

Operator's Quick Reference Guide

OM 1097

Design Tools™ Software

Group: Applied Systems

Part Number: OM 1097

Date: September 2010

ENERGYANALYZER™ II



Quick Start User's Guide

The McQuay EnergyAnalyzer™ II program provides a quick method for estimating energy consumption in a typical building for a wide variety of HVAC systems. In addition, it can provide operating cost and life cycle analysis between two or more HVAC systems so that the best financial decision can be made. EnergyAnalyzer™ II should be used in a preliminary design phase in which justification of a system or improved equipment efficiency is necessary.

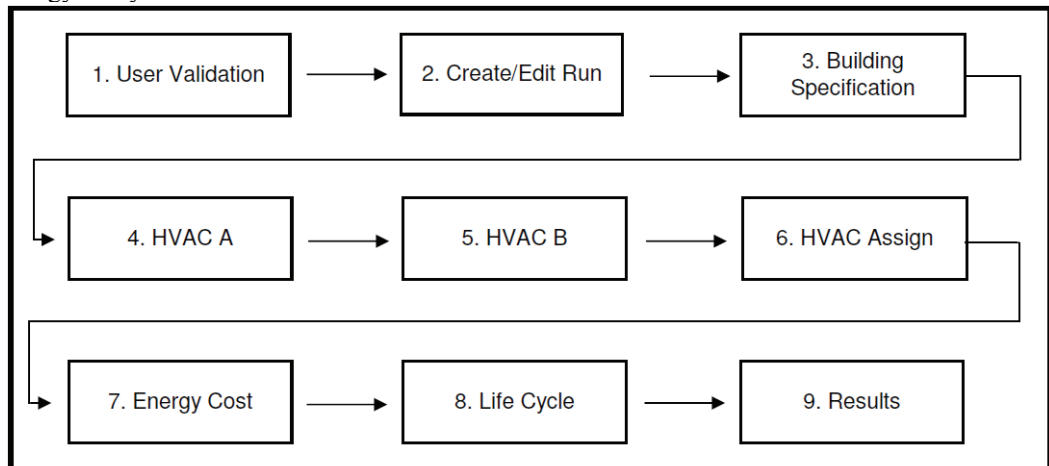
EnergyAnalyzer™ II System Requirements

EnergyAnalyzer™ II is a web-based application; the user must meet certain requirements to access and use the program:

- **Internet access-** Internet access of any type is required to access EnergyAnalyzerII
- **Microsoft Silverlight-** If Microsoft Silverlight is not installed or the current version is not installed on the user's computer, a webpage will appear that sends the user to the Microsoft website to download the latest version at no charge Microsoft Silverlight is directly compatible with Microsoft and Mac operating systems.
- **McQuayTools Suite user ID-** To obtain a McQuayTools Suite user ID, refer to user manual.

Basic Workflow

The flowchart shown in Fig. A indicates the steps required to navigate through EnergyAnalyzer™ II.



EnergyAnalyzer™ II program can be divided into nine **easy** steps to compare two different HVAC options. To get detailed information on each step please refer to user manual:

1. [User validation](#)
2. [Create/edit run](#)
3. [Building specification](#)
4. [HVAC A](#)
5. [HVAC B](#)
6. [HVAC assign](#)
7. [Energy cost](#)
8. [Life cycle analysis](#)

9. [Results](#)

EnergyAnalyzer™ II is designed to help you compare energy costs of two different HVAC systems. Energy analysis runs can be completed with or without detailed information about a particular job. Below are required steps for preliminary and detailed analyses.

Steps for Preliminary (Four Step) Analysis

For an energy analysis on job with very little information or a job in the earliest part of the preliminary design phase, a simple analysis with default building specifications and energy cost approximations is most appropriate. These types of analyses only require four steps:

1. User validation
2. Create/edit job
3. Define one or two HVAC Systems
4. Results

1. User Validation

the user may gain access by logging in at www.mcquaybiz.com/ and navigating to the *Design Tools* page from the left navigation column. Additional links will be available from this page. Select the *Design Software* link. At the top of the Design Software page will be a link to the EnergyAnalyzer™ II application, which will bring the McQuayBiz logged in user to their custom [Jobs List](#). Another link to the energy analysis application can be found in the *My Office* section of McQuayBiz.

The screenshot shows the McQuayBiz website interface. At the top, there is a search bar and navigation links: Home, Help Desk, Who to Contact, My Office, Press Releases, Shopping Cart, and Site Map. The main content area is divided into two sections: 'Hot Links' and 'Design Software'. The 'Hot Links' section contains several links, with 'Design Tools' and 'Design Software' highlighted in red boxes and numbered 1 and 2 respectively. The 'Design Software' section features a table of software files with columns for Title and Description, File Size, and Published date. The 'NEW Energy Analyzer II application!' link is highlighted with a red box and a '3' next to it. The table lists several files, including 'Energy Analyzer™ Purchase and Distribution Guidelines', 'Acoustic Analyzer™ Purchase and Distribution Guidelines', 'Acoustic Analyzer™ Conditional License', 'Energy Analyzer™ Conditional License', 'Energy Analyzer™ Software Registration Card', 'Acoustic Analyzer™ Demonstration - Downloadable Version', and 'Energy Analyzer™ Demonstration - Downloadable Version'.

Title and Description	File Size	Published
Energy Analyzer™ Purchase and Distribution Guidelines	29KB	2008/06/24
Purchase and distribution guidelines Representatives must follow when providing software to customers		
Acoustic Analyzer™ Purchase and Distribution Guidelines	30KB	2008/06/24
Purchase and distribution guidelines Representatives must follow when providing software to customers		
Acoustic Analyzer™ Conditional License	36K	2004/06/14
License you must agree to for using Acoustic Analyzer		
Energy Analyzer™ Conditional License	36K	2004/06/14
License you must agree to for using Energy Analyzer		
Energy Analyzer™ Software Registration Card	25KB	2006/04/05
Registration Card - Required to get future upgrades to Energy Analyzer Software for Customers		
Acoustic Analyzer™ Demonstration - Downloadable Version	5,109KB	2006/08/30
Shows how easy it is for users to calculate the sound of HVAC systems at the property line or in the space using McQuay Acoustic Analyzer software.		
Energy Analyzer™ Demonstration - Downloadable Version	10,605KB	2006/08/30
Shows how easy it is to compare various HVAC systems in order to choose the most efficient system that fits your budget using McQuay Energy Analyzer software.		

2. Create/Edit Job

Creating a new job is the first step in starting the energy analysis. A new job must be created any time the user would like to compare two new HVAC systems.

To Create a New Job:

1. After user validation, select the **New** button
2. Provide basic information regarding the Job Name, building type, building construction and HVAC equipment performance defaults, building area, and location. Any information provided may be edited at a later time on following screens. Select the **OK** button to proceed.

3. Defining the HVAC Systems

EnergyAnalyzer™ II has the capability of analyzing a building with two different HVAC system designs. The base system is referred to as HVAC A, while the alternative HVAC system is called HVAC B. Within each HVAC design, two different systems can be specified.

Enter information on the System Type, Central Cooling Plant (if applicable), and Central Heating Plant (if applicable). Depending on the chosen *System Types* or the existence of System 2, all relevant secondary tabs will appear.

4. Results / Analysis

To obtain the two systems, the user must run a simulation by selecting the Results primary tab and Issue secondary tab. The user must select the **Start Design Day** or **Start Full Year** button located below the progress bar. Design days runs do EnergyPlus simulations for heating and cooling design days. Full simulation runs both HVAC A and B simulations annually at sub-hourly intervals to obtain energy and energy cost data for comparison.

Three secondary tabs are available to the user:

- **Issues-** Users can start and stop simulations from here. A summary of simulation run errors, warnings, and notes will automatically be generated to alert the user of possible simulation invalidators.
- **Summary-** Quickly scroll through a summary of the building and energy cost and consumption comparisons.
- **Reports-** Users can customize the output document, supplied in HTML format, for presentations and simulation validation. Outputs include summaries of input data, energy comparison graphs, energy cost tables, and much more. See the Report section for a more thorough review of available outputs. Select the particular outputs of interest by selecting the checkboxes next to the tables or graphs of interest. To produce the selected tables and graphs in HTML format, select the **Generate Report** button at the bottom of the main screen.

Steps for Detailed Analysis

This section describes steps to perform an energy analysis on a job which is in the design development phase when more detailed building specifications and energy cost information is available. These types of analyses require nine steps:

1. [User validation](#)
2. [Create/edit run](#)
3. [Building specification](#)
4. [HVAC A](#)
5. [HVAC B](#)
6. [HVAC assign](#)

7. [Energy cost](#)
8. [Life cycle analysis](#)
9. [Results](#)

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Hot Links:

- » Stock Units Available
- » eLearning Courses thru ASHRAE!
- » 2010 Daikin Group Sales Meeting
- » Aftermarket & Parts
- » ARRA
- » Case Studies
- » Corporate
- » Daikin Group Sales Meeting
- 1 **» Design Tools**
 - » Application Guides
 - 2 **» Design Software**
 - » Engineering Newsletters
 - » Geothermal Resources
 - » GreenWay Solutions
 - » IBC Seismic Compliance
 - » Refrigerant Resources
 - » Speakers Program
 - » Systems Information
- » Industry Links
- » Literature Purchase
- » Literature Search

Design Software:

NEW Energy Analyzer II application! 3

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Creating a new job is the first step in starting the energy analysis. A new job must be created any time the user would like to compare two new HVAC systems.

To Create a New Job:

3. After user validation, select the **New** button

Provide basic information regarding the Job Name, building type, building construction and HVAC equipment performance defaults, building area, and location. Any information provided may be edited at a later time on following screens. Select the **OK** button to proceed

3. Building specification

The general building information will define the type, size, and location of a building. For new jobs, the Edit Building Definition pop-up dialog will appear before taking the user to the main building specification page. For previously created jobs, the general building information may be edited from the Building primary tab and General secondary tab by selecting the **Edit** button.

Additionally, the exterior wall, roof, floor, and window types can be modified to meet the design specifications from the Building primary tab and Construction secondary tab.

Further along in the design process, the areas and use-characteristics of spaces types will be more well defined and can be edited in the application from the Building primary tab and Activities secondary tab.

4 and 5. Defining the HVAC Systems

EnergyAnalyzer™ II has the capability of analyzing a building with two different HVAC system designs. The base system is referred to as HVAC A, while the alternative HVAC system is called HVAC B. Within each HVAC design, two different systems can be specified. Definition of the HVAC systems is characterized in the primary HVAC A and HVAC B tabs in the System Specs secondary tab.

On the System Specs main screen are two sections, one describing System 1 and the other describing System 2 of HVAC A (or B). If a second system exists for HVAC A, check the System 2 check box and the descriptors will bold.

To describe a system, the user must enter information on the System Type, Central Cooling Plant (if applicable), and Central Heating Plant (if applicable). The *System Type* pull-down menu includes a list of systems that directly condition the spaces from either a local or central location. Examples of *System Types* include a central air handling unit and VRV. The *Central Cooling Plant* describes the system that supplies a cooling source to the chosen *System Type*. *Central Cooling Plants* include chillers and DX condensing units. The *Central Heating Plant* describes the system that supplies heating to components in the chosen *System Type*. Examples of Central Heating Plants include boilers and district hot water.

Depending on the existence of chosen *System Type* and if System 2 exists, all relevant secondary tabs will appear. The available secondary tabs including Secondary, Cooling Plant, and Heating Plant will allow the user to add detailed information on the components of the system. The interactive main screens in the HVAC secondary tab component specification screens allow users to roll their mouse over the individual components and see the name of the specific component. If the background of the component is shaded a light blue, it indicates that the properties of the component can be specified by the user. By clicking on the component, the properties side bar will automatically scroll to the properties of that component.

6. Assigning Zones to Systems

If both HVAC A and HVAC B have only one system defined each, no user input is required on the HVAC Assign primary tab.

If either HVAC A or HVAC B has two systems defined for the building, they will need to be assigned in HVAC Assign under the corresponding secondary tab (HVAC A/B). The assignment is relatively straightforward. In the HVAC Assign table there will be 5 columns: Name, Area, Square Footage, System 1, and System 2.

The System 1 and System 2 columns represent which system will serve each particular activity.. A particular activity can only be served by a single system. To assign a system for an activity (row), select the system (column) circle which represents the HVAC equipment serving it.

7. Defining Utility Costs

For many users, building energy usage is best expressed in energy cost. Energy cost differences are generally what can justify one system versus another. Energy costs are the estimated annual cost of running the analogous building including lights, plug loads, HVAC systems, and anything else that requires electricity, gas, or water. Energy costs generally take into account source energy efficiencies (versus site energy efficiencies analyzed in the simulation). EnergyAnalyzer™ II will provide an estimated difference in building energy costs between HVAC A and HVAC B.

To characterize the utility rates, the user should select the Energy Cost primary tab. Under the secondary tabs, the user may define costs for electricity (demand and usage), natural gas, and water or choose to use the default rates based on the location. Only one rate structure may be specified and it will apply to both HVAC A and HVAC B.

8. Life Cycle Analysis

The purpose of life cycle analysis is to move away from comparing two systems on a first cost basis and compare them over the life span of the equipment. A life cycle analysis looks at the cost to buy the equipment, plus the cost to run and maintain that equipment over its useful life. While one type of equipment may be more expensive to buy at first glance, the utility and maintenance cost to run it may be less expensive than other equipment over the long run. In addition to the cost of running the equipment, this approach also factors in the cost or benefit of saving or investing money over the life of a system.

To complete a life cycle analysis, the user must enable the capability. Navigate to the Life Cycle Analysis primary tab and check the *Enable Life Cycle Analysis* checkbox. In order to make a comparison some general assumptions must be defined as well as specific information pertaining to the specific systems being compared.

Capital Costs are required for both HVAC A and B in the comparison. The costs can be the difference between building costs, HVAC system costs or just equipment costs. For the actual calculations, it is the difference between the values that is important. The program will not accept \$0 so if the incremental cost is known, add \$1 for the “*low cost*” Alternative.

9. Results / Analysis

Under the Results primary tab, the user has the ability to run the simulation comparison and view and print the results. To run a simulation, select the Results primary tab and Issue secondary tab. The user must select the **Start Design Day** or **Start Full Year** button located below the progress bar. Design days runs do EnergyPlus simulations for heating and cooling design days. Full simulation runs both HVAC A and B simulations annually at sub-hourly intervals to obtain energy and energy cost data for comparison.

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