HOURLY ANALYSIS PROGRAM v5.2
NEW FEATURES GUIDE

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Overview

HAP v5.2 replaces v5.11, the legacy version of HAP using 2-D modeling. v5.2 implements features to modernize project data management and software installation. This gives the software greater longevity as computer operating systems evolve. It also implements the same license key control used in HAP v6. Further, v5.2 makes a number of small feature updates and corrects software problems.

While this will be the last update to HAP v5, we continue to offer the software and will provide ongoing help desk support for v5.2. Going forward development resources will focus on adding new technical features to the HAP v6 series of releases.

Transitioning from HAP v5.11 to v5.2 is fast and easy. In v5.2, all of the following are the same as in v5.11:

1. Program workflow.

2. Program input data and input screens

3. Program reports

4. Calculation results (unless affected by a problem fix).

Further, v5.11 projects can be converted into the new .HAP5 project file format. Conversion transfers all input data. Please use the "Convert Previous Version" option on the Project Menu to do this.

Contents

Project Management

HAP v5.2 adds features to make project data management simpler and more flexible.

1. **New Project Data Management Scheme**

   Each project stored as a single .HAP5 file
   Project files can be managed like any other document file. Save the file wherever you like. Move the file whenever you like.
   Eliminated requirement that a project be a folder of multiple files that must stay in one location.

2. **Simplified Project Menu Options**

   Only necessary options are now New, Open, Save, Save As
   Archive, Retrieve options no longer needed.

3. **Updated Convert Previous Version option.**

   Converts complete projects from versions v4.0 through v5.11 to .HAP5 format. All existing input data transferred.
   Converts legacy v3.2 projects to .HAP5 format.
   Converts from either a project archive file (.E3A) or from a HAP project folder.

Software Installation and Operation

HAP v5.2 adds features to make software installation easier and program operation more flexible.

1. Program Installation

Uses a single, self-contained installation file.
Carrier X Builder Framework is no longer required.
Automatically creates a desktop icon to launch the program.
Creates a Carrier eDesign group in the Start Menu and places HAP v5.2 item in that group.

2. **License Key for Program Activation**

A license key must be entered when you first run the program.
NOTE: If you have HAP v6 installed, v5.2 will inherit the license key from v6 as both v5.2 and v6 use the same key.
If you haven't installed HAP v6, license key can be obtained from your most recent renewal email or new license email.
The license key is linked to your HAP software license and expires when the license expires. It covers use of both HAP v6 and v5.2
A new license key is provided each time you renew your license.

3. Large Company IT Management Features

Installer supports silent installations.
Installer supports remote deployment of license keys
Details found in *eDesign Advanced Installation Guide* linked from release sheet and www.carrier.com eDesign software downloads page.

4. Running Multiple Instances

Now possible to run multiple instances of HAP v5.2 at one time.
Allows working on two or more projects in parallel

Envelope Modeling

HAP v5.2 adds enhancements for modeling building envelope performance:

1. Added ASHRAE Standard 90.1 prescriptive wall and roof assemblies to the list of pre-defined assemblies. The list of assemblies is synchronized with the project preference for energy standard. Standard 90.1 prescriptive assemblies can also be imported from the ASHRAE 90.1 Template projects installed with the program (see #8).

2. Added the ability to select pre-defined window and door assemblies. The list of pre-defined window assemblies contains ASHRAE 90.1 prescriptive assemblies synchronized with the project preference for energy standard, and a series of generic glass types. As with walls and roofs, Standard 90.1 prescriptive assemblies can also be imported from the ASHRAE 90.1 Template projects installed with the software (see #8).

3. Updated wall and roof material layer properties using information from the *2021 ASHRAE Handbook - Fundamentals*

4. Expanded list of default wall and roof material layers offered.

5. Because of the expanded set of material layers, implemented a two-tier selection scheme where you select a material category such as "insulations" or "masonry" first and then the list of materials within that category appears for selection.

6. Revised the outside and inside surface resistance defaults to match data recommended by *2021 ASHRAE Handbook - Fundamentals*.

Wall Properties - [2013 Zone 3 Above-grade steel-framed wall]

Name: 2013 Zone 3 Above-grade steel-framed wall
Outside Surface Color: Medium   Absorptivity: 0.675

Layers: Inside to Outside	Thickness in	Density lb/ft³	Specific Ht. BTU / (lb·°F)	R-Value (hr·ft²·°F)/BTU	Weight lb/ft²
Inside surface resistance	0.000	0.0	0.00	0.68000	0.0
5/8-in gypsum board	0.625	50.0	0.26	0.56306	2.6
3.5-in cavity, 16-in o.c. steel fr	3.500	3.4	0.20	6.00000	1.0
R-5 board insulation	1.000	2.5	0.35	5.00000	0.2
5/8-in gypsum board	0.625	50.0	0.26	0.56306	2.6
3/4-in HW stucco	0.750	120.0	0.20	0.08000	7.5
Outside surface resistance	0.000	0.0	0.00	0.17000	0.0
Totals	6.500			13.06	13.9

Overall U-Value: 0.077 BTU/(hr·ft²·°F)

Window Properties - [2013 Zone 3 Metal framing, fixed]

Window Details
Name: 2013 Zone 3 Metal framing, fixed
Detailed Input: ☐
Height: 5.00 ft   Width: 3.00 ft
Frame Type: None
Internal Shade Type: None
Overall U-Value: 0.500 BTU/(hr·ft²·°F)
Overall Shade Coefficient: 0.287

Window Properties - [Double Clear Low-e 0.2 on s3]

Window Details
Name: Double Clear Low-e 0.2 on s3
Detailed Input: ☐
Height: 5.00 ft   Width: 3.00 ft
Frame Type: None
Internal Shade Type: None
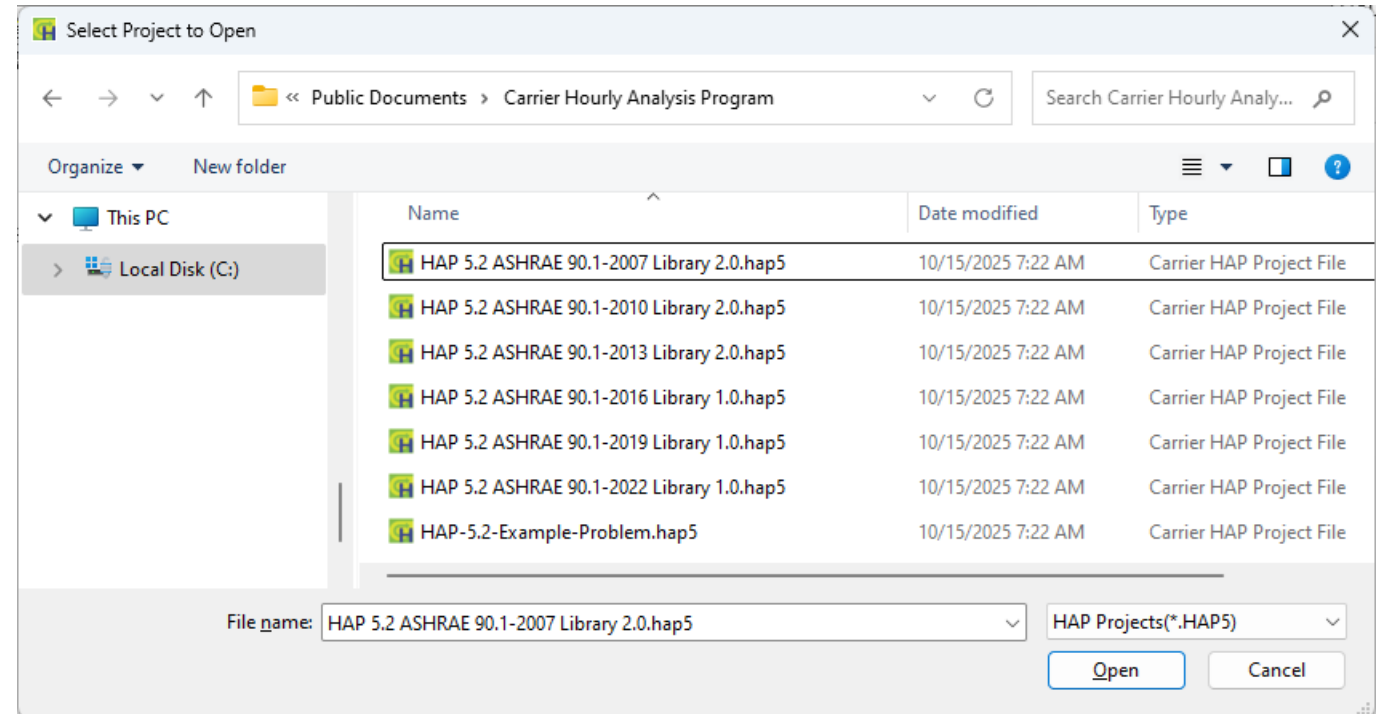Overall U-Value: 0.450 BTU/(hr·ft²·°F)
Overall Shade Coefficient: 0.805
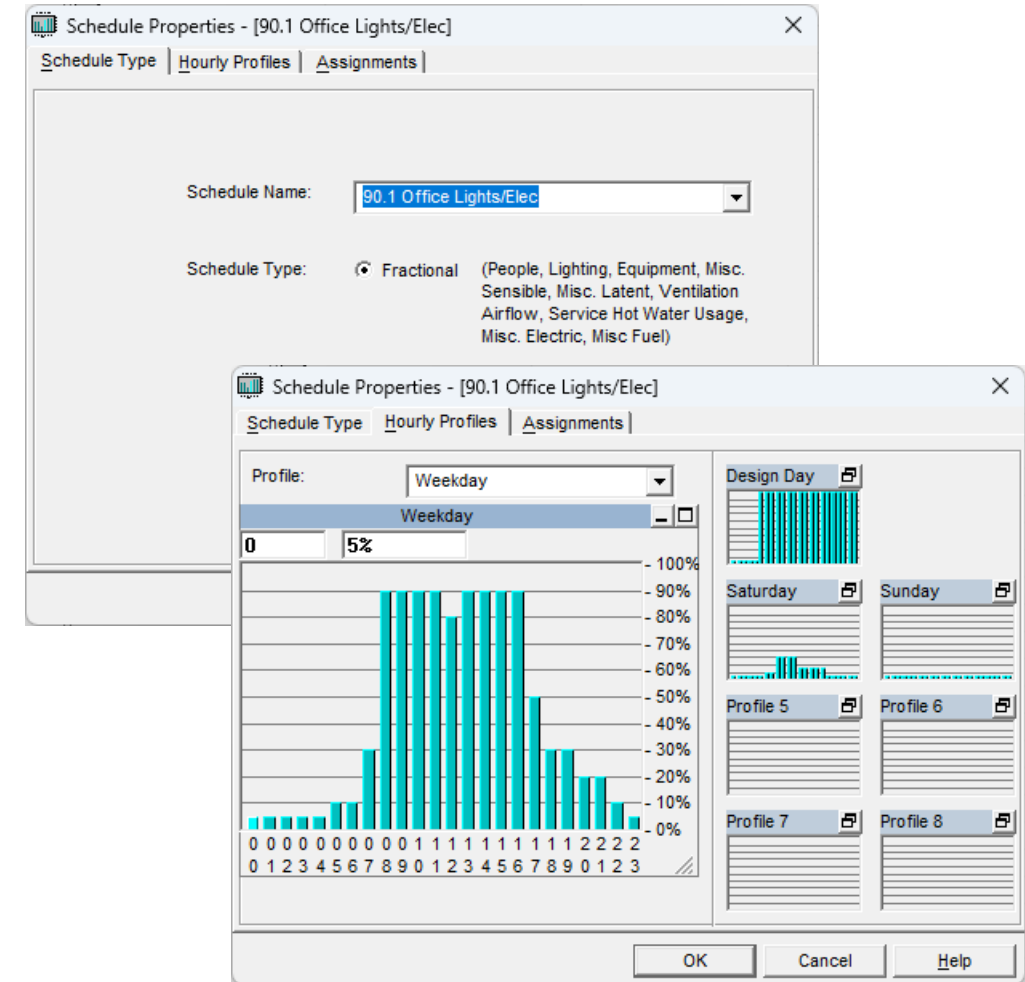
Envelope Modeling

Continued:

7. Revised the set of pre-defined wall and roof assemblies to simplify the list to "base" assemblies which can be selected and then customized with the desired amount of insulation. This makes the list of predefined assemblies easier and faster to work with.

8. Updated ASHRAE 90.1 Template projects for 90.1-2007, 2010, 2013 to offer prescriptive wall and roof assemblies based on the updated material layer properties. Added template projects for 90.1-2016, 2019, 2022 prescriptive assemblies. These project files are installed in the C:\Users\Public\Public Documents\Carrier Hourly Analysis Program folder on your computer. One way to use these template projects is via the Import Project Data option on the Project Menu. That allows selected envelope assemblies and schedules to be imported into your working project.

Other Enhancements

1. **ASHRAE Default Schedules** - Added ability to select ASHRAE Standard 90.1 default schedules. The Schedule Name input now provides a drop-down list containing the ASHRAE 90.1 default schedules for various building types and heat gain types. The Name input can still be used as a text box to directly enter a name when manually creating a schedule.

2. **Saving Reports in PDF Format.** Updated the Report Viewer to add an option for saving reports in PDF format.

3. **EIA Electric and Gas Price Data.** Updated the default US state average prices for electricity and natural gas to use the latest data from the US Energy Information Administration (EIA) available at the time of v5.2 release. That data is for 2023 calendar year.

4. **Help System.** Updated Help documentation to describe all the new and revised features. The majority of changes are in chapters 1-4, 18-21, and 32.

5. **Example Problem.** Updated and modernized the example problem used for training purposes. The .HAP5 project file for the example is installed in the C:\Users\Public\Public Documents\Carrier Hourly Analysis Program folder on your computer.

About Data Conversion & Calculation Results

1. **Project Conversion.** Projects created with v5.11 and older versions of HAP can be converted to .HAP5 project format using the "Convert Previous Version" option on the Project Menu. This converts all project input data. Calculations need to be rerun after conversion.

2. **Will calculation results in v5.2 be different than v5.11 for a converted project?** Generally, no. Calculation results in v5.11 and v5.2 will be the same unless your project is affected by one of the problems corrected in v5.2. A detailed list of problem fixes is found in the HAP v5.2 help system in section 1.2 in the "What's New in HAP" topic.

QUESTIONS?

Please contact Carrier Software Systems at

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Thank you!