

## CHVAC OVERVIEW

The Elite Software CHVAC program quickly and accurately calculates the maximum heating and cooling loads for commercial buildings using the latest ASHRAE procedures. CHVAC allows an unlimited number of rooms which can be grouped into as many as 100 air handling systems. Rooms may be optionally grouped under VAV boxes as well. CHVAC automatically looks up all cooling load and correction factors necessary for computing loads. Outdoor design weather data can be automatically looked up for over 1,900 cities in 75 countries. The weather data can be edited and new cities can be added as well. Comprehensive reports list the general project data, detailed room loads, air handler summary loads, outside air loads, total building loads, building envelope analysis, tonnage requirements, CFM air quantities, chilled water flow rates (if applicable), and complete psychrometric data with entering and leaving coil conditions. Other outstanding features include gbXML import and export capabilities, ASHRAE Standard 62 analysis, automatic building rotation, 360 degree wall orientations, tilted glass, exterior shading, internal operating load profiles, variable indoor design temperatures, people diversity, pretreated outside air, seasonal infiltration and ventilation rates, reheat loads, duct gains and losses, and return air plenums. Numerous reports are available including hourly load profile reports, bar graphs, pie charts, and even a graphical psych chart. Packaged cooling and heating equipment for all manufacturers can be selected from the AHRI databases provided. CHVAC can export project data to Elite Software's DUCTSIZE program and to three different energy analysis programs: Energy Audit, eQuest and EnergyPro.

## DEMONSTRATION VERSION

If you would like to evaluate CHVAC in further detail, you can **download free of charge** a functional demo of CHVAC from Elite's web site, [www.elitesoft.com](http://www.elitesoft.com)

## SYSTEM REQUIREMENTS

CHVAC is a Windows program and will run on any computer with Windows 2000 or higher including Windows 7 and 8.

## CHVAC FEATURES

- Calculates Heating & Cooling Loads based on ASHRAE
- Complies with the ANSI/ASHRAE/ACCA Standard 183
- **Includes ASHRAE CLTD and RTS Calculation Methods!**
- **Links with LEED and 90.1 Certified EnergyPro Software**
- **Imports gbXML Files created by REVIT & AutoCAD MEP!**
- Calculates from Floor Plans created by Elite's Drawing Board
- Computes CFM and L/S Air Quantities with Psychrometrics
- HVAC Equipment Selection From AHRI Databases
- Helps Comply with ASHRAE Standard 62
- Supplied with Design Weather Data for Over 1,900 Cities
- Calculates Runout and Main Trunk Duct Sizes
- Provides Graphical Psychrometric Chart Reports
- Provides Comprehensive Lighting and Equipment Loads
- Prints Numerous Color Pie Charts and Bar Graphs
- **No Copy Protection Hassles! - No Annual Fees!**

## NEW Features in CHVAC Version 8

CHVAC version 8 includes all the above features plus the new features below that were not in CHVAC version 7.

- **EnergyPro** is a premier LEED certified, ASHRAE 90.1 Energy Analysis program that is also the only software able to simulate VRF (Variable Refrigerant Flow) systems. CHVAC project files can be passed over to EnergyPro, thus eliminating redundant entry of project data.
- **Plenum-Room Temperature Difference Calculation**
- **Sloped Ceiling Area Calculator**
- **Load Preview Window** shows calculation results as data is entered with over 90 optional columns of results.
- **New Lighting Load Selections** allows multiple types of lighting loads with space fractions and usage factors.
- **New Equipment Load Selections** provides numerous built-in equipment items with usage factor and profile options. Special handling of latent loads from pools/spas is included.

## CALCULATION METHOD

CHVAC performs calculations using the new RTS (Radiant Time Series) procedures as described in the ASHRAE Handbook of Fundamentals. CHVAC was the first program on the market to use the new sophisticated RTS calculation method. A CLTD option is preserved for comparison purposes, but the RTS method is favored for its increased accuracy and sensitivities. CHVAC calculates in both SI metric and English imperial units.

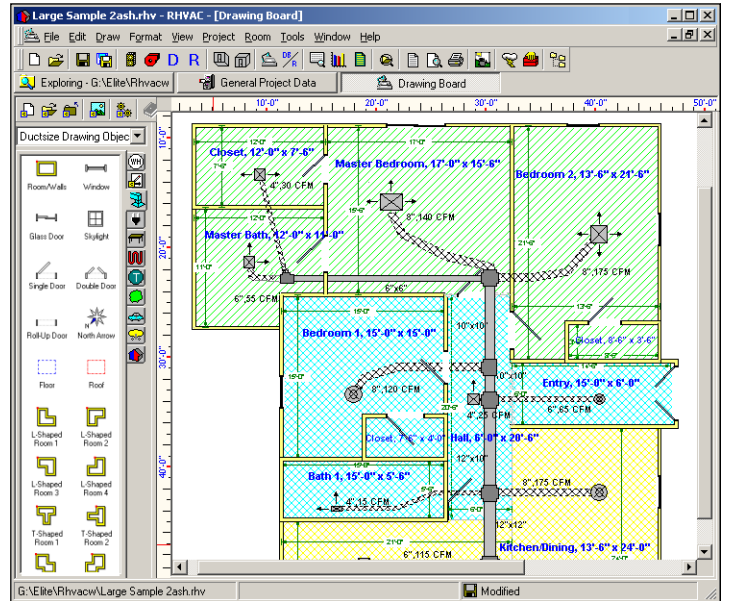
## PROGRAM INPUT

Data can be entered into simple "fill in the blank" screens or optionally obtained graphically from Elite's Drawing Board program or from gbXML files created by CAD packages such as AutoCAD MEP and Revit. Five types of data are requested: general project data, outdoor design data, building material data, air handler data, and specific room data. The general project data includes the project and client name, designer, building opening and closing hours, internal operating load schedules, and any desired safety factors. Built-in help explanations and choices are provided for all data inputs. Free online videos and tutorials are provided along with a comprehensive 300 page user manual.

## ADVANCED FEATURES

CHVAC contains many, many advanced features. Listed below are just some of the capabilities of CHVAC.

- Calculates Peak Heating and Cooling Loads
- Calculates Both Heating & Cooling Cfm Requirements
- **Imports and Exports gbXML Files from REVIT and MEP**
- Allows Manual or Graphical Data Entry
- **Links with LEED Certified EnergyPro Analysis Program**
- Links with Elite's DUCTSIZE program
- Helps Comply with ASHRAE Standard 62
- Provides Overall Building Envelope Report
- Prints Graphic Psychrometric Chart
- Prints Bar Graphs and Exploded Pie Charts
- Selects Equipment from both ARI and GAMA Databases
- Calculates in both SI Metric and English Units
- Exterior Shading Handles Overhangs, Fins, & Glass Tilt
- Built-in Design Weather Data for Hundreds of Cities
- Analyzes Up to 12 Months Per Calculation
- Calculates 24 Hours per Design Day
- Allows Unlimited Number of Rooms per Project
- Rooms May Be Grouped Under 100 Air Handlers
- Rooms May Be Optionally Grouped Under VAV Boxes
- Allows 12 Walls, 12 Windows, and 5 Roofs per Room
- Allows Simultaneous Infiltration and Ventilation
- Allows Different Summer and Winter Air Rates
- Allows Varying Indoor Conditions Within a Project
- Allows 6 Master Roof Types, 8 Master Wall Types, 8 Master Partition Types, and 50 Master Glass Types
- Allows for Floor Slab Perimeter Loads
- Provides a User Defined Master Material Library
- Allows Up to 10 Internal Operating Load Profiles
- Allows Full 360 Degree Wall and Glass Orientations
- Allows Glass to be tilted from 0 to 180 Degrees
- Allows for Roof and Wall Color Effects
- Provision for Both VAV and Constant Volume Systems
- Proper Handling of Return Air Plenum Loads
- Accounts for People Diversity in Total Building Load
- Computes Supply Fan Horsepower and Heat Gains
- Accounts for Both Draw-thru and Blow-thru Fans
- Calculates Reheat Requirements if Necessary
- Computes Supply and Return Duct Gains and Losses
- Allows Direct Specification of Supply Cfm Quantities
- Allows Specification of Minimum Supply Air Quantities
- Allows Heating Only, Cooling Only, or Both
- Excess Supply Air Can be Handled as Reheat, Reserve Capacity, or by Adjusting the Leaving Coil Conditions
- Calculates Chilled and Hot Water Coil Flow Rates
- Allows for Pretreated Outside Air
- Allows for Negative Equipment Loads From Refrigerators
- Allows Heating and Cooling Safety Factors
- Lighting & Equipment Watts along with No. of People can be Entered Directly or on a Per Square Foot Basis
- Allows for Variable Indoor Design Temperatures



CHVAC - Full Commercial HVAC Loads Calculation Program  
 Elite Software Development, Inc.  
 Lakeside Office Complex  
 (800) 648-9523, Orders and Info  
 Page 1

### Building Summary Loads

Building peaks in July at 5pm.

Bldg Load Descriptions	Area Quan	Sen Loss	%Tot Loss	Lat Gain	Sen Gain	Net Gain	%Net Gain
Roof	1,300	3,695	13.50	0	2,717	2,717	8.07
Wall	1,071	4,442	16.23	0	1,622	1,622	4.82
Glass	129	4,776	17.45	0	5,019	5,019	14.92
Floor Slab	150	5,610	20.50	0	0	0	0.00
<b>Skin Loads</b>		<b>18,523</b>	<b>67.68</b>	<b>0</b>	<b>9,359</b>	<b>9,359</b>	<b>27.81</b>
Lighting	1,300	0	0.00	0	4,879	4,879	14.50
Equipment	900	0	0.00	1,100	3,378	4,478	13.31
People	11	0	0.00	2,341	2,834	5,174	15.38
Partition	160	578	2.11	0	153	153	0.45
Cool. Pret.	0	0	0.00	0	0	0	0.00
Heat. Pret.	0	0	0.00	0	0	0	0.00
Cool. Vent.	121	0	0.00	3,093	2,376	5,469	16.25
Heat. Vent.	70	5,084	18.58	0	0	0	0.00
Cool. Infil.	0	0	0.00	0	0	0	0.00
Heat. Infil.	0	0	0.00	0	0	0	0.00
Draw-Thru Fan	0	0	0.00	0	1,487	1,487	4.42
Blow-Thru Fan	0	0	0.00	0	0	0	0.00
Reserve Cap.	0	0	0.00	0	837	837	2.49
Reheat Cap.	0	0	0.00	0	0	0	0.00
Supply Duct	0	2,122	7.75	0	1,210	1,210	3.60
Return Duct	0	1,061	3.88	0	605	605	1.80
<b>Building Totals</b>		<b>27,369</b>	<b>100.00</b>	<b>6,534</b>	<b>27,118</b>	<b>33,652</b>	<b>100.00</b>

Building Summary	Sen Loss	%Tot Loss	Lat Gain	Sen Gain	Net Gain	%Net Gain
Ventilation	5,084	18.58	3,093	2,376	5,469	16.25
Infiltration	0	0.00	0	0	0	0.00
Pretreated Air	0	0.00	0	0	0	0.00
Zone Loads	19,101	69.79	3,441	21,440	24,881	73.93
Plenum Loads	0	0.00	0	0	0	0.00
Fan & Duct Loads	3,184	11.63	0	3,302	3,302	9.81
<b>Building Totals</b>	<b>27,369</b>	<b>100.00</b>	<b>6,534</b>	<b>27,118</b>	<b>33,652</b>	<b>100.00</b>

Check Figures		
Total Building Supply Air (based on a 20" TD):	1,113	CFM
Total Building Vent. Air (10.91% of Supply):	121	CFM
Total Conditioned Air Space:	1,300	Sq. ft
Supply Air CFM/Sq. ft Of Conditioned Space:	0.8559	CFM/Sq. ft
Sq. ft Of Conditioned Air Space Per Ton:	463.5854	Sq. ft/Ton
Tonnage Per Sq. ft Of Conditioned Air Space:	0.0022	Tons/Sq. ft
Total Heating Required With Outside Air:	27,369	Btuh
Total Cooling Required With Outside Air:	2.80	Tons

