our general TRACE 700 training course outline.  
Earn 14 GBCI CE Credits and PHDs.



### Introduction to TRACE 700

This introductory video briefly covers a basic definition of Trace 700, its uses and functionality. Then, we cover all of the main categories and buttons in Trace to provide a basic road map for the software, which we'll build upon in the following lessons of the course.

- Getting Oriented with Trace 700 Project Information
- Selecting Weather Information Creating Templates
- Creating Rooms
- Creating Systems
- Assigning Rooms to Systems Creating Plants
- Assigning Systems to Plants Defining Economics
- Calculating and Viewing Results

### Lesson 1 - TRACE 700 Design Process

*TRACE 700 Load Design Inputs*

- This video provides a solid foundation in the building design process.
- Entering Project Information Selecting Weather Information Creating Template
- Internal Loads Template Airflow Template
- Thermostat Template Construction Template
- Quiz on topics covered in previous video Understanding Room Templates in TRACE 700
- Brief video covers tips on using templates for a more efficient workflow.

### Details



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- Rooms and Systems in TRACE 700
- This video covers how to make rooms and systems.
- Creating Rooms Rooms Tab Partitions Tab Selecting Systems Room Assignments Reports

### **Exercise 1**

- The student will setup a school project based on a provided layout.

### **Lesson 1 -Final Review**

- Review of all topics covered in lesson one, with an emphasis on topics where most people make mistakes.

### **Exercise 1 - Solution Load Design Example**

## **Lesson 2 - Energy**

### **Energy Modeling and Building Simulation - The Big Picture**

*This video explains some of the key differences between load design and energy. New users often struggle with these two unique but related concepts.*

- Load Design VS Energy Analysis
- Design Assumptions
- Analysis Assumptions

### **TRACE 700 Energy Input**

*This video starts in full TRACE 700 mode (by going to options ---> operating mode ---> TRACE 700). It introduces the additional variables required when doing an energy model as well as a load design model*

- Creating Templates, Room and Systems Fans
- Coils
- Creating Plants
- The Plants Wizard
- Making changes to the plants layout
- Creating Plants Manually
- Cooling Equipment and Heating Equipment tabs
- Base Utility and Miscellaneous Accessory Tab
- Assigning Systems to Plants

### **Understanding Reduced Year Schedules**

*Up until now we've treated TRACE 700 simulation as if it was calculating every day of the year separately. While TRACE can do that, that is not what happens by default. Using default TRACE data, you are actually calculating using a*

*reduced year sequence of day types.*

- Reduced Weather Schedules
- Importing Full Year Weather
- Creating Schedules, Efficiently

## **Quiz on topics covered in Load Design & Energy Analogies**

### **Exercise 2**

*This exercise continues with a completed exercise 1. There will be an addition of two rooms, and two systems, as well as adjustments for energy calculations.*

## **Exercise 2 Solution - Load Design and Energy Analysis**

### **TRACE 700 Calculation Demo**

*TRACE 700 operation is discussed from beginning to end. The variables manipulation is discussed as it goes from load design, to hourly loads, to hourly energy consumption, and finally to monthly cost.*

- Trace 700 Sequence of Operation Load Design Mode
- System Simulation
- Energy
- Economics

## **Lesson 2 - Final Review**

# **Lesson 3 - Economic Comparison**

## **Libraries and Sharing Files in TRACE 700**

*This video covers using libraries to calculate economics with custom rate structures*

### **Libraries and Sharing Quiz**

*In this review your knowledge of load versus energy will be tested, as well as the inputs required for energy calculation.*

- TRACE 700 Economics
- Electric Consumption
- Electric Demand
- Gas Rate
- Economics - parameters for life cycle analysis
- Economics Quiz
- TRACE 700 Alternatives Setup

*This video shows how to add multiple alternatives in Trace 700. It also distinguishes the difference between ‘Use alt.’, ‘Create based on alt...’, and ‘create new...’ options when adding or copying alternatives*

### **Alternatives Quiz**

*This quiz tests your understanding of alternatives and how they operate in Trace 700.*

### **Understanding Reduced Year Schedules in TRACE 700**

*Using default TRACE data, you are actually calculating using a reduced year sequence of day types. This video covers common pitfalls to understanding reduced year schedules in Trace.*

- Reduced Weather Schedules
- Importing Full-Year Weather
- Creating Schedules Efficiently

### **Exercise 3**

*In this exercise, continue with a completed exercise 2. There will be an addition of a rate structure, a time of day schedule, and an alternative.*

### **Exercise 3 Rate Structure Solution**

### **Lesson 3 -Final Review**

## **Lesson 4 - Advanced settings in TRACE 700**

### **TRACE 700 Plant Unloading Example**

*This video discusses the full details of cooling plants in Trace 700. We also walk through the calculations to determine the efficiency of a cooling plant at a given set of conditions, using the unloading curves to calculate the final efficiency.*

### **Plant Unloading Quiz**

### **Options and Outputs in TRACE 700**

In this lesson, many options in Trace 700 are discussed, including:

- Sorting rooms/lists alphanumerically
- Changing unit systems
- Changing the load methodology
- Entered values reports
- Energy Parameters
- The Trace 700 visualizer for exporting custom outputs
- Changing the default weather location

- TRACE 700 Input Methods

Here I introduce the various view types in TRACE 700.

- Alternative Methods Review
- Std 62 in Trane TRACE 700

In this lesson, I cover how to properly calculate standard 62 in Trace 700.

- Options in TRACE 700
- In this lesson, we cover:
- Create systems Advanced
- Create systems - Options - Advanced options
- Optimum Start Optimum Stop

### **TRACE 700 Options Quiz**

#### **Exercise 4 TRACE 700 Custom Utilization Schedule**

In this exercise, continue with a completed exercise 3. There will be an addition of a custom utilization schedule, a base utility, and a WSHP plant. In alternative two, the fan coil system will be changed to a WSHP system with Dedicated OA.

#### **Exercise 4 Solution**

## **Bonus - How to**

### **TRACE 700 Thermal Storage**

This short document covers Ice Storage Example and tips.

### **TRACE 700 Solar Panel Estimator**

Here is a TRACE 700 file that can be used to estimate Solar Panel (photovoltaic) energy production by month.

### **Import gbXML into Trane TRACE 700**

Covers common mistakes when importing gbXML files.

### **Move and Combine Alternatives**

This TRACE 700 lesson shows the potential of combining files, alternatives, or importing alternatives in Trace 700.

**TRACE 700 6.2.6 Update**

In this video, the new features of TRACE 700 6.2.6 are discussed, including automatic compressor breakout, the fan prm report and the new LEED report.

**Using TRACE 700 with Microsoft Excel**

Only so many changes can be made in TRACE 700 using templates, and sometimes a user needs to make many changes that templates can't do. This video covers how Excel can save you some time.

**Speed Boost TRACE 700**

Quick trip for speeding up the calculating and reviewing results process in Trace.

**Unnecessary Hours Spent on Unmet Hours**

This video troubleshoots reducing unmet hours with an example.

**Dedicated Outdoor Air in TRACE 700 DOAS**

This video covers the general "work around" for modeling dedicated outdoor air with multiple plants.

**Final Exam**