



eDesign Suite

Faster, smarter, greener HVAC design.



BUILDING SYSTEM OPTIMIZER | HOURLY ANALYSIS PROGRAM | BLOCK LOAD
ENGINEERING ECONOMIC ANALYSIS | REFRIGERANT PIPING DESIGN

What is Carrier eDesign Suite?

eDesign Suite is a collection of software programs created specifically for heating, ventilating, and air-conditioning system (HVAC) engineers. These programs are designed to increase your productivity and accuracy, expand your firm’s analysis capabilities, and add an element of “marketability” to your analysis. eDesign Suite programs provide features for calculating peak loads, designing HVAC systems, modeling building energy use, calculating lifecycle costs and sizing refrigerant piping. The programs are written by HVAC system engineers and supported by industry experts with years of field application experience.

eDesign Suite Benefits:

- Generate designs and analysis faster with less labor
- Offer a wider range of engineering services to clients
- Expand client base by offering more services at lower cost
- Increase reliability of HVAC system designs
- Support USGBC’s Leadership in Energy and Environmental Design (LEED®) rating points to meet owner goals for LEED certification

Carrier eDesign Suite Application

Schematic Design

Using Integrated Project Delivery (IPD), the project team collaborates during the schematic design phase to determine which HVAC design approaches yield the best energy performance. Carrier software tools allow rapid creation of building energy models so multiple design alternatives can be quickly evaluated to identify the optimum design.

BUILDING SYSTEM OPTIMIZER

Powered by HAP

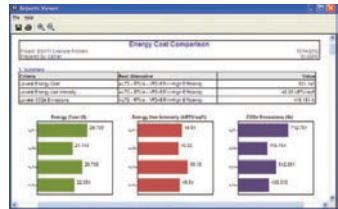
Carrier’s Building System Optimizer quickly compares the energy cost performance of HVAC design alternatives in commercial buildings. It is designed as a screening tool for the schematic design phase of projects or similar situations where multiple HVAC design alternatives need to be evaluated rapidly to identify those with the greatest energy performance potential.

The software uses a streamlined user interface that asks for high-level information about your location, building, HVAC equipment and utility prices. A complete analysis of multiple alternatives can typically be configured in as little as 5 to 10 minutes.

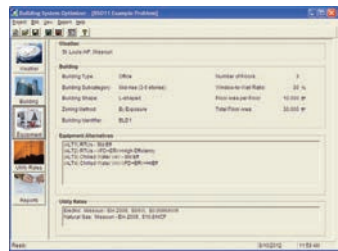
Building System Optimizer uses your inputs to automatically generate a complete, detailed virtual model of the building and its HVAC systems. A full 8,760 hour-by-hour energy simulation is run with this data to yield accurate, reliable energy cost comparisons.

Hourly Analysis Program (HAP)

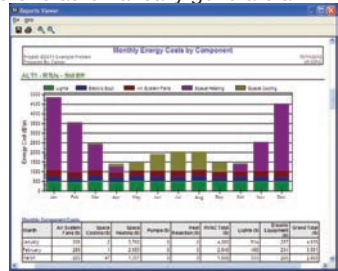
HAP is a multi-function program for building and HVAC analysis. Its functions include rapid generation of energy models to support schematic design phase energy analysis. Complete energy models can be assembled in as little as 5 to 10 minutes and then run using 8,760 hour-by-hour energy simulations to generate accurate comparisons of energy cost performance.



Results Summary



Optimizer Dashboard



Monthly Performance

Design Development

During Design Development, project teams perform detailed analyses to determine peak building loads, size equipment, and assess building energy costs and lifecycle economics of their designs. Carrier supports this work with multiple easy-to-use software tools tailored to different tasks and types of design applications.

Hourly Analysis Program (HAP)

HAP is a multi-function tool supporting peak load calculation, system sizing, and whole building energy analysis for commercial buildings of any size. Bundling these features in a single tool increases your productivity when a job requires both system design and energy analysis.

Peak loads are calculated with the ASHRAE Transfer Function Method. Required airflow rates and equipment capacities are derived based on the specified system type. Ventilation airflows can be sized per ASHRAE Standard 62.1.

Annual energy cost can be analyzed for a wide array of HVAC system and equipment types. Part-load performance models are included. Complex utility rates, including demand charges, can be modeled. Calculations use a full 8,760 hour-by-hour simulation approach. Features support energy modeling for schematic design, detailed design and LEED rating applications.

A large menu of tabular and graphical output reports is offered.

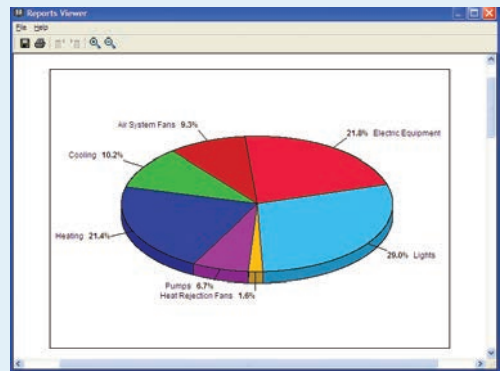
HAP complies with ASHRAE Standard 183, and the requirements in ASHRAE Standard 90.1 Appendix G for software use in the Performance Rating Method.

Block Load

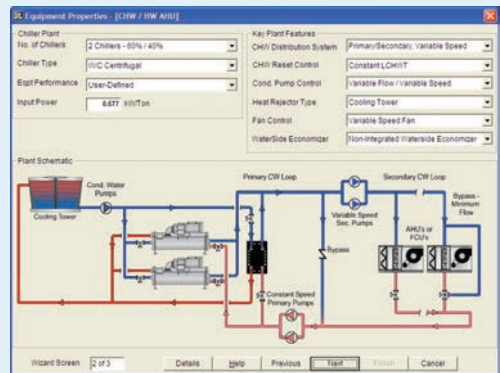
Block Load calculates peak cooling and heating loads for small and mid-sized buildings. It also generates equipment sizing requirements to support selection of HVAC equipment and uses a streamlined user interface to support quick analysis. The software offers a choice of ASHRAE Radiant Time Series or Transfer Function Method load calculations and complies with ASHRAE Standard 183.

Engineering Economic Analysis

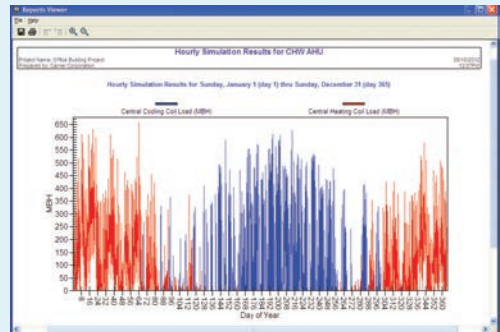
Engineering Economic Analysis compares the lifecycle economics of alternate HVAC system designs. The software offers simple payback, simple cash flow and detailed lifecycle analysis features. The analysis compares alternatives on the basis of Total Present Worth, Net Present Worth, Internal Rate of Return, Savings to Investment Ratio and Cash Flow.



Component Energy Costs



Plant Configuration



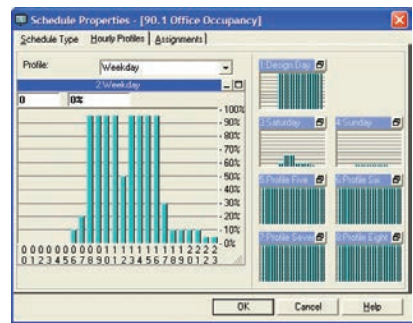
Hourly Load Profiles

Construction Documents

Final construction documents require accurate sizing and selection of equipment. Carrier supports this work with tools for system sizing, equipment selection and piping design.

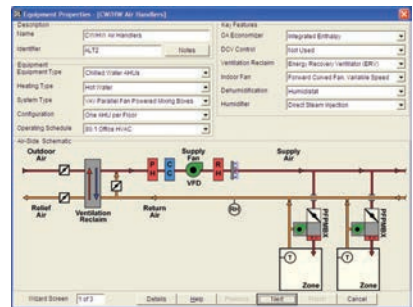
Hourly Analysis Program (HAP)

HVAC system components are sized using a System-Based Design concept which tailors sizing procedures to the specific system type and components involved. This provides airflow and equipment capacity data that can directly support equipment selection without further manual calculations.



ASHRAE Default Schedules

HAP offers features to export equipment sizing results to Carrier’s Electronic Catalog (E-CAT) software to drive equipment selections, which eliminates the need for manual data input in E-CAT. In addition, HAP project files can be automatically emailed to your Carrier sales office for assistance selecting equipment.



Air System Configuration

Block Load

Block Load offers similar features to HAP for sizing equipment for Constant Air Volume, Variable Air Volume and fan coil systems and then exports sizing results to Carrier Electronic Catalog (E-CAT) to support equipment selections.

Refrigerant Piping Design

This tool calculates required pipe sizes for suction, discharge and liquid refrigerant lines in split DX systems and for chillers with remote coolers or condensers. It sizes horizontal lines, and single and double vertical risers. You may also assess whether vertical risers are sized to ensure oil return at minimum load, and determine the amount of subcooling required in liquid lines to avoid flashing.

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